DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summary Semester Examination, May 2018

Branch: B. Tech.
Subject with Subject Code: Basic Computer Programming [ICT206]
Semester: II
Marks: 60
**Date:** 25 / 05 / 2018
Time: 3 Hrs.

Q. No. 1 Attempt the following:

A) Write the commands to compile and to execute a program in Linux environment. Write the name of file is created as programmer successfully compile the program? **[4]**

Solve the following expression. What will the value store in result variable?
```
int x = 1, y = 5, z = -2, result;
result = -x + (z + y * (z + x) / z - y / x) + x - y / 2;
```

B) Write a C code for flowchart as shown in figure below. **[4]**
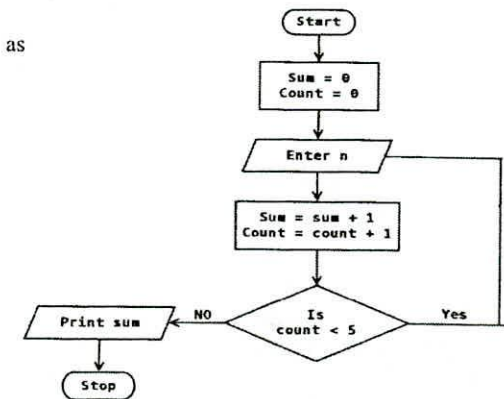
C) Write an algorithm to calculate the factorial of a number (N). Verify your result by a trace table by assuming N = 5. **[4]**
Hint: The factorial of N is the product of numbers from 1 to N.

Q. No. 6 Attempt the following:

A) Consider a pixel which has two coordinate X and Y. **[4]**
  i. Which is the best data type suit to declare the pixel in C and also write the syntax to declare the pixel.
  ii. Write syntax initialize the X coordinate to 10 and Y coordinate to 15.
  iii. Write the syntax to display that initialize value of X and Y to the user.
  iv. Write the syntax to take four pixels of a square.

B) Write a program that compares two dates entered by user. To store date, use structure as a data type. Date that contains three members namely date, month and year. If the dates are equal then display message as "Both Dates are Equal" otherwise "Both dates are Unequal". **[4]**

C) Define a structure in C. **[4]**

Consider a 'Book' which contains four fields as {Title, Author, Edition, ISBN}. Give proper syntax to declare a structure variable for Book and also initialize the values for structure elements as {"The C Programming Concepts", "Dennis Ritchie", 2, 0131103628} respectively.

□□□□□□

Q. No. 2 Attempt the following:

A) Write a program that take input as a time in seconds from user and print the output in the form **HH:MM:SS**. [4]

```
For eg:
        Input: 7907
        Output: 2:11:47
```

B) With the help of suitable example, explain any four the Logical Operators in C. [4]

OR

B) With the help of suitable example, explain any four Arithmetic Operators in C. [4]

C) Enlist the hierarchy of Data Types in C. Also write the amount of size required to store the basic data types in the memory. [4]

Q. No. 3 Attempt the following:

A) Consider the program given below: [4]

```
int main() {
        int a = 6;
        int b = 6;
        int lamp, light;
        lamp = 5*a + 2*b;
        light = 4*a + 8*b;
        while(lamp < light) {
                lamp = lamp + 4;
                light = light - 2;
        }
        return 0;
}
```

How many times does the while loop execute? What will the value of 'lamp' and 'light' variable in each iteration?

B) Write a main() program that first asks the user for an integer, N, and then calculates three sums: the sum of the even integers, the sum of the odd integers, and the sum of all integers from 0 to N. The output of the program is: [4]

```
Enter n: 7
Sum = 28, Sum of Odd = 16, Sum of Even = 12
```

C) Give the generalize syntax for the *do....while, while, if...else*, and *for* loop constructs. [4]

OR

C) Write the program using Switch Statement which takes an arithmetic operator +, -, *, / and two operands from the user as an input and performs the calculation on the two [4]

operands depending upon the operator entered by the user and display the result as an output on Screen.

Q. No. 4 Attempt the following:

A) Differentiate between the static and automatic storage type of variable with respect to the following points: [4]
Storage, Default Initial Value, Scope of variable and Life of variable.

B) What do you mean of the function in C? Define the recursion. Give the proper syntax for function prototype and function definition. [4]

C) What is the output of following code? [4]

```
#include"stdio.h"

void foo(int n, int sum){
        int k = 0, j = 0;
        if (n == 0) return;
        k = n % 10;
        j = n / 10;
        sum = sum + k;
        foo (j, sum);
        printf ("%d,", k);
}

int main (){
        int a = 204, sum = 0;
        foo (a, sum);
        printf ("SUM=%d\n", sum);
        getchar();
}
```

Q. No. 5 Attempt the following:

A) Write a program in C that takes two matrices of size 3 X 3 as in input from the user. Same program performs addition and subtraction of two matrices and display the result of addition and subtraction to the user. [4]

B) User want to enter 25 numbers of the same kind. Which data type would you like to suggest to use to a programmer to receive input from user through keyboard. Further write the code or program in C that find sum and average of 25 numbers entered by user and display the result i.e. sum of 25 numbers and average of 25 numbers on the screen. [4]

C) Define an Array? Define String in C? How to declare and initialize strings in C, give an example? [4]

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD - 402 103
End Semester Examination, May 2018

Branch: B. Tech.   **Semester:** II

Subject with Subject Code: Energy and Environmental Engineering **Marks:** 60
[CHE206]

Date: 25 / 05 / 2018   **Time:** 3 Hrs.

Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt **ANY FIVE** questions of the following.
3. Illustrate your answers with neat sketches, diagram, etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Solve any Two of the following: (6×2=12)

(a) How the fuel and ash handling system of the steam based power plant works? Show it partly with a free hand sketch. What are the considerations to be taken in to account before installation of steam power plant?

(b) List the various component of the gas turbine based power plant. Explain how open cycle gas turbine power plant is different than closed cycle gas turbine power plant. State any four advantages of diesel engine power plants

(c) Explain the nuclear fission phenomenon occurred in the nuclear reactor. Describe the working of indirect type nuclear power plant with a neat sketch. What the limitations of nuclear power generation. State any four.

Q.2. Solve any Two of the following: (6×2=12)

(a) How the fuel cells are classified? Explain the working principle of Proton Exchange Membrane type fuel cell? Draw a neat sketch of the above fuel cell.

(b) Describe the working of solar water heater with a neat sketch and label all the main component of the system. Name any two solar power plant installations in India.

(c) What is tidal power? Explain the working of tidal power plant with a neat sketch. State any four advantages as well as limitations of tidal power generation.

Q.3. Attempt the following: (6×2=12)

(a) Explain the term "energy efficiency" in terms of various household equipment. What are the benefits derived from the energy efficient devices?

(b) What are the energy conservation opportunities available in industry? Briefly explain. How the energy is saved while using air conditioner and refrigerator?

Q.4. Attempt the following: (6×2=12)

(a) Define Air Pollution. What are the indoor air pollutants? Explain the effects of indoor air pollution on the human health.

(b) Following are the sources of the soil pollution: Industrial waste, Urban waste, Agricultural practices, and Radioactive pollutants. Write the effect of the above on soil degradation. List the various farm and forestry practices that controls the soil pollution.

Q.5. Solve the following: (6×2=12)

(a) Define sustainable development. List the various measures that may lead to sustainable development. Write any four benefits of rainwater harvesting as one of the measures of sustainable development.

(b) What is radioactive pollution? What are its effects? What are the measures to be taken to minimize the radiation pollution?

Q.6. Solve the following: (6×2=12)

(a) What are the steps to be taken to preserve the tropical forest according to forest conservation act? Explain in brief.

(b) How the water pollution sources are classified? What are the effects of water pollution on human and animal health?

Best of luck

BoL

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Summer Semester Examination, May 2018

B. Tech. First Year (Semester - II)

Subject with Subject Code: Basic Civil Engineering (CV205)

Time: 03 Hours   Max. Marks: 60

INSTRUCTIONS TO THE STUDENTS:
1. Attempt any five questions from the given six questions. Figures to the right indicate full marks.
2. Illustrate your answers with neat sketches, diagrams etc. where ever necessary.
3. Necessary data is given in the respective questions. If such data is not given, it means that the knowledge of that data is a part of the examination.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Use of logarithmic table, drawing instruments and non-programmable calculators is permitted.

Q. 1	a)	Define the following terms: Strength, Hardness, Elasticity, and Plasticity.	**(4)**
	b)	Write a short note on composition of cement clinker.	**(8)**
Q. 2		Solve any two from the following:	**(6x2)**
	a)	Explain with neat sketch: conventional spread footing.	
	b)	Write the classification of Piles according to Load Transfer mechanism.	
	c)	What are the functions of doors and windows?	
Q. 3	a)	Enlist the different elements of a building.	**(4)**
	b)	Explain in brief the various aspects of orientation.	**(8)**
Q. 4	a)	Draw a neat sketch of telescopic leveling staff.	**(4)**
	b)	What are the fundamental principles of surveying? Explain briefly.	**(8)**

<div align="center">OR</div>

	b)	Explain in brief the primary divisions of surveying.	**(8)**
Q. 5	a)	Draw a neat sketch of a general cross-section of a road.	**(6)**
	b)	Draw neat sketches of: No parking, Overtaking prohibited, No entry.	**(6)**
Q. 6	a)	What is meant by air pollution and what are its sources.	**(6)**
	b)	Write a short note on rain water harvesting.	**(6)**

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD - 402 103
End Semester Examination, May 2018

Branch: M. Tech.   Semester: II
(MMD/MMDE/MHP/MME/MMF/MEXX/MCH/MTEE)

Subject with Subject Code: Research Methodology [MMD204A]   Marks: 60
[MMDE204A/MME11E3D/MHP12E5A/MMF204A/MEXX203C/MOE12E5A/
MCH206/MTEE205E]

Date: 23 / 05 / 2018   Time: 3 Hrs.

Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram, etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q.1. Solve any Two of the following: (6×2=12)

(a) Explain in brief the research process using a neat flow chart. Define the main issues which should receive the attention of the researcher in formulating the research problem.

(b) What are the factors to be considered while preparing research design for a particular research problem? Explain in brief the qualities of a good research.

(c) Describe the different types of research, clearly pointing out the difference between an experiment and survey.

Q.2. Solve any Two of the following: (6×2=12)

(a) What is the importance of literature review in research? Suggest any model how you will analyse it.

(b) What are methods of sampling in response of complex random sampling designs? Elaborate each in brief.

(c) What is hypothesis? What characteristics it must possess in order to be a good research hypothesis?

Q.3. Attempt the following: (6×2=12)
(a) A random sample of 200 measurements from an infinite population gave a mean value of 50 and a standard deviation of 9. Determine the 95% confidence interval for the mean value of the population.

(b) Enumerate the different methods of collecting data. Write a brief note on different types of analysis of data pointing out the significance of each.

Q.4. Attempt the following: (12×1=12)

(a) Below are given the observed values of two responses A and B for three different tests each.

Response	1	2	3
A	30	32	22
B	20	18	16

Set up a table of ANOVA and calculate F ratio. State whether the difference between the output of the two responses is significant taking 7.71 as the table value of F at 5% level for v1=1 and v2=4.

Q.5. Solve any two of the following. (6×2=12)

(a) How does an error differ from an Uncertainty? What is a fixed error and Random error? Explain.

(b) A certain resistor draws 110.2 V and 5.3 A. The uncertainties in the measurement are ±0.2 V and ±0.06 A, respectively. Calculate the power dissipated in the resistor and the uncertainty in the power.

(c) The torque and the engine speed of a truck is given as follows:
   Engine drive: $T = -170 + 29.4\omega - 0.284\omega2$ and Load: $T = 10.5\omega$
where T = torque, N.m and ω = rotation speed, r/s.
Determination of the operating condition of the truck is a simulation of a two components system. Perform this simulation adopting suitable flow diagram. Use an initial value for simulation of ω = 40 r/s and show the result in the form in the table.

Q.6. Solve any two of the following: (6×2=12)

(a) Describe in brief the layout of research report covering all relevant points.

(b) Explain the methods of Bibliography and its importance in context of research report.

(c) Write notes on the footnotes and documentation style to be used in research report. Write the correct meaning of the following abbreviations use in the research report. i) viz., ii) et. al., iii) art., iv) vid

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M.Tech. (CE / CSE / CS / CS&IT) **Semester: II**

Subject with Subject Code: **Pattern Recognition** **Marks: 60**
[MTCE1205D]

Date: 23 / 05 / 2018 **Time: 3Hrs.**

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. a) With neat diagram, explain Pattern recognition system in detail. (6)

b) Explain the concept of Probability theory. (6)

Q.2. a) Explain in detail about Bayes Decision Rule. (8)

b) Give short notes on K-NN classifier. (4)

Q.3. a) How minimum spanning tree used in clustering? (6)

b) Write and explain the DBSCAN algorithm. (6)

Q.4. a) How can you determine distance between two separable classes? (8)

b) Describe about sequential forward selection algorithms. (4)

Q.5. a) Explain in detail about principal component analysis. (6)

b) Write short notes on kernel principal component analysis. (6)

Q.6. a) Explain about support vector machine in detail. (6)

b) Write FCM algorithm with example. (6)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD - 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (Electrical Power System)   **Semester: II**

Subject with Subject Code: Energy Management & Auditing [MTEPS205-C]   **Marks: 60**

Date: 23 / 05 / 2018   **Time: 3 Hrs.**

Instructions to Candidates:
1. Attempt any **five** questions from the given questionnaire.
2. Each question carries **twelve (12)** marks.
3. Neat diagram must be drawn wherever necessary.
4. Figure to right indicate full marks.
5. Assume suitable data if necessary.
6. Use of non-programmable calculator is allowed.

Q.1 Write a short note on: **(12)**
     i) Energy monitoring

     ii) Energy targeting

     iii) Energy Reporting

Q.2 Discuss different phase of energy audit methodology.   **(12)**

Q.3 Explain all possible energy conservation measure possible in lighting system.   **(12)**

Q.4 Explain different aspect of load management with respect to energy efficiency.   **(12)**

Q.5 Write note on: **(12)**

     i) Multitasking solid state meter in energy management

     ii) Importance of meter location and requirement

Q.6 Explain various type of light sources & also discuss about performance characteristics.   **(12)**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD - 402 103
End Semester Examination, May 2018

Branch: M. Tech. (SE / CTM)   **Semester: II**

Subject with Subject Code: Research Methodology   **Marks: 60**
[CVSE-E5-A / CVCTM-E5-A]

Date: 23 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five of the following questions.
3. Assume suitable data, if required, stating clearly the assumptions made

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Q.No.1   Attempt any **two** of the following questions: (6x2=12)

a) What is the importance of literature review in academic reports? How do you arrive at the scope of work by literature review carried out on the topic Urban Infrastructures Systems?

b) Explain primary and secondary data, clearly stating their importance in research. Distinguish between null and alternative hypothesis.

c) What is sampling? A geologist weighs a rock several times on a sensitive scale. Each time, the scale gives a slightly different reading. Under what conditions can these readings are thought of as a simple random sample? What is the population?

Q.No. 2   Attempt any **two** of the following questions: (6x2=12)

a) A surveyor is measuring the perimeter of a rectangular plot. He measures two adjacent sides to be 50.11 ± 0.05 m and 75.21 ± 0.08 m. These measurements are independent. Estimate the perimeter of the plot and find the uncertainty in the estimate.

b.) A book contains 100 misprints distributed randomly throughout its 100 pages. What is the probability that a page observed at random contains at least two misprints? Assume Poisson distribution.

c) What do you understand by Coefficient of Correlation? Enlist eight properties of Coefficient of Correlation.

Q.No. 3 Attempt the following questions: (6x2=12)

a) The following are data on Advertising Expenditure and Sales in a company.
   Advertising Expenditure (in Rupees Thousand) : 18   19   20   21   22   23
   Sales (Rupees in lakhs)   : 17   17   18   19   19   19
   Determine the correlation coefficient between them and interpret the result.

b) Write in brief about the following:
   i)   Interpretation of results of the research
   ii)   Importance of Chi-square test in engineering research

Q.No. 4 Attempt the following questions: (6x2=12)

a) A statistics class for engineers consists of 25 industrial, 10 mechanical, 10 electrical and 8 civil
   engineering students. If a person is randomly selected by the instructor to answer a question,
   find the probability that the student chosen is (i) an industrial engineering major and (ii) a civil
   engineering or an electrical engineering major.

b) The following are the details of plinth areas of ownership apartment flats offered by 3 housing
   companies A, B, C. Use analysis of variance to determine whether there is any significant
   difference in the plinth areas of the apartment flats.

Housing Company	Plinth area of apartment flats			
A	1500	1430	1550	1450
B	1450	1550	1600	1480
C	1550	1420	1450	1430

Q.No. 5 Attempt any two of the following questions: (6x2=12)

a) Explain the difference between research methods and research methodology.

b) An engineer plans to compute a 90% confidence interval for the mean diameter of steel rods. He
   will measure the diameters of a large sample of rods, compute X and s, and then compute the
   interval $X \pm 1.645s/\sqrt{n}$. State True or false with justification. The probability that the population
   mean diameter will be in this interval is 90%.

c.) The results of a particular examination are given below in a summary form:

Result	Percentage of candidates
Passed with distinction	15
Passed	75
Failed	20

It is known that a candidate gets failed if he obtains less than 40 marks, out of 100 while he/she
must obtain at least 75 marks in order to pass with distinction. Determine the mean and standard
deviation of the distribution of marks assuming this to be normal.

Q.No. 6 Attempt any two of the following questions: (6x2=12)

a) Emphasis on the four qualities of a good research.

b) In an experiment to determine the effect of catalyst on the yield of a certain reaction, the mean
   yields for reactions run with each of four catalysts were $X1= 89.88$, $X2= 89.51$, $X3= 86.98$, and
   $X4= 85.79$. Assume that five runs were made with each catalyst.

   i)   If MSE = 3.85, compute the value of the F statistic for testing the null hypothesis
         that all four catalysts have the same mean yield. Can this null hypothesis be
         rejected at the 5% level?

   ii)   Use the Tukey–Kramer method to determine which pairs of catalysts, if any, may be
         concluded to differ at the 5% level.

c) When it is operating properly, a chemical plant has a mean daily production of at least 740 tons.
   The output is measured on a simple random sample of 60 days. The sample had a mean of 715
   tons/day and a standard deviation of 24 tons/day. Let μ represent the mean daily output of the
   plant. An engineer tests $H_0:\mu \geq 740$ versus $H_1:\mu < 740$.

   i)   Find the P-value.

   ii)   Do you believe it is plausible that the plant is operating properly or are you
         convinced that the plant is not operating properly? Explain your reasoning.

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. Electronics (EE/ETE/ECE/CE)　　　　　**Semester: II**

Subject with Code: Research Methodology　　　　　**Marks: 60**
　　[MTECE255D/MTEEE255D/MTETE255D/MTCEE255D]
Date: 23 / 05 / 2018　　　　　**Time: 3 Hrs.**

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Instructions to the Students:
　　1. Each question carries 12 marks.
　　2. Attempt any five questions of the following.
　　3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
　　4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.No.1 a.) Distinguish between Research methods and Research methodology.　　**(06)**
　　b.) Explain the significance of research.　　**(06)**

Q.No. 2 a.) Describe fully the techniques of defining a research problem.　　**(06)**
　　b.) Explain, how the working hypotheses can be developed?　　**(06)**

Q.No. 3 a.) What are the parts of research design? Give your understanding of　　**(06)**
　　a good research design. Is single research design suitable in all research
　　studies? If not, why ?
　　b.) How to develop a Research Plan? Explain.　　**(06)**

Q.No. 4 a.) Explain the steps of Simulation modeling.　　**(06)**
　　b.) Explain the basic principles of experimental designs.　　**(06)**

Q.No. 5 a.) Explain in brief different types of sample designs.　　**(06)**
　　b.) Calculate the Covariance between X and Y using short-cut method.　　**(06)**

X :	65	66	67	68	69	70	71	72
Y :	60	65	68	68	70	78	80	88

Q.No. 6 a.) Explain in brief the layout of research report.　　**(06)**
　　b.) Write short note on plagiarism.　　**(06)**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: B. Tech.   **Semester: II**
Subject with Subject Code: Basic Electronics Engineering   **Marks: 60**
                        [EXE205]
Date: 23 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Use of non-programmable calculators is allowed.

Q.1. **A]** Describe essential features of the following bonds: **04**

   (a) Ionic bond
   (b) Covalent bond
   (c) Metallic bond

   B] Explain the classification of materials with material science point of view.   **04**

   C] Difference between n-type and p-type semiconductors.   **04**

Q.2. **A]** Discuss the concept of Hole.   **04**

   B] The resistivity of Cu is 1.72×10^{-8} ohm- m. Calculate the mobility of   **04**
   electrons in Cu. Given that the number of electrons per unit volume is
   $10.41 \times 10^{28}/ m^3$.

   C] Fermi energy for silver is 5.5 eV. Find out the energy for which the   **04**
   probability of occupancy at 300 K is 0.9.

Q.3.   Attempt any *three* of the followings

   A] Explain the static and dynamic resistance of a p-n junction diode.   **04**

   B] Explain the working principle of a voltage doubler circuit.   **04**

   C] If V_{rpp} is 10 V and V_{dc} is 300 V. Find ripple factor (% ripple r).   **04**

D] Distinguish between avalanche and zener mechanism.   04

Q.4. **A]** Explain the concept of base-width modulation.   04

B] Design a fixed bias circuit with R_E using silicon transistor having h_{FE} = 100, V_{CC} is 12 V and dc bias conditions are V_{CE} = 6V, I_C = 3mA. V_{BE} = 0.7V.   04

C] Discuss the procedure of testing a transistor when its terminals are unknown.   04

Q.5. Attempt any *two* of the followings

A] List and explain the four physical factors that determine inductor inductance.   06

B] A Coil has a resistance of 200Ω and an inductance of 1H when measured at very low frequency. The distributed capacitance is 200pF. Find the percentage change in effective inductance when this coil is used at frequency of 1000Hz. Also calculate the effective value of inductance.   06

C] Draw and explain Permanent Magnet Moving Coil Instrument.   06

Q.6. **A]** Find the octal equivalent of $(2F.C4)_{16}$ and the hex equivalent of $(762.013)_8$.   04

B] Differences between the Combinational and Sequential Logic Circuits.   04

C] Perform the following addition operations: 04
      (a) $(275.75)_{10}$ + $(37.875)_{10}$
      (b) $(AF1.B3)_{16}$ + $(FFF.E)_{16}$

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Dr. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE - RAIGAD - 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (CE/CS/CS&IT/CS&E)　　　　　　　**Semester : II**

Subject with Subject Code: Mobile Computing　　　**Marks: 60**
[MTCE1204C]

Date: 21 / 05 / 2018　　　　　　　　　　　　　　　**Time: 3 Hrs.**

Instructions: 1] Attempt any 5 questions.
　　　　　　　　2] Figures / Structures to the right indicate full marks.
　　　　　　　　3] Each question Carry 12 Marks
　　　　　　　　4] Assume suitable data, if necessary.
　　　　　　　　5] Neat diagrams must be drawn wherever necessary.

Q. No. 1. Attempt the following questions.

　　A) What is android? Explain android architecture with diagram.　　　　　[8M]

　　B) State the challenges present in the development of android application.　　[4M]

Q. No. 2. Attempt the following questions.

　　A) What is intent? Explain Explicit Vs Implicit intents.　　　　　　　　[8M]

　　B) What are the advantages and disadvantages of shared preferences in android? [4M]

Q. No. 3. Attempt the following questions.

　　A) How to create menus in android? Explain with example.　　　　　　[8M]

　　B) Write a short note on "adaptive layout ".　　　　　　　　　　　　[4M]

Q. No. 4. Attempt the following questions.

　　A) What is SQLite database? Explain its method in detail.　　　　　　　[8M]

　　B) Explain content resolver and providers in android.　　　　　　　　[4M]

Q. No. 5. Attempt the following questions.

　　A) What is services? explain service life cycle.　　　　　　　　　　　[8M]

　　B) Write a short note on "notification in android ".　　　　　　　　　[4M]

Q. No. 6. Attempt the following questions.

　　A) Explain Google Cloud messages in android.　　　　　　　　　　　[8M]

　　B) What are the different built in sensors are there in android powered devices.　[4M]

□□□□□□

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (Manufacturing Engineering)   **Semester: II**

Subject with Subject Code: Total Productive Maintenance   **Marks: 60**

[MMF203H]

Date: 21 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Solve any TWO of the following.   **(12)**
  a. What is RCM and enlist its principles?
  b. What is Tero Technology? State its objectives and Benefits.
  c. Explain the 5's principles with examples.

Q.2. Solve any TWO of the following.   **(12)**
  a. What are the different types of Maintenance and explain each of them in brief?
  b. Explain preventive maintenance schedules with example.
  c. What are the challenges in TPM and its importance?

Q.3. Solve the following.   **(12)**
  a. Organizing for TPM implementation. Describe.
  b. Explain the terms:
    i. Zero Breakdown Concept
    ii. Zero Defect

Q.4. Solve the following.   **(12)**
  a. Write in detail about autonomous maintenance and focused maintenance.
  b. Explain in detail about the Organization for TPM with flowchart.

Q.5. Solve the following.   **(12)**
  a. Write in detail about maintenance planning and scheduling.
  b. Describe about the Maintenance Staffing Methods.

Q.6. Solve the following.   **(12)**
  a. Write in detail about the Expert systems with example.
  b. Describe in brief about Maintenance Management Information System.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (Electronics Engineering)   **Semester: II**

Subject with Subject Code: Advanced Biomedical Signal Processing   **Marks: 60**

[MTEEE244A]

Date: 21 / 05 / 2018   **Time: 3 Hrs.**

Instructions to the Students
1. Figures to the right indicate the full marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram, etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1 Attempt any two   **(12)**
   a) Explain the deterministic, stochastic, and fractal signals?
   b) Explain biomedical signals other than EMG and ECG?
   c) Explain phonocardiogram with three channel simultaneous record of PCG, ECG and carotid with neat sketches of the genesis of heart sound?

Q.2 Attempt any two   **(12)**
   a) Explain Maternal-Fetal ECG in details with its modeling.
   b) A non-causal LSI system has an impulse response given by $h[k]=\delta[k+1]-\delta[k-1]$
   i)Determine its response to the input signal $x[k]= \cos(pk)$. The system is initially at rest.
   ii) Calculate the output when $P=4$; when $P=2\pi$.
   c) Draw and explain the diagram of biomechanics of airflow into and out of lungs?

Q.3) Answer the following   **(12)**
   a) How the cocktail party problem is applied to EEG Signals, Explain in detail?
   b) What are the different techniques employed for the removal of baseline wander from the ECG signal.

Q.4 Answer the following   **(12)**
   a) What are different signal processing techniques to remove the power line interference?
   b) Explain spectral analysis of heart rate variability with block diagram?

Q.5 Answer the following   **(12)**
   a) Draw the block diagram of computer aided diagnosis and therapy used in biomedical signal analysis?
   b) Draw the block diagram and explain the loss less and lossy data compression used in biomedical signal processing?

Q.6 Answer the following   **(12)**
   a) How the heart rhythm events can be represented mathematically?
   b) What are the different types of artifacts in EEG and how they can be filtered out?

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103

Summer Semester Examination, May 2018

Branch: M. Tech. (EPS)   **Semester: II**

Subject with Subject Code: Modeling and simulation of Power Electronic System [MTEPS204B]   **Marks: 60**

Date: 21 / 05 / 2018   **Time: 3 Hrs.**

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1.

(a) What are the challenges in computer simulation of power electronic system?   (6)

(b) What is the role of computer simulation in analysis and of power electronic System?   (6)

Q.2. Explain the state space representation technique used for modeling of buck converter.   (12)

Q.3. What is the control gain linearization technique? How it is used for gain linearization of rectifier with inverse cosine technique?   (12)

Q.4. What is state space averaging technique? How it is used for modeling and linearization of converter transfer function?   (12)

Q.5. Explain the modeling and analysis of shunt static VAR compensator.   (12)

Q.6. Explain in detail the modeling and analysis of STATCOM   (12)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (Structural Engineering)   Semester: II
Subject with Subject Code: Design of Tall Buildings   Marks: 60
[CVSE-E4-A]
Date: 21 / 05 / 2018   Time: 3 Hrs.

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Solve any three.
(i) Write a short note on gravity loads acting on the structure. (04)
(ii) Explain when dynamic analysis is needed to be carried out for structure as per IS 875 Part III (1987). State different methods to perform dynamic wind analysis of structure. (04)
(iii) Explain in brief seismic load acting on structure. Hence explain why vertical component is not considered generally for design of structures. (04)
(iv) Distinguish between working stress method and limit state method of design of structure. (04)

Q.2. Solve any three.
(i) Write a short note on flat slab-column structural system. (04)
(ii) Explain shear wall-column interaction in shearwall framed structure. (04)
(iii) Explain load transfer mechanism in braced rigid frame structure. (04)
(iv) Explain with figure working of outrigger truss structural system. (04)

Q.3. Solve any one. (12)
(i) Analyze the frame shown in following figure by portal frame method to get the column end moments, beam end moments and reactions. (Note that black dots are midpoints of corresponding member not internal hinges.)
OR
(ii) (a) Write a short note on P-Delta analysis of structure. (04)
    (b) Write a short note on creep in concrete. (04)
    (c) Write a short note on tuned mass damper for response control of structure. (04)
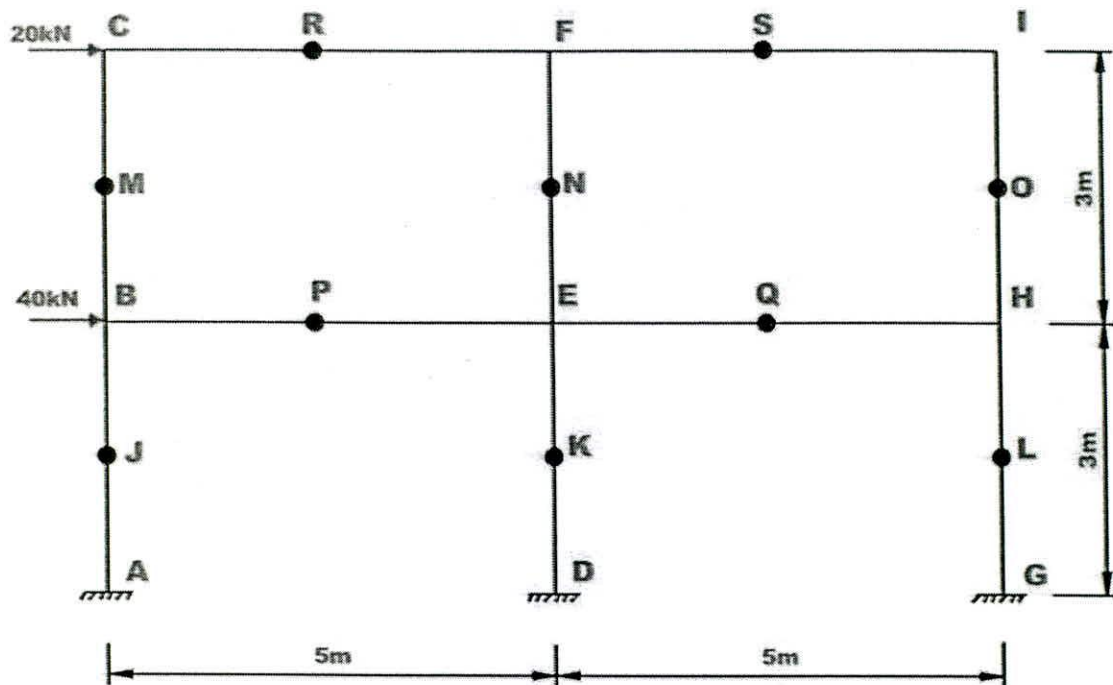
Q.4. (i) Draw schematic diagram of chimney showing major components of chimney.

(ii) Derive expression for stresses in steel and concrete due to temperature difference in chimney walls.

(iii) A circular RC chimney has a constant shell thickness of 300 mm and an external diameter of 4m. The section is reinforced with one percent steel located at 50mm from outer face. The temperature difference between the inside and outside face of concrete is 70⁰C.

Modulus of elasticity of steel = 210 kN/mm²
Modulus of elasticity of concrete = 19 kN/mm²

Q.5. (i) Why hyperboloid structure is used for cooling tower design? (4)

(ii) Describe the role of cold water basin in cooling tower. (4)

(iii) Describe counter flow design of the cooling tower. (4)

Q.6. (i) Draw schematic diagram of transmission tower and show following parts in that. (6)

(a) peak

(b) cross arm

(c) cage and

(d) body of transmission tower. Also state its purpose.

(ii) Describe loadings to be considered while designing of transmission tower. (6)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (Manufacturing Engineering)   **Semester: II**
Subject with Subject Code: Total Productive Maintenance   **Marks: 60**
[MMF203H]
Date: 21 / 05 / 2018   **Time: 3 Hrs.**

Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Solve any TWO of the following. (12)
   a. What is RCM and enlist its principles?
   b. What is Tero Technology? State its objectives and Benefits.
   c. Explain the 5's principles with examples.

Q.2. Solve any TWO of the following. (12)
   a. What are the different types of Maintenance and explain each of them in brief?
   b. Explain preventive maintenance schedules with example.
   c. What are the challenges in TPM and its importance?

Q.3. Solve the following. (12)
   a. Organizing for TPM implementation. Describe.
   b. Explain the terms:
     i. Zero Breakdown Concept
     ii. Zero Defect

Q.4. Solve the following. (12)
   a. Write in detail about autonomous maintenance and focused maintenance.
   b. Explain in detail about the Organization for TPM with flowchart.

Q.5. Solve the following. (12)
   a. Write in detail about maintenance planning and scheduling.
   b. Describe about the Maintenance Staffing Methods.

Q.6. Solve the following. (12)
   a. Write in detail about the Expert systems with example.
   b. Describe in brief about Maintenance Management Information System.

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103
Summer Semester Examination, May 2018

Branch:	**B. Tech.**	**Semester:**	**II**
Subject:	**Engineering Graphics**	**Marks:**	**60**
Subject Code:	**ME104**		
Date:	**21/05/2018**	**Time:**	**4 Hrs.**

Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt **any five** questions out of the following six questions.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q.1 a) Identify the mistakes made, if any, while showing the dimensions in the following figure and redraw the figure. **(6)**
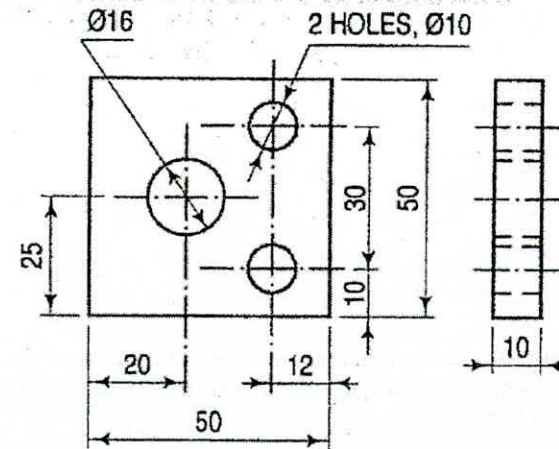
b) Inscribe a regular dodecagon (polygon having 12 sides) in a circle of diameter 70 mm. **(6)**

Q.2 Draw the following views of the object (in X – direction) shown below, by using first angle projection method.
a) **Front View** (6)
b) **Top View** (6)
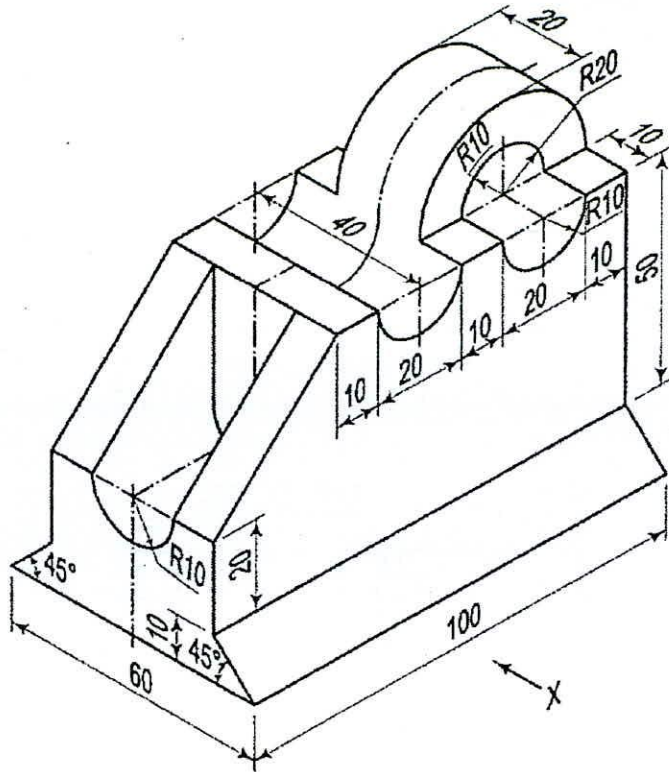
Q.3. Draw the projections of a circle of 60 mm diameter resting in the H. P. on a point A on the circumference, its plane inclined at 45^0 to the H. P. and the diameter AB making an angle of 30^0 with the V. P. (12)

Q.4 A pentagonal prism is resting on one of the corners of its base on the H.P. The longer edge containing that corner is inclined at 45^0 to the H.P. The top view of the axis of the prism makes an angle of 30^0 with the V.P. Draw the projections of this solid having side of base as 45 mm and height of 70 mm. (12)

Q.5. A hexagonal pyramid, base 30 mm side and axis 65 mm long, is resting on its base on the H.P. with two edges parallel to the V.P. It is cut by a section plane, perpendicular to the V.P. inclined at 45° to the H.P. and intersecting the axis at a point 25 mm above the base. Draw the front view, sectional top view, sectional side view and true shape of the section. (12)

OR

Q.5 Draw the isometric view of the following casting. (12)

Front view   **Left Hand Side View**
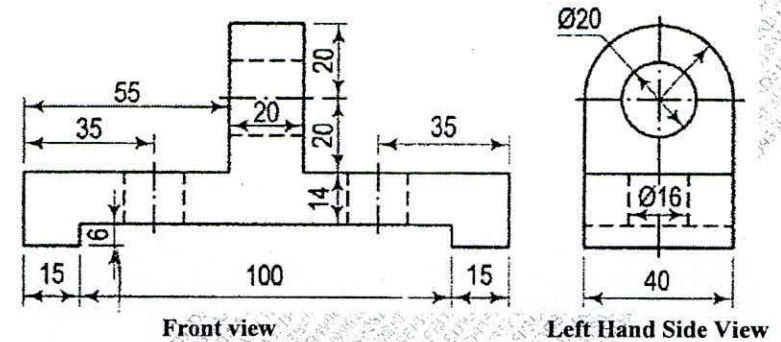
Q.6. Draw the development of the frustum of a pentagonal pyramid, which is resting on H.P. The pyramid is cut by an AIP (auxiliary inclined plane) inclined at 60^0 to the H.P. and intersecting the axis of the pyramid at distance of 30 mm from apex. The pentagonal pyramid is having base of 30 mm side and height of 60 mm. (12)

Dr. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY

LONERE - RAIGAD - 402 103

Summer Semester Examination, May 2018

Branch: M. Tech. (CE/CS/CS&IT/CS&E)   Semester : II

Subject with Subject Code: Mobile Computing   Marks: 60
[MTCE1204C]

Date: 21 / 05 / 2018   Time: 3 Hrs.

Instructions: 1] Attempt any 5 questions.
2] Figures / Structures to the right indicate full marks.
3] Each question Carry 12 Marks
4] Assume suitable data, if necessary.
5] Neat diagrams must be drawn wherever necessary.

Q. No. 1. Attempt the following questions.

A) What is android? Explain android architecture with diagram.   [8M]

B) State the challenges present in the development of android application.   [4M]

Q. No. 2. Attempt the following questions.

A) What is intent? Explain Explicit Vs Implicit intents.   [8M]

B) What are the advantages and disadvantages of shared preferences in android? [4M]

Q. No. 3. Attempt the following questions.

A) How to create menus in android? Explain with example.   [8M]

B) Write a short note on "adaptive layout ".   [4M]

Q. No. 4. Attempt the following questions.

A) What is SQLite database? Explain its method in detail.   [8M]

B) Explain content resolver and providers in android.   [4M]

Q. No. 5. Attempt the following questions.

A) What is services? explain service life cycle.   [8M]

B) Write a short note on "notification in android ".   [4M]

Q. No. 6. Attempt the following questions.

A) Explain Google Cloud messages in android.   [8M]

B) What are the different built in sensors are there in android powered devices. [4M]

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Dr. Babasaheb Ambedkar Technological University,
Lonere – Raigad, 402103
Summer Semester Examination, May 2018
B. Tech.
Subject: Basic Electrical Engineering (EE204)

Date: 21 / 05 / 2018   Semester: II

Time: 3 Hrs.   Max. Marks: 60

Instructions to Students:
1. **Attempt any FIVE questions from Question 1 to Question 6.**
2. Illustrate your answers with neat sketches, diagrams etc. wherever necessary.
3. If some part or parameter is found to be missing, you may appropriately assume it and should mention it clearly.

Q.1)

a) Explain the Effect of Temperature on Resistance of Pure metals, Alloys & Insulators.   **(6M)**

b) Calculate the equivalent resistance between the terminal A & B.   **(6M)**
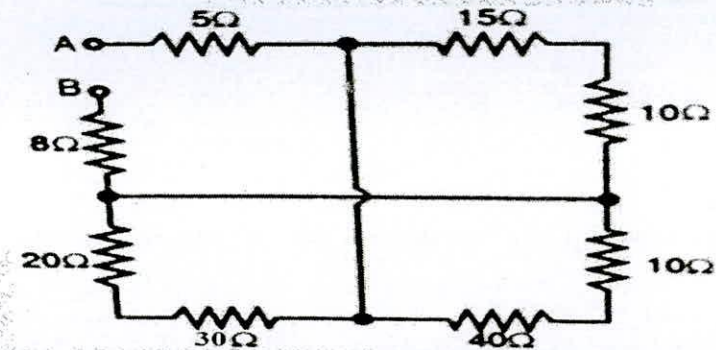
OR

b) An Electrical pump lifts 68 tons of water a minute through 7 m height at an overall efficiency of 68%. Calculate the input power in kW to motor. If pump is operated for 4 hours a day, calculate the cost of energy at 8 paise per kW-hr for 30 days.   **(6M)**

Q.2)

a) Find the current flowing through 3 Ω resistor connected between C & D in the circuit shown below by Thevenin's theorem.   **(6M)**
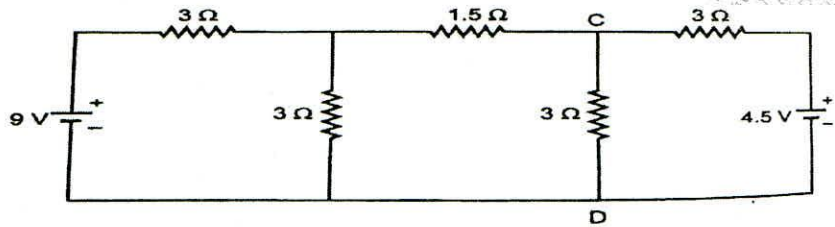
b) Using Nodal Analysis, find the current through 2Ω resistance for the circuit shown below. **(6M)**
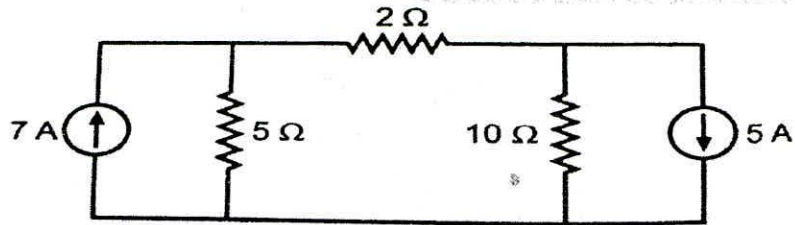
Q.3)

a) Define the following terms: **(6M)**

   i) Time Period   ii) Average Value   iii) Form Factor

   iv) Crest Factor   v) Angular Velocity   vi) Cycle

b) Explain AC circuit with Pure Capacitance and derive the equations for Average & Instantaneous Power. **(6M)**

Q.4)

a) Explain series R-L-C circuit with neat diagram and draw its phasor diagrams. **(6M)**

b) A coil having a resistance of 10 Ω and an inductance of 0.2 H, is connected to a 100 V, 50 Hz supply. Calculate: **(6M)**
i) The impedance of coil.
ii) The reactance of coil.
iii) The phase difference between the current and applied voltage.

OR

b) A metal filament lamp rated at 750 W, 100 V is to be connected in series with the capacitance across a 230 V, 50 Hz supply. Calculate the value of capacitance required. **(6M)**

Q.5)

a) Explain the Energy Stored in a Magnetic field and give its expression. **(6M)**

b) Explain the Faraday's laws of Electromagnetic Induction and also explain the methods for deciding the direction of Induced EMF. **(6M)**

Q.6)

a) Explain the Construction of Transformer with a neat diagram. **(6M)**

b) Efficiency of 400 kVA single phase transformer is 98.77 % when delivering full load of 0.8 power factor and it is 99.13 % at half load unity power factor. Calculate: **(6M)**
i) Iron Losses   ii) Full Load Copper Losses.

□□□□□□

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD - 402103
End Semester Examination, May 2018

Branch: F.Y. B.Tech.   **Semester: II**

Subject: Engineering Physics (PHY 203)   **Marks: 60**

Date: 18 / 05 / 2018   **Time: 3 Hrs**

Instructions to the Students:
1. Each question carry 12 marks
2. Attempt any five questions of the following
3. Illustrate your answers with neat sketches, diagrams etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. No.1 Attempt the following.

a. Which are the forces involved in Forced Oscillations? Obtain the differential equation   06
   of forced oscillations.

b. What are ultrasonic waves? Describe magnetostriction method for generating ultrasonic   06
   waves.

Q. No. 2 Attempt any two of the following.

a. In case of Newton's rings in reflected light show that diameter of bright rings is   06
   proportional to the square root of odd natural numbers.
   In Newton's rings, the diameter of a certain bright ring is 0.65 cm and that of tenth
   ring is 0.95 cm. If $\lambda = 6000\ A^0$, calculate the radius of curvature of a convex lense.

b. Give the diagrammatic representation of polarized and unpolarized light.   06
   Explain the method of producing plane polarized light by reflection.

c. Explain the construction and working of He-Ne laser with neat diagram.   06

Q. No. 3 Attempt the following.

a. What is Q-value of nuclear reaction? Calculate the Q-value of given reaction and   06
   state whether reaction is exothermic or endothermic.

$$_3Li^7 + {}_1H^1 \rightarrow {}_2He^4 + {}_2He^4 + Q$$
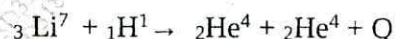
Given Mass of Li = 7.01822
Mass of H = 1.00814
Mass of He = 4.00387.

b. State Heisenberg's Uncertainty Principle and prove that electron cannot exists in the nucleus. 06

Q. No. 4 Attempt the following.

a. Define Packing Density. Find the packing density in SC, BCC, and FCC lattices. 06

OR

a. Derive the relation between crystal density 'ρ' and lattice parameter 'a'.
The density of copper is 8980 Kg/ m³ and unit cell dimension is 3.61 A⁰. Atomic weight of copper is 63.54. Determine crystal structure. 06

b. State and Derive Moseley's law for characteristics X-ray spectrum. 06

Q. No. 5 Attempt the following.

a. Discuss the different types of magnetic materials interms of magnetic moments. 06

OR

a. Prove Bohr magneton μ_B = eℏ/ 2m. Differnetiate between hard and soft magnetic materials. 06

b. What is Microscopic Ohm's Law? Differentiate between Type I and Type II superconductors. 06

Q. No. 6 Attempt any two of the following.

a. Derive an expression for conductivity in an intrinsic and extrinsic semiconductor.
Calculate conductivity of pure silicon when the concentration of carriers is
1.6 X 10¹⁰ / cm³, and μ_e = 1500 cm²/V-s, μ_h = 500 cm²/V-s. 06

b. Explain the terms
   i. Dielectric constant
   ii. Electric Displacement
   iii. Polarizability 06

c. What is displacement current? Write Maxwell's equations in differnetial and integral form. 06

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD - 402 103
End Semester Examination, May 2018

Branch: B. Tech

Subject with Subject Code: Engineering Chemistry [CHM203]

Date: 18 / 05 / 2018

Semester: II

Marks: 60

Time: 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

Q.1. Attempt Any Two questions of the following.
   a) Explain Zeolite process of softening of water with its advantages and disadvantages.   06
   b) What are the types of water and explain methods to remove temporary hardness?   06
   c) Write note on: Dissolved Oxygen.   06

Q.2. a) State Phase rule equation. Explain the term Phase involved in it with examples.   06
   b) Explain areas, curves, triple point and metastable curve of water system with phase diagram.   06

Q.3. a) Explain any two physical methods of concentrations of ore.   06
   b) What is Smelting? Explain the process of isolation of metals by Pyrolysis.   06

Q.4. Attempt Any Two questions of the following.
   a) What are the types of fuels and characteristics of good fuel?   06
   b) Describe the process of determination of % of C, H and N in the coal.   06
   c) How can you differentiate the Thick film and Extreme pressure lubrication with examples?   06

Q.5. a) What is Fermentation? Discuss how Invertage and Zymase brings the conversion of cane sugar to Ethyl alcohol.   06
   b) Explain synthesis, physical-chemical properties and uses of Naphthalene.   06

Q.6. Attempt Any Two questions of the following.
   a) What are the types of indicators? Explain Quinonoid theory of Acid Base Indicator.   06
   b) Write note on: Conductometric Titrations.   06
   c) Explain in detail Debye-Huckel theory of Strong electrolyte.   06

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (E&TC)   Semester: II
Subject with Subject Code: Optical Fiber Communication   Marks: 60
[MTEEE233E]
Date: 18 / 05 / 2018   Time: 3 Hrs.

Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Use of non-programmable calculators is allowed.

Q.1. A] Describe the ray theory and its importance in optical fiber communication.   06

B] What is a meridional and skew rays? How they help in working of optical   06
fiber.

Q.2. A] Discuss the concept of mode field diameter. Explain its physical significance   06
in the working of optical fibers.

B] Numerical aperture is the universal quality measure of an optical fiber: 06
Justify the statement.

Q.3.   Attempt any *two* of the followings.
A] Discuss the modal analysis in graded indexed fiber.   06

B] Write a short note on fiber slices.   06

C] List and explain various fiber connectors and cables.   06

Q.4. A] List and explain different losses occurs in optical fibers. Also suggest how   06
to overcome each.

B] Discuss the physical significance of group and phase velocity in optical   06
fibers.

Q.5. A] What is dispersion? Discuss the phenomenon of intermodal and intramodal   06
dispersion.

B] Discuss the non-linear effects in optical fiber   03

C] Explain the concept of fiber Birefringence and polarization mode dispersion.   03

Q.6. Write a note on any *three* of the followings.

A] Optical Solitons. **04**

B] Fiber Bragg grating **04**

C] Photonic Crystal fibers **04**

D] Erbium-doped fiber amplifiers **04**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M.Tech. (Mechanical / Production Engineering)   **Semester: II**

Subject with Subject Code: Lean Manufacturing   **Marks: 60**
[MMF203B]

Date: 18 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Explain sources of waste in lean manufacturing process.   **(12)**

Q.2. Explain Traditional vs. Lean manufacturing.   **(12)**

Q.3. **Explain the following:**   **(3X4 =12)**
a) Explain the Philosophy of Just in Time with examples
b) Explain Poka-Yoke
c) Explain 5 S

Q.4. a) Describe employ involvement, teams, training.   **(06)**
b) Explain auditing in lean manufacturing with examples.   **(06)**

Q.5. Explain culture importance in lean manufacturing.   **(12)**

Q.6. Write a note on Startup of lean processes and examples of applications.   **(12)**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD - 402103
Summer Semester Examination, May 2018

Branch: M. Tech. Civil (Structural Engineering)　　　　Semester: II

Subject with subject Code: Retrofitting of Structures　　　Marks: 60
[CVSE-E3C]

Date: 18 / 05 / 2018　　　　　　　　　　　　　　　　Time: 3 Hrs.

Instructions to the Students
1. Each question carries 12 marks
2. Attempt any five questions of the following
3. Illustrates your answer with neat sketches, diagrams etc., wherever necessary
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly at proper location.

Q. No. 1
A) What do you mean by quality assurance in concrete construction? Why quality assurance is important? What do you mean by quality assurance in concrete construction? Why quality assurance is important? 　**[6]**

B) Explain different non-destructive test/techniques to evaluate strength of concrete. 　**[6]**

Q. No. 2
A) Explain causes of cracks in structures. Also enlist different types of cracks. 　**[6]**

B) Explain causes of dampness in buildings. 　**[6]**

Q. No. 3
A) Discus procedure to repair the deteriorated steel structure elements. 　**[6]**

B) Explain types and causes of deterioration in steel structure. 　**[6]**

Q. No. 4
A) Discus factors affecting properties of fiber reinforced concrete. 　**[6]**

B) Explain Sulphur infiltrated concrete? State its applications. 　**[6]**

Q. No. 5
A) Define terms Maintenance, Repair and Rehabilitation. 　**[6]**

B) Discuss causes of deterioration in concrete structure? 　**[6]**

Q. No. 6
A) Why strengthening of existing reinforced concrete structure is necessary? 　**[6]**

B) Discuss materials and methods of strengthening of reinforced concrete structure. 　**[6]**

□□□□□□

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103

Summer Semester Examination, May 2018

Branch: M. Tech. (CE / CSE / CS&IT / CS)　　　　**Semester:** II

Subject with Subject Code: Software Testing　　**Marks:** 60
[MTCE1203A]

Date: 18 / 05 / 2018　　　　　　　　　　　　　**Time:** 3 Hrs.

Instructions: 1] Attempt any **5 Questions**.

　　　　　　　2] Figures / structures to the right indicate full marks.

　　　　　　　3] Each Question Carry **12 Marks**.

　　　　　　　4] Assume suitable data, if necessary.

　　　　　　　5] Neat diagrams must be drawn wherever necessary.

Solve the following:

Q.1a) While harping on automation in automation syndrome what points must be consider? (6)

b) Differentiate between quality assurance and quality control. Draw the Entry Task Verification model(ETVX) applied to requirement phase. (6)

Q.2a) How to create traceability matrices? Why to use traceability matrices? What are the disadvantages of not using traceability matrices? What are the benefits of traceability matrices? (6)

b) What is Black box testing? In what scenarios which Black box testing is most effective? (6)

Q.3a) Explain integration testing as phase of testing and type of testing. (6)

b) Compare and contrast between Bi-directional and big bang testing. (6)

Q.4a) Which activities should be focus to achieve product reliability? (6)

b) Explain stress testing. Give reasons the product may not recover immediately when the load is decrease? (6)

Q.5a) How collecting requirement in performance testing is different than other testing? (6)

b) Differentiate between resetting and rerunning test cases? Illustrate the use of "reset" flag for regression testing in various phase. (6)

Q.6a) Compare and contrast between buddy and pair testing. (6)

b) What are the different tools for object oriented system? Explain them. (6)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: M.Tech. (EPS)   **Semester: II**

Subject with Subject Code:- Smart Grid Design and Analysis (MTEPS203-B)
Marks: 60   **Date:- 18-05-2018**   **Time: 3 Hrs.**

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q1. What do you mean by smart grid? What are its functions? Give comparison of smart grid and traditional grid?   (12)

Q2. Explain in detail various communication technologies used in smart grid?   (12)

Q3 Draw and explain the block diagram of phase measurement unit .Also show how it is used in wide area applications?   (12)

Or

What do you mean by wide area measurement system explain with block diagram.   (12)

Q.4 What is smart metering? With the help of functional block diagram explain the working of smart meter.   (12)

Q5 Explain with diagram energy storage technologies in smart grid.   (12)

Q.6 Explain grid integration issues of renewable energy sources.   (12)

*** End ***

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
END SEMESTER EXAMINATION, MAY 2018
Class: B. Tech First Year
Subject: Communication Skills (HS202)

Time: 3 Hrs.	Marks: 60
Date: 16/05/2018	Semester: II

Q: 1 Answer the following questions.
    A) Explain the various functions of communication. (06)
<div align="center">OR</div>

    A) Non Verbal communication is more important than Verbal communication. -- Discuss.

    B) What are the tips for effective communication? (06)
<div align="center">OR</div>

    B) Answer the following
        i) Importance of feedback in communication.
        ii) Name the barriers to communication.

Q: 2 Attempt <u>**Any Two**</u> of the following. (12)
    A) What is an interview? List down the types of interview questions.
    B) State the importance of visual aids in formal presentations.
    C) Explain the techniques of Group Discussion.
    D) Write the advantages of Oral Communication.

Q: 3 Attempt <u>**Any Two**</u> of the following
    A) What is phoneme? Explain the basic sounds in English. (06)
    B) What is intonation? Explain in brief the falling and rising tone. (06)
    C) Write the following words in phonemic script. (06)
        i)   Aim   ii)   Chalk   iii)   Excellent
        iv)   Language   v)   Nation   vi)   Stadium.
    D) Identify the following words and the spellings. (06)
        i)   /pəˈlaɪt/   ii)   /ˈsɪŋə-/   iii)   /ˈkætʃ/
        ii)   /dɪˈlaɪt/   iv)   /ˈʃaʊt/   vi)   /ˈθʌndə/

Q: 4 A) Select the appropriate word and rewrite the sentences (<u>**Any Three**</u>) (03)
    i. Spoken or written in two languages is
        a. Bias   b. Biography   c. Bilingual   d. Bewilder
    ii. Exact statement of meaning is
        a. Determine b. Decency   c. Dictionary   d. Definition
    iii. To take part in an activity is
        a. Payment   b. Participation   c. Pause   d. Pacify
    iv. Connected with the practical use of machinery is
        a. Tentative   b. Technical   c. Terminate   d. Tiresome

B) Correct the following sentences and rewrite (<u>Any Three</u>) (03)
   i) He signed upon the application form
   ii) The ability of plan, organize and coordinate work is all fundamental to working with deadline.
   iii) Neither of the printers are working.
   iv) Cotton catch the fire easily.

C) Do as directed (<u>Any Six</u>) (06)
   i) He returned after ------- hour. (Use correct article)
   ii) I looked ------ when he entered the room. (Use correct preposition)
   iii) Please -------- our sincere apologies. (accept, expect – choose correct word)
   iv) Write synonyms for   i) beautiful   ii) quickly
   v) Write antonyms for   i) abundance ii) compulsory
   vi) What -------- you like to have tea or coffee? (Use correct modal verb)
   vii) Everything -------- (change) with time. (Use correct form of given verb)

Q: 5 Attempt '<u>A and B</u>' or '<u>C</u>'
   A) As a Secretary of English Literary Association write a notice for notice board inviting names to participate in proposed elocution contest. (06)
   B) Write short essay on 'Ban on Plastic – Good step to save environment' (06)
   OR
   C) Write a job application letter with appropriate resume for the post of Junior Engineer to The Manager, XYZ Automation, Mumbai, 400042. (12)

   (12)

Q: 6 Attempt <u>Any Two</u> of the following
   A) Explain --- skimming and scanning.
   B) Write strategies of acquisition of listening skills.
   C) What are the barriers to effective listening?
   D) Explain – active and passive listening.

-----@@@%%%%@@@-----

2) A car weighing 4000 N is moving at a speed of 100 m/s as shown in figure 6. The resistance to the car is largely due to air drag which is equal to 0.004 v^2. What distance will it travel before its speed is reduced to 50 m/s?

Figure 6

Q.5.   Attempt the following.   (06X2=12)

A) What is meant by impulse of a force and momentum? State and prove the principle of impulse and momentum.

B) Explain the components of motion: rectangular components of velocity and acceleration.

Q.6.   Attempt the following.   (06X2=12)

A) Ball A of mass 1 kg moving with a velocity of 2 m/s, impinges directly on a ball B of mass 2 kg at rest. Find the velocities of the two balls after impact. Assume the coefficient of restitution e = ½.

B) Explain and prove D'Alembert's principle. How will you explain the concept of dynamic equilibrium?

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Instructions to the Students:
1. Attempt ANY FIVE Questions from Question No 1 to Question No 6.
2. Illustrate your answers with neat sketches, diagrams etc. wherever necessary.
3. Necessary data is given in the respective questions. If such data is not given, it means that the knowledge of that part is a part of examination.

Q.1.   Attempt the following.   (06X2=12)

1) State and explain the Principle of Transmissibility. How it is useful as per engineering mechanics point of view? Explain with any example.

2) How will you find out resultant of a several concurrent coplanar forces by summing rectangular components? Explain this method with resolution and projections of the forces with any example.

Q.2.   Attempt the following.   (06X2=12)

1) Two equal loads of 2500 N are supported by a flexible string ABCD at points B and C as shown in figure 1. Find the tensions in the portions AB, BC and CD of the string.
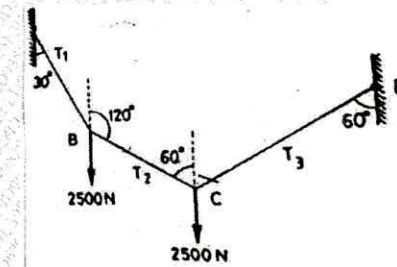

Figure 1

2) A truss is loaded and supported as shown in figure 2. Determine the axial forces in the member CE, CG and FG.
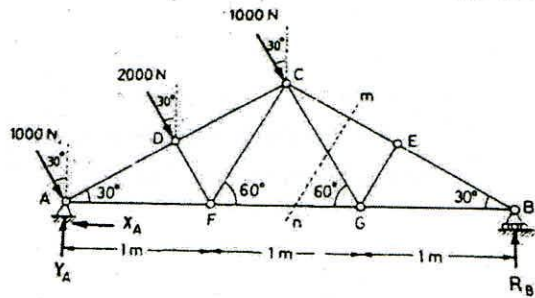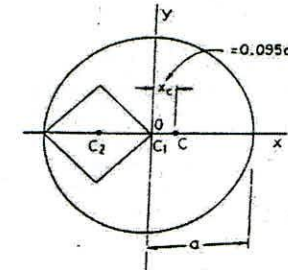
Figure 2

Figure 4

Q.3.   Attempt the following.   (06X2=12)

1) A block A weighing 1000 N is to be raised by means of a 15 ° wedge B weighing 500 N as shown in figure 3. Assuming the coefficient of friction between all contact surfaces to be 0.2, determine what minimum horizontal force P should be applied to raise the block.
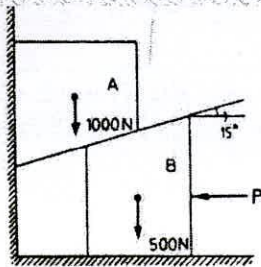

Figure 3

2) A square hole is punched out of a circular lamina as shown in figure 4. The diagonal of the square which is punched out is equal to the radius of circle. Find the centroid of the remaining lamina?

Q.4.   Attempt the following.   (06X2=12)

1) Two cylinders A and B rest in a horizontal channel as shown in figure 5. The cylinder A has a weight of 1000 N and radius of 9 cm. The cylinder B has weight of 400 N and a radius of 5 cm. the channel is 18 cm wide at the bottom with one side vertical. The other side is inclined at an angle 60 ° with the horizontal. Find the reactions at the points L, N and P.
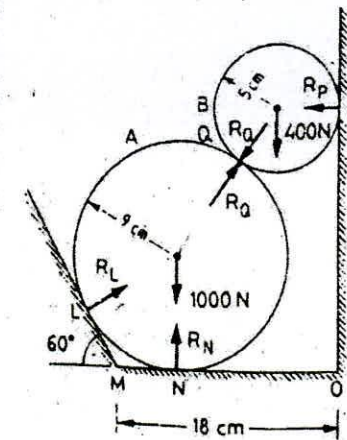

Figure 5

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: B. Arch (First Year Architecture) Semester: II

Subject: History of Architecture Marks: 60

Subject Code: AR10200005

Date: 16 / 05 / 2018 Time: 3 Hrs.

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Instructions: 1. All Questions are compulsory.
2. Do not erase construction lines.
3. Solve all questions on drawing sheets.

==

Q. No. 1 Answer the following: (15 Marks)

A) Compare Architectural styles of North Indian temple Architecture with South Indian temple Architecture. Draw suitable sketches wherever necessary.

Q. No. 2 Attempt any ONE of the following: (15 Marks)

A) Write down with neat sketches characteristic features of Gothic Architecture, with respect to construction. Support your answers with sketches.

B) Write short note on *Chola* temple architecture with suitable examples.

Q. No. 3 Attempt any FOUR of the following: (20 Marks)

A) Draw neat Sketch plan and section of Early Christian Cathedral

B) Draw a suitable sketch of important typologies of Buddhist cave Architecture.

C) Great mosque of *Sammara*.

D) Write short note on Cathedral of Pisa

E) Draw plan of Quwat ul Islam mosque, showing additions in various time period.

F) Construction techniques used in Byzantine Architecture, with a suitable example.

Q. No. 4 Answer the following: (5 x 2 = 10 Marks)

A) *Miharab* in a mosque is
   A. Niche in a wall B. Idol C. Fountain D. Court

B) **In Gothic Architecture following Construction technique was used**
   A. Dome on *Pendentives* B. Flying buttresses C. Wooden coloumns and beams
   D. Curvilinear shells

C) *Durga* Devi temple is an example of following periods
   A. Rajput Period B. Gupta Period C. Chola period D. Early Chalukyan

D)   **Ambulatory path in a temple is called**

   A. Pradakshina Path   B. Apse   C. Ardhamandapa   D. Liwan

E)   **Choir is the**

   A. Entry point of cathedral   B. End point of a cathedral   C. Crossing of Nave and Transept   D. Circular Ambulatory

F)   **Jagati is a**

   A. Raised platform of a temple   B. Apex of a Temple   C. Middle portion of a temple
   D. Entrance of a temple

G)   **Rathas were built by**

   A. Cholas   B. Pallavas   C. Guptas   D. Rajputs

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Arch. (General)   **Semester: II**

Subject with Subject Code: Sustainable Architecture & Design   **Marks: 80**
[MAR10200004]

Date: 16 / 05 / 2018   **Time: 3 Hrs.**

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Instructions: 1] **Questions No. 1 is compulsory** and **Attempt any FOUR** from **Question No. 2 to Question No. 6**.
   2] Figures / structures to the right indicate full marks.
   3] Assume suitable data, if necessary.
   4] Neat diagrams must be drawn wherever necessary.

==

Q. No. 1. Answer in single sentence with full form if required: **[15]**
A)

   i.   ECBC

   ii. EE

   iii. IGBC

   iv. EMS (ISO 14000)

   v.   EIA

B) Match the columns.

   i.   LCA   a. Candelas meter-2

   ii. Warm and Humid Climate   b. Lux

   iii. Luminance   c. Life Cycle Analysis

   iv. Composite   d. Pondicherry

   v.   Illuminance   e. Ahmadabad

Attempt any FOUR Questions (Q. No. 2 to Q. No. 6) of the following.

Q. No. 2 Write about transmission of light and Photometric quantities of light.   **[15]**

Q. No. 3 What is the process of EIA and steps involved in it? Write about one project example. **[15]**

Q. No. 4 What are the goals of sustainability described by UNDP and also write about   **[15]**
sustainable architecture.

Q. No. 5 Write any one climatic Zone in detail along with its strategies   **[15]**

Q. No. 6 Write about process of Life Cycle Analysis and explain the concept of Carbon **[15]**
Footprint

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. Civil (Structural Engineering)   Semester: II

Subject with Subject Code: Finite Element Analysis   Marks: 60
[CVSE202]

Date: 16 / 05 / 2018   Time: 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1.

A] Enlist the weighted residual methods. Explain any one method.   (06)

B] Determine the displacements of nodes 1 and 2 in the spring system shown in fig.1 Use minimum potential energy principle.   (06)
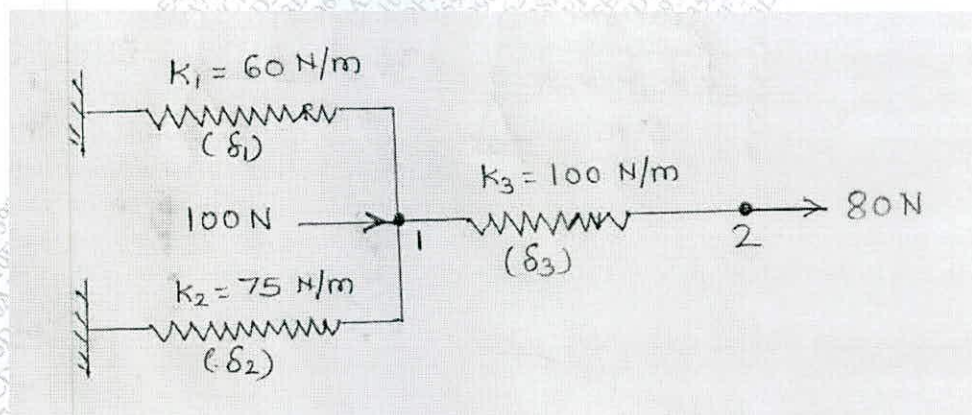
Fig.1

Q.2.

A] Using Lagrange polynomial find shape functions for three noded bar element. Plot the variation of shape functions.   (06)

B] Derive the stiffness matrix for beam element.   (06)

Q.3.

A] For the plane truss shown in fig 2. Determine the nodal displacements and stress in each member. Take E= 200 Gpa and A= 250 mm^2.   (12)
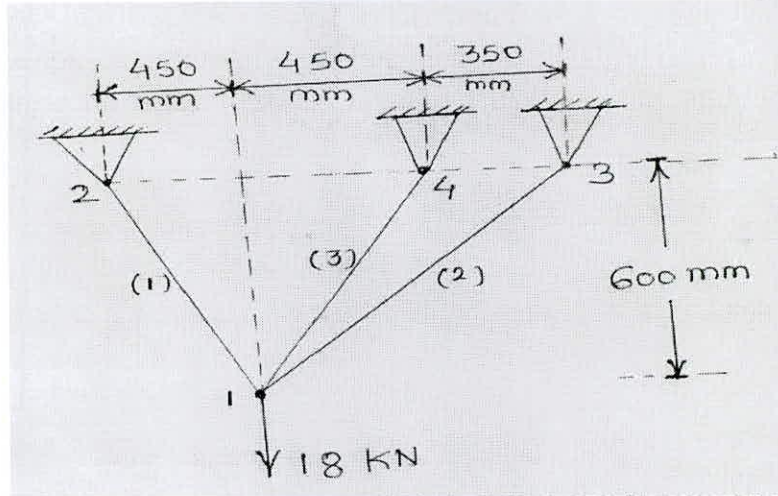
Fig.2

OR

A] Analyze the beam shown in fig.3 by finite element method and determine the end reactions. Also determine the deflections at mid spans. Given $E = 2 \times 10^5$ N/mm^2 and $I = 5 \times 10^6$ mm^4. **(12)**

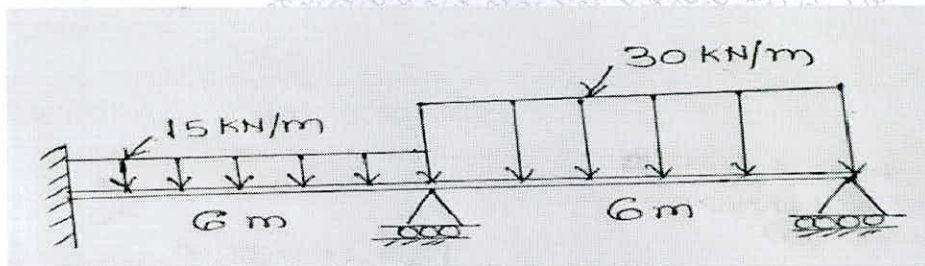**Fig.3**

Q.4.A]

    i) Explain Pascal's triangle for polynomial function. **(06)**

    ii) Explain the isoparametric concept in finite element analysis. **(06)**

OR

    A] Determine the shape functions for CST element. Show that they are nothing but area coordinate. **(12)**

Q.5.

    A] Explain the term Axi – symmetric problems. **(06)**

    B] Write short notes on Gaussian quadrature integration technique. **(06)**

Q.6.

    A] Explain h-version of finite element method. **(06)**

    B] Explain p-version of finite element method. **(06)**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech (Electronics Engineering)   Semester: II

Subject with Subject Code: NANO ELECTRONICS   Marks: 60
[MTEEC202]

Date: 16 / 05 / 2018   Time: 3 Hrs.

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Instructions: 1) All questions carry equal marks.
2) Answer any five of the following questions.

Q. No.1 a) What are the different film deposition methods? Explain Pulsed Laser Deposition method.

b) List the mechanical and vibrational properties of Carbon nano tube.

Q. No.2 a) Discuss the application of Nano tubes as data processing devices.

b) Illustrate the design structure for Ferro electric FET.

Q. No.3 a) Discuss the properties of high permittivity dielectrics.

b) With the block diagram explain the functional principle of smart card.

Q. No.4 a) Draw and explain the MRAM cell architecture.

b) Describe the read and writing schemes for a ferro electric memory cell.

Q. No.5 a) Discuss the use of phase change material for storage.

b) With the neat diagrams illustrate holographic data storage.

Q. No.6 a) What are the basic elements of a photonic network? Explain briefly their structure.

b) What are the pre requisites for Organic LED? Discuss.

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Sumer Semester Examination, May 2018

Branch: M. Tech. (Mechanical / Production)   **Semester: II**

Subject and Code: Casting and Moulding Technology   **Marks: 60**
            [MMF202]

Date: 16 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.

Q.1. What is scope of technology in casting and molding? Give your comments on current technology used in foundry? Compare casting and molding in foundry.   **(12M)**

Q.2 a) Explain concept of solidification in casting.   **(06M)**
     b) Explain chemical composition and structure of plastics for molding.   **(06M)**

Q.3 a) what is the causes and remedies of casting defect.   **(06M)**
     b) What is calendaring? Explain with neat sketch.   **(06M)**

Q.4 a) How simulation software are useful for casting methoding, indicating at least two commercial software available.   **(08M)**

     b) Explain Injection molding with neat sketch.   **(04M)**

Q.5 a) what are simulation technique used in gating system design of casting.   **(06M)**
     b) Explain extrusion and transfer molding.   **(06M)**

Q.6 a) Explain in short Gating Layout in casting.   **(06M)**
     b) Explain in short Expert system and Inspection technique in casting.   **(06M)**

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Dr. Babasaheb Ambedkar Technological University, Lonere
Master of Technology (Computer Engineering and Allied Branches)
Course: Software Architecture (MTCE1202)
Summer Semester Examination, May 2018

Maximum Marks: 60   Duration: 3 Hours

Instructions to Students:
1. Solve any Five Questions of the following
2. Illustrate your answers with neat sketches, diagrams, examples etc. wherever necessary.
3. Necessary data is given in the respective questions. If such data is not given, it means that the knowledge of that part is a part of examination.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1 (a) Classify following Software Systems as Product and Services. Justify Your answer   (4)
(1) Ubuntu LTS (2) Libreoffice (3) IRCTC Railway Reservation System (4) Whatsup Messenger

Q. 1 (b) Classify given Risks in following categories : (a) Users (b) Requirements (c) Project Complexity (d) Planning and Control (e) Team (f) Organizational Environmental   (4)
Risk to be classified are:
1. Users not committed to the project
2. System requirement not adequately identified
3. High level of technical complexity.
4. Immature technology
5. Inadequate estimation of required resources
6. Poor project planning

Q. 1 (c) Name and define the activities that are performed as a part of *project planning*.   (4)

Q. 2 (a) Represent following design information using UML Class diagram and relationships supported by UML.   (6)
1. The Java class *UserInterface.java* imports *BlogEntry.java*.
2. The *BlogAccount* class is optionally associated with zero or more objects of the *BlogEntry* class.
3. An *Author* owns a collection of *Blogs*.
4. A **BlogEntry** is made up of an **Introduction** and a **MainBody**.
5. A **BlogEntry** and **WikiPage** are both types of **Article**.

Q. 2 (b) Answer following questions using the UML diagram shown in Figure 1. Shown here   (6)
(1) Which type of UML diagram it is? (2) List out all the stereotypes used in the diagram. (3) Write the name of modules referred in the diagram.

Q. 3 (a) Write any three definitions of Software Architecture   (4)

Q. 3 (b) Name the processing element, data element and connecting element in UML diagram Shown in Figure 1.   (4)

Q. 3 (c) If we consider Software Architecture as a Problem Solving process then what sub-activities are performed as a part of of software Architecture.   (4)
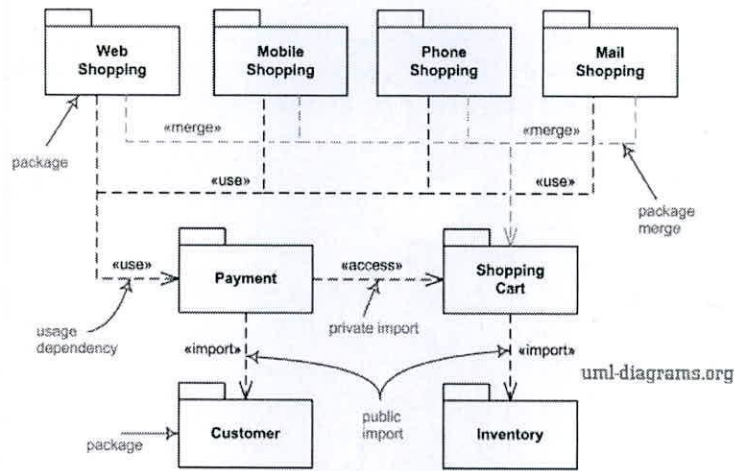
Figure 1 : UML Diagram

Consider following requirements of an application to answer questions numbered from 4 to 5

Develop a complete Python based **Birthday Greeter** *to record date of births alumni of your institute and to send the birthday greeting messages to alumni. The greeting messages are to be sent over emails and mobile SMS. Provide a feature to customize the birthday greeting message according to gender of recipients. The system shall record or import the date of birth information and contact details from simple text file or xlsx file or JSON file. Design the system anticipating following future requirements.*

1. *System shall support audio message.*
2. *System Shall support video message.*
3. *System shall configure natural languages for text messages.*
4. *System shall recommend an appropriate birthday message or greeting card from a gallery of cards by analyzing recipients social profile available on platforms such as Facebbok/Twitter.*
5. *System shall create a dispatch order for cookies.*
6. *System shall provide web access as well as mobile access to the system functionality.*
7. *System shall provide features to post messages on social networking sites such as Facebbok/Twitter.*
8. *System shall have an analytics engine to analyze the profile of alumni on social media such as Facebook/Twitter/LinkedIn and to recommend an appropriate greeting message from the available gallery of messages/cards.*

Q. 4 (a) Identify the important stakeholders of the system and their concerns for the above mentioned requirements. (6)

Q. 4 (b) Identify at least ten functional requirements. Which are the identified requirements are architecturally significant requirements and why?. (6)

Q. 5 (a) Describe following Non-Functional requirements in the context of above mentioned application (1) Performance (2) Availability (c) Security (6)

Q. 5 (b) Specify an Architectural Solution based on *Model-View-Controller (MVC)* pattern by clearly identifying the responsibilities assigned to the design elements i.e. Model, View and Controller. Is it more appropriate to use MVC pattern over Publish Subscriber ? Why? (6)

Q. 6 (a) Develop a concurrency viewpoint for the application. How many Processes/threads you will use? Allocate responsibilities to different processes and threads. (6)

Q 6(b) What are the architectural decisions that may encounter in this application. List out alternatives for each decisions and preferred choice along with your justification for that. (6)

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Branch: M. Tech. (Electrical Power Systems / Electrical Engineering)   Semester: II

Subject with Subject Code: ADVANCE POWER SYSTEM PROTECTION   Marks: 60
[MTEE202/MTEPS202]

Date: 16 / 05/ 2018   Time: 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part/parameter noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Right side figure indicates the Marks carried by the questions.

Q.1 Draw and explain the basic construction of static relay along with advantages. [12]

Q.2 **Solve the following questions. (Any One)** [12]
- (a) Explain the terms Transfer or Replica Impedance and Mixing transformers of circuits related with the static relays in details.
- (b) Prove the duality between the phase and amplitude comparator for Two input signals.

Q.3 **Attempt the following questions. (Any Two)** [12]
- (a) What are the different types of phase comparator and explain the direct or block-spike phase comparator.
- (b) Explain in detail the Hall effect device as a vector product phase comparator.
- (c) Draw the block diagram and explain the instantaneous measuring relays for voltage and current and give the application of the over and under voltage relays.

Q.4 **Solve the following questions.**
- (a) What do you understand by duo-bias Transformer differential protection? Explain it in detail. [06]
- (b) Explain the harmonic restraint percentage differential relays for transformer protection. [06]

Q.5 **Answer the following questions.**
- (a) Draw a schematic diagram, operating characteristic and explain the working of a static mho relay using an amplitude comparator. [06]
- (b) Explain the effects of power swings on the performance of the distance relay. [06]

Q.6 **Answer the following questions.**
- (a) Discuss the on line digital computer application for the protection of the transmission line. [06]
- (b) Draw and explain the micro-processors based overcurrent relay for phase and earth faults. [06]

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE - RAIGAD - 402 103
Summer Semester Examination, May 2018

Branch: M. Arch. (General)   **Semester: II**

Subject with Subject Code: Sustainable Architecture & Design   **Marks: 80**
[MAR10200004]

Date: 16 / 05 / 2018   **Time: 3 Hrs.**

==

Instructions: 1] **Questions No. 1 is compulsory** and **Attempt any FOUR** from Question No. 2 to Question No. 6.
2] Figures / structures to the right indicate full marks.
3] Assume suitable data, if necessary.
4] Neat diagrams must be drawn wherever necessary.

==

Q. No. 1. Answer in single sentence with full form if required: **[15]**
A)

  i.   ECBC

  ii.   EE

  iii. IGBC

  iv.   EMS (ISO 14000)

  v.   EIA

B) Match the columns.

  i.   LCA   a. Candelas meter-2

  ii.   Warm and Humid Climate   b. Lux

  iii. Luminance   c. Life Cycle Analysis

  iv.   Composite   d. Pondicherry

  v.   Illuminance   e. Ahmadabad

Attempt any FOUR Questions (Q. No. 2 to Q. No. 6) of the following.

Q. No. 2 Write about transmission of light and Photometric quantities of light.   **[15]**

Q. No. 3 What is the process of EIA and steps involved in it? Write about one project example.   **[15]**

Q. No. 4 What are the goals of sustainability described by UNDP and also write about sustainable architecture.   **[15]**

Q. No. 5 Write any one climatic Zone in detail along with its strategies   **[15]**

Q. No. 6 Write about process of Life Cycle Analysis and explain the concept of Carbon Footprint   **[15]**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summary Semester Examination, May 2018

Branch: B. Arch (First Year Architecture)　　　　　　　**Semester: II**
Subject: History of Architecture　　　　　　　　　　**Marks: 60**
Subject Code: AR10200005
Date: 16 / 05 / 2018　　　　　　　　　　　　　　**Time: 3 Hrs.**

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Instructions:　　1. All Questions are compulsory.
　　　　　　　　　2. Do not erase construction lines.
　　　　　　　　　3. Solve all questions on drawing sheets.

==

Q. No. 1　Answer the following:　　　　　　　　　　　　　　**(15 Marks)**
A)　Compare Architectural styles of North Indian temple Architecture with South Indian temple Architecture. Draw suitable sketches wherever necessary.

Q. No. 2　Attempt any ONE of the following:　　　　　　　　　**(15 Marks)**
A)　Write down with neat sketches characteristic features of Gothic Architecture, with respect to construction. Support your answers with sketches.
B)　Write short note on *Chola* temple architecture with suitable examples.

Q. No. 3　Attempt any FOUR of the following:　　　　　　　　**(20 Marks)**
A)　Draw neat Sketch plan and section of Early Christian Cathedral
B)　Draw a suitable sketch of important typologies of Buddhist cave Architecture.
C)　Great mosque of *Sammara*.
D)　Write short note on Cathedral of Pisa
E)　Draw plan of Quwat ul Islam mosque, showing additions in various time period.
F)　Construction techniques used in Byzantine Architecture, with a suitable example.

Q. No. 4　Answer the following:　　　　　　　　　　　**(5 x 2 = 10 Marks)**
A)　*Miharab* in a mosque is
　　　A. Niche in a wall　　B. Idol　　C. Fountain　　D. Court

B)　**In Gothic Architecture following Construction technique was used**
　　　A. Dome on *Pendentives*　　B. Flying buttresses　　C. Wooden coloumns and beams
　　　D. Curvilinear shells

C)　*Durga* **Devi temple is an example of following periods**
　　　A. Rajput Period　　B. Gupta Period　　C. Chola period　　D. Early Chalukyan

D)	**Ambulatory path in a temple is called**
	A. Pradakshina Path B. Apse C. Ardhamandapa D. Liwan

E)	**Choir is the**
	A. Entry point of cathedral B. End point of a cathedral C. Crossing of Nave and Transept D. Circular Ambulatory

F)	**Jagati is a**
	A. Raised platform of a temple B. Apex of a Temple C. Middle portion of a temple D. Entrance of a temple

G)	**Rathas were built by**
	A. Cholas B. Pallavas C. Guptas D. Rajputs

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Instructions to the Students:

1. Attempt ANY FIVE Questions from Question No 1 to Question No 6.
2. Illustrate your answers with neat sketches, diagrams etc. wherever necessary.
3. Necessary data is given in the respective questions. If such data is not given, it means that the knowledge of that part is a part of examination.

Q.1.   Attempt the following.   (06X2=12)

1) State and explain the Principle of Transmissibility. How it is useful as per engineering mechanics point of view? Explain with any example.

2) How will you find out resultant of a several concurrent coplanar forces by summing rectangular components? Explain this method with resolution and projections of the forces with any example.

Q.2.   Attempt the following.   (06X2=12)

1) Two equal loads of 2500 N are supported by a flexible string ABCD at points B and C as shown in figure 1. Find the tensions in the portions AB, BC and CD of the string.
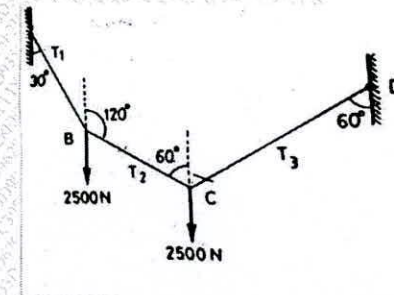

Figure 1

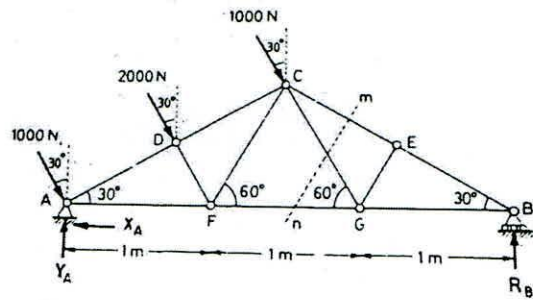2) A truss is loaded and supported as shown in figure 2. Determine the axial forces in the member CE, CG and FG.

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2) A car weighing 4000 N is moving at a speed of 100 m/s as shown in figure 6. The resistance to the car is largely due to air drag which is equal to $0.004 \, v^2$. What distance will it travel before its speed is reduced to 50 m/s?

Figure 6

Q.5.   Attempt the following.   (06X2=12)

A) What is meant by impulse of a force and momentum? State and prove the principle of impulse and momentum.

B) Explain the components of motion: rectangular components of velocity and acceleration.

Q.6.   Attempt the following.   (06X2=12)

A) Ball A of mass 1 kg moving with a velocity of 2 m/s, impinges directly on a ball B of mass 2 kg at rest. Find the velocities of the two balls after impact. Assume the coefficient of restitution $e = \frac{1}{2}$.

B) Explain and prove D'Alembert's principle. How will you explain the concept of dynamic equilibrium?

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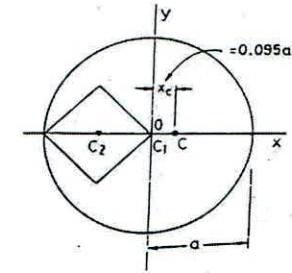
Figure 2

Figure 4

Q.3.   Attempt the following.   (06X2=12)

1) A block A weighing 1000 N is to be raised by means of a 15 ° wedge B weighing 500 N as shown in figure 3. Assuming the coefficient of friction between all contact surfaces to be 0.2, determine what minimum horizontal force P should be applied to raise the block.
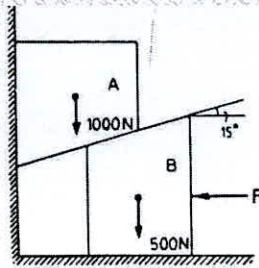

Figure 3

2) A square hole is punched out of a circular lamina as shown in figure 4. The diagonal of the square which is punched out is equal to the radius of circle. Find the centroid of the remaining lamina?

Q.4.   Attempt the following.   (06X2=12)

1) Two cylinders A and B rest in a horizontal channel as shown in figure 5. The cylinder A has a weight of 1000 N and radius of 9 cm. The cylinder B has weight of 400 N and a radius of 5 cm. the channel is 18 cm wide at the bottom with one side vertical. The other side is inclined at an angle 60 ° with the horizontal. Find the reactions at the points L, N and P.
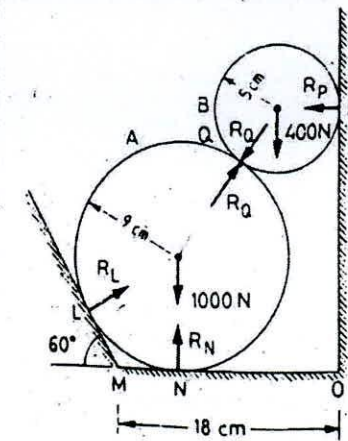

Figure 5

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
END SEMESTER EXAMINATION, MAY 2018
Class: B. Tech First Year
Subject: Communication Skills (HS202)

Time: 3 Hrs.	Marks: 60
Date: 16/05/2018	Semester: II

Q: 1 Answer the following questions.

A) Explain the various functions of communication. (06)

OR

A) Non Verbal communication is more important than Verbal communication. -- Discuss.

B) What are the tips for effective communication? (06)

OR

B) Answer the following
  i) Importance of feedback in communication.
  ii) Name the barriers to communication.

Q: 2 Attempt **Any Two** of the following. (12)
  A) What is an interview? List down the types of interview questions.
  B) State the importance of visual aids in formal presentations.
  C) Explain the techniques of Group Discussion.
  D) Write the advantages of Oral Communication.

Q: 3 Attempt **Any Two** of the following
  A) What is phoneme? Explain the basic sounds in English. (06)
  B) What is intonation? Explain in brief the falling and rising tone. (06)
  C) Write the following words in phonemic script. (06)
   i) Aim ii) Chalk iii) Excellent
   iv) Language v) Nation vi) Stadium.
  D) Identify the following words and the spellings. (06)
   i) /pəˈlaɪt/ ii) /ˈsɪŋə/ iii) /ˈkætʃ/
   ii) /dɪˈlaɪt/ iv) /ˈʃaʊt/ vi) /ˈθʌndə/

Q: 4 A) Select the appropriate word and rewrite the sentences (**Any Three**) (03)
  i. Spoken or written in two languages is
   a. Bias b. Biography c. Bilingual d. Bewilder
  ii. Exact statement of meaning is
   a. Determine b. Decency c. Dictionary d. Definition
  iii. To take part in an activity is
   a. Payment b. Participation c. Pause d. Pacify
  iv. Connected with the practical use of machinery is
   a. Tentative b. Technical c. Terminate d. Tiresome

B) Correct the following sentences and rewrite (**Any Three**)   (03)
  i) He signed upon the application form
  ii) The ability of plan, organize and coordinate work is all fundamental to working with deadline.
  iii) Neither of the printers are working.
  iv) Cotton catch the fire easily.

C) Do as directed (**Any Six**)   (06)
  i) He returned after ------- hour. (Use correct article)
  ii) I looked ------ when he entered the room. (Use correct preposition)
  iii) Please -------- our sincere apologies. (accept, expect – choose correct word)
  iv) Write synonyms for   i) beautiful   ii) quickly
  v) Write antonyms for   i) abundance   ii) compulsory
  vi) What -------- you like to have tea or coffee? (Use correct modal verb)
  vii) Everything -------- (change) with time. (Use correct form of given verb)

Q: 5 Attempt '**A and B**' or '**C**'
  A) As a Secretary of English Literary Association write a notice for notice board inviting names to participate in proposed elocution contest.   (06)
  B) Write short essay on 'Ban on Plastic – Good step to save environment'   (06)

  OR

  C) Write a job application letter with appropriate resume for the post of Junior Engineer to The Manager, XYZ Automation, Mumbai, 400042.   (12)

Q: 6 Attempt **Any Two** of the following   (12)
  A) Explain --- skimming and scanning.
  B) Write strategies of acquisition of listening skills.
  C) What are the barriers to effective listening?
  D) Explain – active and passive listening.

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Arch. (General)   **Semester: II**

Subject with Subject Code: Building Byelaws, Codes and Legislation   **Marks: 80**
[MAR10200006]

Date: 15 / 05 / 2018   **Time: 3 Hrs.**

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Instructions: 1] **Questions No. 1** is **compulsory** and **Attempt any THREE** from **Question No. 2** to **Question No. 5**.
2] Figures / structures to the right indicate full marks.
3] Assume suitable data, if necessary.
4] Neat diagrams, sketches, maps must be drawn wherever necessary.

==

Q. No. 1 Write short notes on: **[20]**

1. CBD
2. CIDCO
3. FSI
4. TDR
5. Truck Terminal

Attempt any THREE of the following:

Q. No. 2 Discuss the Navi Mumbai plan with map in detail.   **[20]**

Q. No. 3 Discuss in details land use classification, the use of zones with legal framework of a **[20]** development plan

Q. No. 4 Write in length about Architect's act of 1972, Architect's code of conduct and **[20]** professional responsibilities. Also discuss about fees and competitions.

Q. No. 5 How will you manage Architects office? Describe in detail documentation and **[20]** computerization methods.

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Dr. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination: May 2018

Branch: B.Tech (Common to all)   **Semester:** II

Subject with code: Engineering Mathematics-II (MATH 201)   **Marks:** 60

Date: 14/05/2018   **Time:** 03 Hrs.

INSTRUCTION: Attempt any FIVE of the following questions. All questions carry equal marks.

Q.1 Solve any three

(a) If $\arg(z+1) = \dfrac{\pi}{6}$ and $\arg(z-1) = \dfrac{2\pi}{3}$, find z.   [4 Marks]

(b) Solve: $x^7 + x^4 + x^3 + 1 = 0$.   [4 Marks]

(c) If $\cos(\theta + i\phi) = \mathrm{Re}^{i\alpha}$, show that $\phi = \dfrac{1}{2}\log_e\left(\dfrac{\sin(\theta-\alpha)}{\sin(\theta+\alpha)}\right)$.   [4 Marks]

(d) Prove that $\tan\left\{i\log\left(\dfrac{a-ib}{a+ib}\right)\right\} = \dfrac{2ab}{a^2-b^2}$.   [4 Marks]

Q.2 Solve any three.

(a) Solve $(4x - 6y - 1)dx + (3y - 2x - 2)dy = 0$.   [4 Marks]

(b) Solve $\dfrac{dy}{dx} = \dfrac{y+1}{(y+2)e^y - x}$.   [4 Marks]

(c) Solve $(1 + y^2) + (x - e^{\tan^{-1} y})\dfrac{dy}{dx} = 0$.   [4 Marks]

(d) Determine the charge and current at any time 't' in a series R-C circuit with $R = 10\Omega$, $C = 2 \times 10^{-4}\,F$ and $E = 100V$, given that $q(0) = 0$.   [4 Marks]

Q.3. Solve any three.

(a) Solve $\dfrac{d^2 y}{dx^2} + 6\dfrac{dy}{dx} + 9y = 5^x - \log 2$.   [4 Marks]

(b) Solve $\dfrac{d^2 y}{dx^2} - 2\dfrac{dy}{dx} + 5y = 25x^2$.   [4 Marks]

(c) Solve $(D^2 + 2D + 1)y = e^{-x}\log x$ by method of variation of parameters.   [4 Marks]

(d) Solve $x^2 y'' - 3xy' + 5y = x^2 \sin(\log x)$.   [4 Marks]

Q.4. (a) Obtain the Fourier series expansion of $\sqrt{1-\cos x}$ in the interval $0 \le x \le 2\pi$. [6 Marks]

(b) Find the Half-range co-sine series for $f(x) = \begin{cases} \frac{1}{4} - x & 0 < x < \frac{1}{2} \\ x - \frac{3}{4} & \frac{1}{2} < x < 1 \end{cases}$ [6 Marks]

Q.5. (a) If a particle describes the curve $r = 2a\cos\theta$ with constant angular speed ω, find the radial and transverse components of velocity and acceleration. [4 Marks]

(b) For the curve $x = t^3 + 1, y = t^2, z = t$, find the magnitude of tangential and normal components of acceleration at $t = 1$. [4 Marks]

(c) If the particle describes the cardioid $r = a(1 - \cos\theta)$ under a force to the pole, show that the force is proportional to the inverse of the 4th power of the distance. [4 Marks]

Q.6. (a) Find the directional derivative of $\phi = 5x^2 y - 5y^2 z + 2.5z^2 x$ at the point $p(1,1,1)$ in the direction of the line $\frac{x-1}{2} = \frac{y-3}{-2} = z$. [4 Marks]

(b) If $\vec{F} = (ax + 3y + 4z)\hat{i} + (x - 2y + 3z)\hat{j} + (3x + 2y - z)\hat{k}$ is solenoidal, find the value of 'a'. [4 Marks]

(c) Find the total work done in moving a particle in the force field, given by $\vec{F} = 3xy\hat{i} - 5z\hat{j} + 10x\hat{k}$ along the curve $x = t^2 + 1, y = 2t^2, z = t^3$ from $t = 1$ to $t = 2$. [4 Marks]

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: M.Tech. (Electrical Power System)   **Semester: II**

Subject with Subject Code:- Power System Dynamics and Control (MTEPS201)

Date:- 14/05/2018   **Marks: 60**   **Time:3 Hrs.**

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt all questions.

(Marks)

Q.1. Draw the functional block diagram of excitation system and explain all the elements in detail . **(12)**

Q.2. Derive stator equations for small signal stability analysis of single machine infinite bus System. **(12)**

Q.3. What is power system stabilizer? Why is it used? Explain its tuning procedure. **(12)**

Q.4. Explain in detail the effect of AVR on synchronizing and damping torque components. **(12)**

OR

Q.4. Explain any one technique of analysis of very large systems. **(12)**

Q.5. Explain operation of delta - omega and delta - P - omega stabilizers in detail and compare them. **(12)**

OR

Q.5. Explain various design criteria in connection with digital stabilizer. **(12)**

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402103
Summer Semester Examination:– May-2018

Branch: M.Tech. (Structural Engineering)   Semester:II

Subject with Subject Code: - Theory of Plates and Shells code (CVSE201)

Date: - 14/05/2018   Marks: 60   Time: 3 Hrs.
==

Instructions to the Students
1. Each question carries 20 marks.
2. Attempt any three questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q1.a) What are the assumptions made in thin plates with small deflections? Give a brief account of

classification of plates.   (10 Marks)

Q1.b) Derive the moment curvature relationship in the case of pure bending of plates.   (10 Marks)

OR

Q1.c) Derive the equations of equilibrium for small deflections of laterally loaded plates.   (10 Marks)

Q1.d) A long narrow simply supported rectangular plate 1m wide, 10mm thick subjected to a uniform load of

$1.0 N/M^2$. Taking poisons ratio=0.3, and E=200Gpa. Find maximum deflection and B.M.   (10 Marks)

Q2.a) A simply supported rectangular plate of dimension a x b x h is subjected to load 'P acting over an area

XY. Derive the expression for deflection. Adopt Navier's approach.   (10 Marks)

Q2.b) Find Levy's solution for simply supported and uniformly loaded rectangular plates.   (10 Marks)

Q3.a.1) Derive the differential equation for deflection for the symmetrical bending of a circular plate with

lateral loads of the type.   (15 Marks)

$$\frac{d^3w}{dr^3} + \frac{1}{r}\frac{d^2w}{dr^2} - \frac{1}{r^2}\frac{dw}{dr} = \frac{Q}{D}$$

Q3.a.2) Give the difference between the circular plate with and without hole with respect to analysis and design. **(05 Marks)**

OR

Q3.b) Find the transverse deflection w, radial moment Mr, tangential moment M_Q and corresponding stresses and also find the Wmax for the circular plates of the following types.

i) A simply supported plate subjected to UDL q

ii) A simple supported plate subjected to point load a Centre **(20 Marks)**

Q4.a) Derive the equations of equilibrium of membrane theory for cylindrical shells. **(10 Marks)**

Q4.b) A simply supported circular cylindrical shell with free longitudinal edges is spanning 22m and radius of 10m and semi-circular angle of 35 degrees. The edge beam has width of 300mm and depth of 1500mm. Determine stress resultants for N_x N_0 Nx_0 under self-weight using membrane theory. If there is an edge beam what is the maximum longitudinal force developed in the edge beam. **(10 Marks)**

OR

Q4.c) Write boundary conditions for simply supported cylindrical shells with the edge Conditions.

i) Single shell without edge beam   ii) Single shell with edge beam **(08 Marks)**

Q4.d) State the assumptions in Schorer's theory of cylindrical shells and drive the shorer's differential equation **(12 Marks)**

Q5.a) Derive the membrane differential equation for the elliptic paraboloid. **(10 Marks)**

Q5.b) Obtain expression for transverse deflection using Finster Walder theory. **(10 Marks)**

OR

Q5.c) State the assumptions made in Finster Walder theory. **(05 Marks)**

Q5.d) Obtain the expression for deflection in case of uniformly loaded circular plates with clamped edges. **(15 Marks)**

Q6.a) Design a cylindrical shell roof considering beam and arch action to cover a parking place 40 meters wide and 160 meters long. Superimposed load due to waterproofing cover and occasional live loads may be taken as 350 kg/m² of the surface of the shell. Slope at the ends may be taken as 40 .Thickness of the shell may be taken as 110mm.Dimensions of the edge beam may be assumed as 300 mm by 1500 mm. Shell may be divided into four parts for arch action. Use M20 and Fe250 steel. Show the design details clearly. **(10 Marks)**

Q6.b) Discuss the general guidelines followed for selecting the dimensions of the various structural components of a shell. **(10 Marks)**
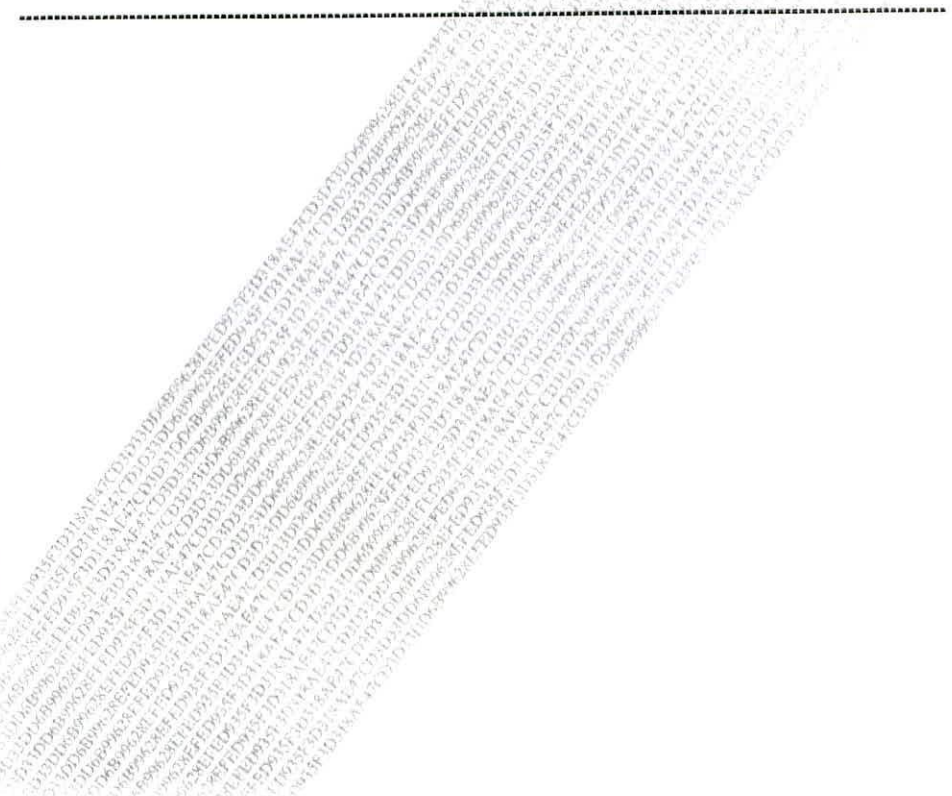
DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103
Summer Semester Examination – May - 2018

Branch: M.Tech (Electronics Engineering)   Sem.:- II

Subject with Subject Code:- Advanced DSP [MTEEC201]   Marks: 60

Date:- 14-05-2018   Time:- 3 Hr.

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Instructions:-   1. Solve any five questions.
                  2. Assume suitable data, if necessary.
                  3. Figures to right indicate full marks.

Q.No.1   **Attempt any TWO of the following**   (12)
a.) State various methods for signal modeling. Explain one of those in details.
b.) Explain operation for Wiener filter and derive an expression for the minimum mean square error.
c.) Derive the Spectral Factorization of a power spectrum $P_x(e^{j\omega})$.

Q.No. 2   **Attempt any TWO of the following**   (12)
a.) Compare Auto-correlation and co-variance methods.
b.) Explain the stochastic ARMA model.
c.) Any process that can be factored is called as regular process. Justify this statement and describe the properties of regular process.

Q.No. 3   **Attempt any TWO of the following**   (12)
a.) Derive the expression for Wiener Hoff equations
b.) Derive the expression for computing Kalman gain.
c.) Give in details Levinson recursion algorithm for solving Toplitz system of equations.

Q.No. 4   **Attempt any TWO of the following**   (12))
a.) Explain Newton's steepest descent method.
b.) Explain Widrow-Hoff LMS Adaptation Algorithm.
c.) How the adaptive echo-canceller works

1

Q.No.5   **Attempt any TWO of the following**   **(12)**

a.) Justify the need of interpolation & decimation processes in Multirate DSP.

b.) Describe Poly-phase realization.

c.) State and explain the applications of Wavelet Transform for sub-band coding.

Q.No.6   **Attempt any TWO of the following**   **(12)**

a.) If the desired unit sample response is

$$h_d[n]=2(1/2)^n u[n]$$

Determine the parameters of filter with system function

$$H(Z) = \frac{b0+b1z^{-1}}{1+a1z^{-1}} \text{ using Pade approximation technique.}$$

b.) Determine the mean and autocorrelation of the sequence x[n] which is output of an ARMA (1,1) process described by the difference equation x[n]=1/2 x[n-1]+w[n]-w[n-1], where, w[n] is a white noise with variance σ_ω^2

c.) In the Welch method, calculate the variance of Welch Power Spectrum Estimate with Barlett window, if there is 50% overlap between successive sequences.

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2

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: M. Tech.   **Semester:** II
(Manufacturing / Production / Manufacturing Process Engineering)
Subject with Subject Code: METAL FORMING PROCESSES   **Marks:** 60
                              [MMF201]

Date: 14 / 05 / 2018   **Time:** 3 Hrs.
==

Instructions to the Students:
1. Attempt any five questions of the following.
2. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
3. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. No. 1

  (a)   What does yielding of isotropic plastic material means?   **6M**

  (b)   What is yield criteria?   **6M**

Q. No. 2

  (a)   Discuss the various factors which affect the rolling force.   **6M**

  (b)   What are different defects in rolling process? What are their causes and remedial.   **6M**

Q. No. 3

  (a)   What are the various methods of tube drawing? Compare them.   **6M**

  (b)   Discuss the different variables that affect the deep drawing process.   **6M**

Q. No. 4

  (a)   Explain the operation that are normally employed in forging and how forging improves the mechanical properties.   **6M**

  (b)   Sketch and describe the following forging tools: **6M**
        (i) Anvil, (ii) Swage Block, (iii) Ball pin hammers, and (iv) Hardie.

Q. No. 5 Explain the basic rules of die design for machine forging. Write its advantages and **12M** limitations of machine forging.

Q. No. 6 Write short notes on: **12M**
        (a) Defects in wire drawing.
        (b) Isothermal forging.
        (c) Heat generation in metal forming process.

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – 402 103, RAIGAD (MS)
End Semester Examination, May 2018

Branch: M. Tech (CE / CSE / CS&IT / CS)   **Semester: II**
Subject with Subject Code: Data Science [MTCE1201]   **Marks: 60**
Date: 14 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students:
- Assume suitable data wherever necessary and mention it clearly
- If any of the parameter is noticed to be missing, assume appropriate value and mention it clearly
- Write answer to the point and correct.

Q. 1 Attempt the following.

a) Differentiate between Data Science, Machine Learning and AI using different criteria such as definition, scope and role. **(6 marks)**

b) What are various steps involved in an analytics of project? **(6 marks)**

Q. 2 Attempt the following,

a) What is text mining? Write R language code to convert uppercase to lowercase letters. **(6 marks)**

b) Give some situations where you will use an SVM over a RandomForest Machine Learning algorithm and vice-versa. **(6 marks)**

Q. 3 Attempt the following.

a) What is categorical? Explain with suitable example the procedure to check the cumulative frequency distribution of any categorical variable. **(6 marks)**

b) What are the various aspects of a Machine Learning process? **(6 marks)**

Q. 4 Attempt the following.

a) What is K-means clustering? Enlist different steps in the K-means clustering algorithm. **(6 marks)**

b) A small accounting firm pays each of their five junior accountant's ₹35,000, two senior accountants ₹80,000 and the firms owner ₹3, 20,000 (all salaries are per month). **(6 marks)**
  i) What is the mean salary paid per month?
  ii) What is the median salary paid per month?
  iii) How many employees earn less than the mean salary every month?

Q. 5 Attempt the following.

a) What is unsupervised machine learning? Enlist and explain steps in the unsupervised machine learning. **(4 marks)**

b) What is Linear Regression? **(4 marks)**

c) How machine learning is deployed in real world scenarios? **(4 marks)**

Q. 6
A leading fashion store chooses to predict the Willingness of a customer to buy a shirt of a particular price category based on the customers data. The company strongly believes that the willingness of a customer to buy depends on 3 factors essentially. They are the Gender of the customer (Male/ Female), the type of car used by the customer (Sports/ Family) and the type of shirt price category (Cheap/ Expensive).

From the past history, The Company has got the data of 12 customers (gender, The type of the car used by the customer and The Shirt price category) along with the data of whether they bought the shirt of that category. The company customer data is given below table. Then, answer the following questions.

Customer ID	Gender	Car type	Shirt price category	Will buy?
1	Male	Sports	Cheap	No
2	Male	Sports	Expensive	Yes
3	Male	Family	Cheap	Yes
4	Male	Family	Expensive	No
5	Male	Sports	Cheap	Yes
6	Male	Sports	Expensive	Yes
7	Male	Family	Cheap	Yes
8	Male	Family	Expensive	No
9	Female	Sports	Cheap	No
10	Female	Family	Cheap	No
11	Female	Sports	Expensive	No
12	Female	Family	Expensive	No

i) What is the best feature to split at the root level, If the splitting criterion is Entropy?
(4 marks)

ii) Assume that you stop growing the tree, when there are 2 or fewer data points in a leaf node. If you use Entropy for the splitting criterion, Then How many leaf nodes will you end up with? **(4 marks)**

iii) Assume that you stop growing the tree, when there are 2 or fewer data points in a leaf node. If you use Entropy for the splitting criterion, then What is the prediction accuracy? **(4 marks)**

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Branch: B. Arch (First Year)   Sem.:- II

Subject with Subject Code:-Theory of structures – I (AR1020006)S
   Marks: 60

Date: - 14/ 05 /2018   Time:- 2 Hr.

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Instructions:-
1. *Read all the questions carefully.*
2. *Neat sketches must be drawn wherever necessary.*
3. *Figures to the right indicate full marks.*

Attempt any Three Questions From the Following

Q.1 :   The resultant of two forces P and Q is 1400N vertical. Determine the forces Q and   (7)
(a)   the corresponding angle θ for the system of forces as shown in fig.1

Fig.1
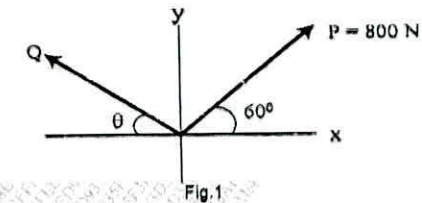
(b)   Find the centre of gravity of a channel section 100 mm × 50 mm × 15 mm   (7)

(c)   Explain Resolution and composition method   (6)

                                    OR

Q.2 :   A triangle ABC has its side AB = 40 mm along positive x-axis and side BC = 30 mm   (7)
(a)   along positive y-axis. Three forces of 40 N, 50 N and 30 N acts along the sides AB, BC
        and CA respectively. Determine magnitude of the resultant of such a system of
        forces.

(b)   An I-section is made up of three rectangles as shown in Fig. Find the moment of   (7)
        inertia of the section about the horizontal axis passing through the centre of gravity
        of the section.

                                    1
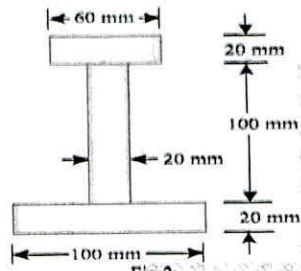
4

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Fig.2

(c) Explain Resolution and composition method (6)
(4)

Q.3:a) Write down Parallel axis theorem and Perpendicular Axis theorem (8)

(b) Find the moment of inertia of 150mm × 150 mm × 30 mm T-section (8)

(c) A simply supported beam, AB of span 6 m is loaded as shown in Fig.3. Determine the reactions RA and RB of the beam.
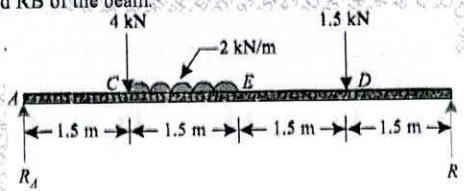

Fig.3
OR

Q.4:a) Explain types of support and types of beam with sketch (4)

b) Find the moment of inertia about the centroidal X-X and Y-Y axes of the angle section shown in figure 4 (8)
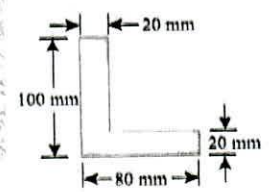

Fig.4

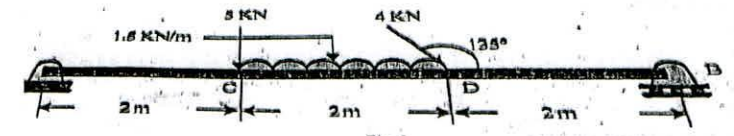c) Determine support reaction as shown in figure 5 (8)

Fig.5

Q.5:a) Define point of contra flexure with sketch and zero shear force diagram (4)

b) Draw shear force and bending moment diagram for simply supported beam shown in figure 6 (8)
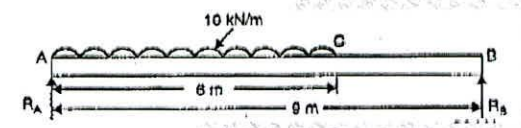
Fig.6

c) Draw shear force and bending moment diagram for cantilever beam carrying UDL shown in figure 7 (8)

Fig.7
OR

Q.6:a) What is shear force and bending moment diagram, explain with sketch (4)

b) Draw shear force and bending moment diagram for simply supported beam shown in figure 8. (8)

Fig.8

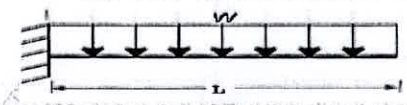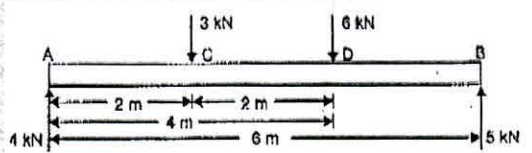c) Draw shear force and bending moment diagram for cantilever beam carrying point load at its free end shown in figure 9 (8)
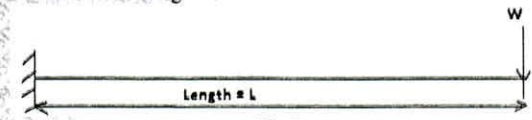

Fig.9

2

3

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
End Semester Examination – May - 2018

Branch: M. Arch (General)   First Year   Sem.:- II

Subject :- Elective II (Re Architecture)

Subject Code:- MAR10200005A   Marks: 80
Date:- 14/5/2018   Time:- 3 Hrs.

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Instructions:-   1. Q. No. 1 is compulsory.
                    2. Answer any **Three** Questions out of remaining.

Q. No. 1:- Explain the following terms in brief.(Any FOUR)

    (A)   Restoration
    (B)   Revival
    (C)   Re development
    (D)   Revitalization
    (E)   Refurbishment   (5*4=20 Marks)

Q. No. 2:- Discuss scope & need of Re Architecture with suitable examples in any City. Draw sketches to support your answer.   (20 Marks)

Q. No. 3:-" Re Architecture can be used as an effective tool for improvement of heritage value" explain the statement with suitable example of any City you know with minimum Two examples within that City.   (20 Marks)

Q. No. 4:- Explain changing housing types over the years and need of conserving the same in old core with the help of example of any growing city.   (20 Marks)

Q. No. 5:- Explain the need of appropriate legislation and regulations for preservation and heritage conservation . In what way concept of Re Architecture is helpful in implementation of such legislation?   (20 Marks)

--------------------***************The End***************--------------------------

Branch: B. Tech   **Semester: I**

Subject with Subject Code: Engineering Graphics [ME104]   **Marks: 60**

Date: 11 / 05 / 2018   **Time: 4 Hrs**

Instructions to the Students:

     1. Each question carries 12 marks.

     2. Attempt **any five** questions of the following.

     3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.

     4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. a) Identify the mistakes made, if any, while showing the dimensions in the following figure and redraw the figure.   **(4)**

     b) Redraw the figure showing a lever as shown in the following figure.   **(8)**
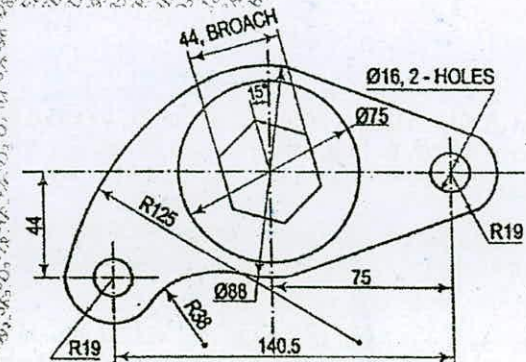
Q.2. a) Draw the projection of points P and T, when point P is 25 mm above H.P. and 20 mm behind V.P. and point T is in H.P. and 25 mm in front of V.P. **(4)**

b) Draw the following views of the object shown in the following figure in X direction. **(4)**
   i) Front view **(4)**
   ii) Top view **(4)**
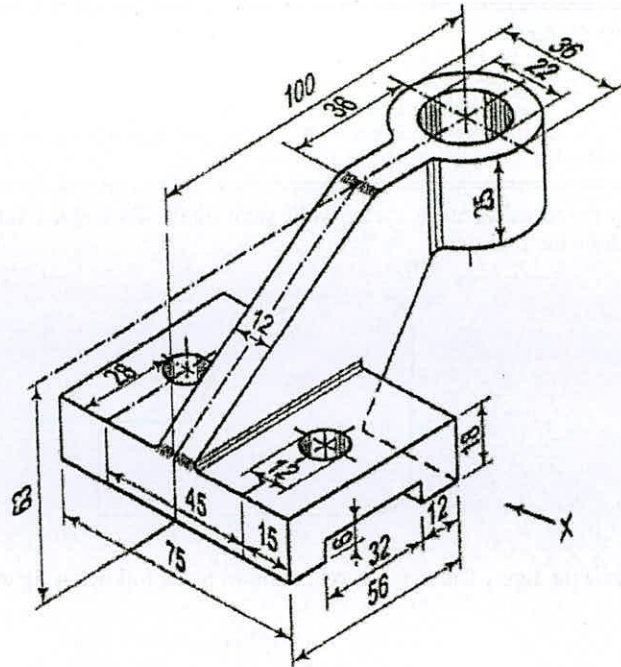
Q.3. a) A line AB 90 mm long is inclined at 30° to HP. Its end A is 12 mm above HP and 20 mm in front of the VP. Its front view measures 65 mm. Draw the Top View of AB and determine its inclination with VP. Also locate the traces. **(6)**

b) Draw the projections of a regular hexagon of 30 mm side, having one of its sides in the HP and its surface making an angle of 45° with the HP. **(6)**

Q.4. A right hexagonal prism of side 25 mm and 20 mm thick with one side of the base is perpendicular to V.P. resting on the ground. A vertical frustum of square pyramid of base side 30 mm and height 50 mm is resting on the prism such that 20 mm sides and top face side 30 mm is one side of square makes 45° with the V.P. Assume that axis of both the solids are

coinciding. Draw the projections of combined solids when top corner of the square pyramid is 70 mm above the ground (H.P.) **(12)**

Q.5. Solve **any one** of the following questions **(12)**
A square pyramid with a base side of 45 mm and slant height of 70 mm is resting on the base on the HP with two base sides perpendicular to the VP. It is cut by two AIPs, sloping in opposite directions, such that the true shape of the section is
i) a trapezium with parallel sides of 30 mm and 14 mm
ii) a trapezium with smaller sides of 20 mm and the distance between parallel sides being 36 mm.
Locate the cutting planes and draw FV and sectional TV. Also draw the true shapes of both the sections.

OR

Following figure shows Front View (FV) and Top View (TV) of an object. Draw its isometric view.
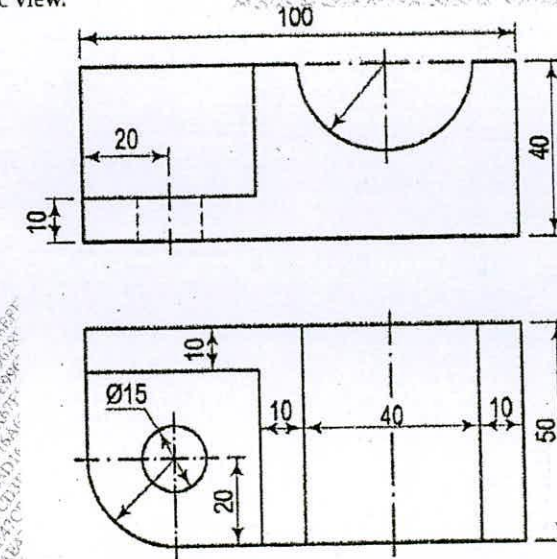
Q.6. A pentagonal pyramid, base side 56 mm and length of axis 90 mm, has a corner of base in the VP. The slant edge through that corner is inclined to the VP at 60° and parallel to the HP. The solid is cut by an Auxiliary Vertical Plane inclined at 30° to the VP and passing through the midpoint of axis. Develop the remaining portion of the pyramid. **(12)**

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
End Semester Examination – May – 2018

Branch: B. Arch (First Year Architecture)   Semester: II

Subject: Environmental Science-II   Marks: 60

Subject Code: AR10200004

Date: 11 / 05 / 2018   Time: 3 Hrs.

Instructions: 1. All Questions are compulsory.

2. Draw sketches wherever necessary

Q. No. 1	**Answer the following:**	
A)	What is Rainwater harvesting? Explain in detail with necessary sketches	**(10 Marks)**
B)	What are the causes of Marine Pollution? State its effect on Marine Ecosystem	**(5 Marks)**
Q. No. 2	**Attempt any ONE of the following:**	
A)	Describe waste water management technique in detail	**(10 Marks)**
B)	Explain the causes of environmental degradation	**(5 Marks)**

OR

Q. No. 2		
A)	Explain environmental protection movements in India	**(10 Marks)**
B)	What are the threats to biodiversity caused by human activities	**(5 Marks)**
Q. No. 3	**Attempt any FOUR of the following:**	**(20 Marks)**
A)	Ecological planting	
B)	Contour bunds and wells for rainwater harvesting	
C)	Define ecological succession	
D)	Characteristics of population	
E)	What are ecological methods and techniques in architecture	
F)	Enlist any five impacts of global climate change	
G)	Name India's bio geographic regions	

Q. No. 4 **Answer the following:**   **(5 x 2 = 10 Marks)**

   A)   Define producer

   B)   List out any two national parks in India

   C)   Name any two environmental activists

   D)   Who started chipko movement

   E)   Food chain

   F)   Causes of soil pollution

   G)   Define Biodiversity

----- **END OF PAPER** -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
End Semester Examination-May – 2018

Branch: M. Arch. (General)
Subject- Low Cost Building Material and Construction
Subject Code-MAR10200003
Date: 11 /05 /2018

Semester: II
Marks: 80

Time: 3 Hrs.

Instructions: 1] **Questions No. 1** is **compulsory** and **Attempt any FOUR** from Question No. 2 to Question No. 6.
2] Figures / structures to the right indicate full marks.
3] Assume suitable data, if necessary.
4] Neat diagrams must be drawn wherever necessary.

Q. No. 1 Answer in single sentence / filling the blanks / match the columns / Define **[20]**
[COMPULSORY QUESTION]

i A _____ is the curve assumed by a freely suspended chain or flexible cable under the action of gravity.

   a) Catenary
   b) Dome
   c) Vault
   d) Arch

ii _____are characterized by a thrust whose intensity and angle may disturb the stability of the whole.

   a) Terracotta Floors
   b) Arches and vaults
   c) Wattle and Daub
   d) None of above

iii Write list of materials used for ferro concrete / Ferrocement (Any four)

iv What are the advantages of a rat-trap bond? (any two)

v A _____ material is one that: Does not deplete non-renewable (natural) resources and has no adverse impact on the environment when used.

   a) Traditional
   b) Structural
   c) Sustainable
   d) None of above

Attempt any FOUR of the following. (Long Questions)

Q. No. 2 Write a short note on   **[15]**
1) Use of Bamboo as alternative construction material in line with following pointer
    a) General note
    b) Selection criteria for structural bamboo
2) Advantage and disadvantage of Bamboo construction technique
3) At least 2 construction detail with supporting sketch

Q. No. 3 Discuss any **Two** of construction technology developed by CBRI with supporting sketches.   **[15]**

    a) Precast RCC Channel Unit
    b) Precast Reinforced Concrete Plank and Joist Scheme for Roof/Floor
    c) Prefabricated Brick Panel System for Roof/Floor

Q. No. 4 Write a note on CPM and PERT.   **[15]**

Q. No. 5 Write Short note on (Any two)   **[15]**
1)Light Gauge Steel structure (LGS)
2)Rammed earth construction technique
3)Arch Vault & dome (AVD)

Q. No. 6 What is pre fabrication? What are advantages and disadvantages of pre fabrication? Explain its **[15]** application and at least 2 construction details with supporting sketch.

----- **END OF PAPER** -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: B. Arch (First Year Architecture) Semester: I

Subject: History of Architecture I Marks: 60

Subject Code: AR1010006

Date: 11 / 05 / 2018 Time: 3 Hrs.

Instructions: 1. All Questions are compulsory.
2. Draw neat sketches to support your answer.

Q. No. 1 Answer the following: (15 Marks)

A) Describe with appropriate sketches the method of Optical corrections used in Greek civilization.

Q. No. 2 Attempt any ONE of the following: (15 Marks)

A) Along with appropriate sketches describe the Column Orders in Roman Architecture.

B) Describe with appropriate sketches any two pre historic dwellings.

Q. No. 3 Attempt any FOUR of the following: (20 Marks)

A) Write a short note on 'Mayan Pyramid' with appropriate sketche.

B) Describe 'The Great Bath' from the Indus Valley Civilization.

C) Describe the Great Pyramid of Cheops.

D) Write in short about the Ziggurat of Ur-Namu, Ur.

E) Write a note on 'Stupa at Sanchi' along with its significance.

F) State the significance of Cave Painting in Pre Historic times.

Q. No. 4 Answer the following questions in one sentence only. (5 x 2 = 10 Marks)

A) Name three column orders used in 'Greek Architecture'.

B) Name the construction technologies used by the Romans to span their structures.

C) Name any three Gods in Egyptian Civilization.

D) Name the stages of evolution of pyramids.

E) Name different type of Public buildings built by the Romans.

----- END OF PAPER -----

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD – 402103
Summer Semester Examination, May – 2018

Branch: B. Tech

Subject: Basic Electrical Engineering [EE104]

Date: 11 / 05 / 2018

Semester: I

Marks: 60

Time: 3 Hrs

Instructions to the students:

1. Each question carries 12 marks.

2. Attempt any 5 question of the following.

3. Illustrate your answers with neat sketches, diagrams etc., wherever necessary.

4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1.

a) A conductor has cross sectional areas of 10cm² & specific resistance of 7.5µΩ cm at 0⁰c. **6M** What will be its resistance in Ω/km when the temperature is 40⁰c. Take the temperature coefficient of the material = 0.005 / ⁰c.

b) Explain the terms i) Electrical Work ii) Concept of Power. And write the necessary **6M** equations for the same.

Q.2.

a) With the help of Thevenins theorem, find the magnitude and direction of the current **6M** flowing   through 5 Ω resistor shown in figure below.
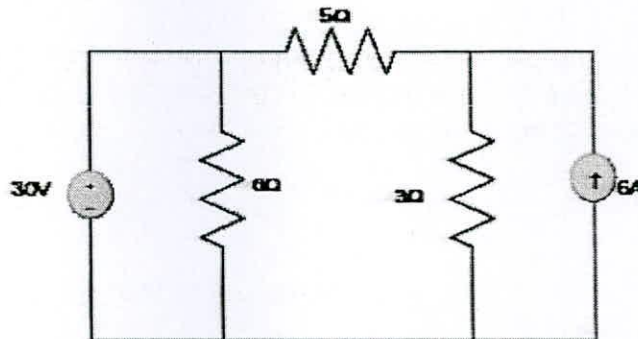
b) Prove that, "The Star resistance to be connected to a given terminals is equal to the product **6M** of the two delta resistances connected to the same terminal divided by the sum of the delta resistances"

OR

b) State and Prove Maximum power transfer theorem. **6M**

Q.3.

   a) Define   **6M**
       i) Active Power   ii) Reactive Power   iii) Apparent Power

   b) A sinusoidal alternating current of frequency 25Hz has a maximum value of 100A. How   **6M**
       long it will take for the current to attain value 20A & 50A.

<div align="center">OR</div>

   b) Find the resultant of the following signals given   **6M**
       $E1 = 25 \sin \omega t$
       $E2 = 10 \sin (\omega t + \Pi/6)$
       $E3 = 30 \cos \omega t$
       $E4 = 20 \sin (\omega t - \Pi/4)$. Draw all phasors.

Q.4.

   a) Explain Resonance in series RLC circuit.   **6M**

   b) Three identical resistances are connected in delta to a 3-Phase supply of 400V. The line   **6M**
       current is 34.65A and the total power taken from the supply is 14.4kW. Calculate the
       resistance and reactance values of each impedance.

Q.5.

   a) Discuss similarities & dissimilarities in Electrical & Magnetic circuits.   **6M**

   b) A coil of 450 turns is uniformly wound around a ring of an iron alloy of mean   **6M**
       circumference of 100cm & cross-sectional area 1.025cm^2 When a current of 0.5A is
       linearly reduced to zero in 0.01sec, the emf induced in coil is 2V. Find Relative
       permeability of the iron alloy & the inductance of coil.

Q.6.

   a) Derive the EMF equation of Transformer.   **6M**

   b) Calculate the capacitance and energy stored in a parallel plate capacitor which consists of   **6M**
       two metal plates, each 60cm^2 separated by a dielectric of 1.5mm thickness and of $\varepsilon_r = 3.5$ if
       a potential difference of 1000V is applied across it.

       Given: $\varepsilon_0 = 8.854 * 10^{-12}$ F/m.

<div align="center">-------------END OF PAPER-------------</div>

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M. Tech. (Mechanical / Production)   **Semester:** I

Subject and Code: Processing of Advanced Materials [MMF104I]   **Marks:** 60

Date: 09 / 05 / 2018   **Time:** 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.

Q. 1. What Composite? Classify the Composite material along with example? Explain **(12M)** advantages, disadvantages and application in detail?

Q. 2. What are traditional and nontraditional machining methods used for machining **(12M)** of composite material such as MMC, GFRP in detail?

Q. 3. Write short note **(12M)**
   a) Fabrication of composite
   b) Processing of ceramics

Q. 4. Why it is called as nonferrous alloy? Compare ferrous and non ferrous alloys. Give the advantage of nonferrous alloys and their properties and application in details. **(12M)**

Q. 5 a) What are methods used for Processing of Polymers? **(06M)**
     b) Explain with neat sketch working and principle of EDM. **(06M)**

Q. 6 a) Explain Recent trends and future prospects in high speed Machining. **(06M)**
     b) Explain in details application of nontraditional machining. **(06M)**

----- **END OF PAPER** -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M. Tech. (Mechanical / Production)   **Semester:** I

Subject and Code: Processing of Advanced Materials [MMF104I]   **Marks:** 60

Date: 09 / 05 / 2018   **Time:** 3 Hrs.

==

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
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Q. 1. What Composite? Classify the Composite material along with example? Explain **(12M)** advantages, disadvantages and application in detail?

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b) Explain with neat sketch working and principle of EDM. **(06M)**

Q. 6 a) Explain Recent trends and future prospects in high speed Machining. **(06M)**
b) Explain in details application of nontraditional machining. **(06M)**

----- **END OF PAPER** -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: B. Tech **Semester: I**

Subject:-Basic Computer Programming [ICT106] **Marks: 60**

Date: 08 / 05 / 2018 **Time: 3 Hrs.**

Instructions to the Students:

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q.No.1 a) Explain Error checking and Debugging of program. **(06)**

b) Explain in detail Arithmetic, Relational and Logical operators in C. **(06)**

Q.No.2 Attempt any two of the following: **(12)**

a) Why Compiling is important in C programming? How to compile Program?

b) What is Conditional Expressions? How it is used in C?

c) Write short note on both.

    i) Flowchart
    ii) Data Types in C

Q.No.3 a) Write difference between While loop, Do While loop and For loop. **(06)**

b) Suppose new generation of transport Bus (root Mumbai to Kolhapur) has no conductor in it, and there is machine at the door of bus has functionality for ticket booking, in that there are four options which indicates Stops of journey like 1-Panvel, 2 -Pune, 3-Satara, 4-Kolhapur. Passenger have to enter appropriate choice, if no option chosen then it will consider Kolhapur as default and book Ticket Accordingly.
Write a program to develop such functionality. **(06)**

Q.No.4 a) Define following terms with proper example. **(06)**

    i) Static Variables   ii) Register Variables   iii) Function

Q.No.4 b) What will be the output if you will compile and execute the following code?
Choose correct option from given bellow and justify your answer. **(06)**

    i)
```
void main(){
int i=10;
static int x=i;
if(x==i)
        printf("Equal");
```

```
        else if(x>i)
                printf("Greater than");
        else
                printf("Less than");
        }
```

(A) Equal   **(B) Greater than**   **(C) Less than** **(D) Compiler error**   **(E) None of above**

ii)   `void start();`
        `void end();`
        `#pragma startup start`
        `#pragma exit end`
        `int static i;`
        `void main(){`
                `printf("\nmain function: %d",++i);`
        `}`
        `void start(){`
                `clrscr();`
                `printf("\nstart function: %d",++i);`
        `}`
        `void end(){`
                `printf("\nend function: %d",++i);`
                `getch();`
        `}`

(A) main function: 2	(B) start function: 1	(C) main function: 2	(D) Compiler error
start function: 1	main function: 2	end function: 3	
end function: 3	end function: 3	start function: 1	(E) None of these

Q.No.5 a) Why do we use Arrays in C? What is Multidimensional Array?   **(06)**

b) What is Command Line Argument? How to use command line argument explain with any program.   **(06)**

Q.No.6 Attempt any two of the following: **(12)**

a) What is structures? How to create structures? How to declare structure variable? How to initialize structure members? What is an array of structure?

b) What happen if Standard Library is not present in C? Explain any Two Headers in Standard Library.

c) Write a program to identify, number entered by user is EVEN or ODD.

--END--

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: B. Arch (First Year Architecture)   Semester: I

Subject: Environmental Science-I (Focus on built form)   Marks: 60

Subject Code: AR1010005

Date: 08 / 05 / 2018   Time: 3 Hrs.

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Instructions: 1. All Questions are compulsory.
                   2. Draw sketches wherever necessary

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Q. No. 1   Answer the following: (LONG ANSWER QUESTION)   (15 Marks)

   A)   Explain typical features of hot and dry climate. Describe measures of shelter design to be considered for hot and dry climate with the help of sketches.

Q. No. 2   Attempt any ONE of the following: (LONG ANSWER QUESTION)   (15 Marks)

   A)   Enlist different types of shading devices. what are the factors affecting its design.

   B)   What are the functions of ventilation and explain cross ventilation in detail.

Q. No. 3   Attempt any FOUR of the following: (SHORT ANSWER QUESTION)   (20 Marks)

   A)   What is day lighting. briefly explain the day lighting factor.

   B)   What are the factors of climate on which human thermal comfort depends?

   C)   Describe thermal insulation in building envelope.

   D)   Define stack ventilation technique.

   E)   Explain Sun path diagram with neat sketch.

   F)   Describe the Effect of landscaping.

Q. No. 4   Answer the following: (5 x 2 = 10 Marks)
             (Single Line Answer / Objective Types Questions)

   A)   Micro climate.

   B)   Dry bulb temperature.

   C)   Convective cooling.

   D)   Relative humidity.

   E)   Components of Psychrometric chart.

   F)   Enlist names of tropical climates.

   G)   Draw a detailed sketch for human body heat exchange with environment.

----- **END OF PAPER** -----
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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: B. Tech.
Subject with Subject Code: Basic Civil Engineering [CV105]
Date: 08 / 05 / 2018

Semester: I
Marks: 60
Time: 3 Hrs.

Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. No. 1 Solve any three of the following:

(a)	State and discuss the basic role of Civil Engineer in any type of construction work.	[4]
(b)	What are the various requirements of good building stone?	[4]
(c)	Draw a neat sketch of conventional brick and label it.	[4]
(d)	What are the process of manufacturing of cement? Explain Wet process.	[4]

Q. No. 2 Solve any three of the following:

(a)	Define Foundation and explain the functions of foundation.	[4]
(b)	Define: i) Roof ii) Stairs iii) Door iv) Lintel	[4]
(c)	Define bearing capacity of soil. What are the measures to be taken for increasing bearing capacity of soil.	[4]
(d)	Draw a cross section of a wall showing the components of the building.	[4]

Q. No. 3 Solve any three of the following:

(a)	Define building. Explain site selection for residential building.	[4]
(b)	State the necessity of building bye laws.	[4]
(c)	Write use and properties of distemper.	[4]
(d)	Enlist various types of plan and explain Building plan.	[4]

Q. No. 4 Solve any three of the following:

(a) Define Surveying. What are the application of surveying. **[4]**

(b) Differentiate between Plane surveying and Geodetic surveying. **[4]**

(c) Give any two practical application for each of the following. **[4]**
   i) G.I.S.
   ii) G.P.S.

(d) Define change point. Explain the necessity of change point. **[4]**

Q. No. 5 Solve any three of the following:

(a) Draw the cross section of road in embankment. **[4]**

(b) State the role of Indian railway in national development. **[4]**

(c) Explain airways or aviation. **[4]**

(d) Explain the classification of roads according to traffic and according to tonnage. **[4]**

Q. No. 6 Solve any three of the following:

(a) Define dam. State its purposes. **[4]**

(b) Explain the importance of rainwater harvesting. **[4]**

(c) What are the different control measures of air pollution? **[4]**

(d) Explain necessity of irrigation and benefits of irrigation. **[4]**

———— END OF PAPER ——

Dr. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester (Regular) Examination – May – 2018

Branch: B. Arch (First Year Architecture)   **Semester: II**

Subject: Building Construction Technology and Materials-2   **Marks: 50**

Subject Code: AR1020003

Date: 08 / 05 / 2018   **Time: 3 Hrs.**

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Instructions: 1. All Questions are compulsory.
               2. Do not erase construction lines.
               3. Draw neat sketches wherever necessary.

==

Q. No. 1   **Solve any TWO of the following:**   (10 Marks)

     A)   Describe any two types of glass and describe their manufacture.   (5 Marks)

     B)   For which elements is Aluminum used in building industry?   (5 Marks)

     C)   What are the different ways of joining the Structural steel sections?   (5 Marks)

OR

Q. No. 1   **Solve any TWO of the following:**   (10 Marks)

     A)   What is method of mixing concrete manually (not using mechanical concrete mixers)?   (5 Marks)

     B)   What are "Common M S Round Rebars", "Cold Twisted Rebars (TOR)" and Thermo Mechanically treated Rebars (TMT)"?   (5 Marks)

     C)   What are the properties of aluminum?   (5 Marks)

Q. No. 2   **Attempt any ONE of the following:**   (20 Marks)

     A)   i) What are the commonly used PVC products in building industry?   (5 Marks)

           ii) Why is important to maintain Water-Cement ratio when mixing concrete?   (5 Marks)

           iii) Explain with a neat sketch various Structural sections used in building industry. What is the IS nomenclature used to describe Beams, Channels, Tees, Angles, etc.   (10 Marks)

OR

     B)   i) Describe test to determine crushing strength of concrete.   (5 Marks)

           ii) What are the different families of polymers used in building industry?   (5 Marks)

           iii) What are the different proportions of cement & fine aggregate used in making mortar? Where are they used?   (10 Marks)

Q. No. 3   **Attempt any ONE of the following:**   (20 Marks)

     A)   i) Why is wall cladding done? Draw a neat well annotated sketch showing stone cladding on brick wall.   (10 Marks)

           ii) Draw a neat well annotated sketch of cavity wall. Explain in about 10 lines advantages of using cavity wall over solid walls.   (10 Marks)

OR

B)   i) Why do we use composite walls? Draw a neat well annotated sketch showing composite wall with stone facing & brick backing.   **(10 Marks)**

     ii) Draw a neat well annotated sketch section through an external wall showing details from foundation to roof level.   **(10 Marks)**

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: B. Tech.   **Semester:** I

Subject with Subject Code: Basic Electronics Engineering   **Marks:** 60
                                      (EXE105)

Date: 07 / 05 /2018   **Time:** 3 Hrs.

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Instructions:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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Q. 1. Answer the following: (12)
   a) Explain with neat sketch ionic bond and covalent bond.
   b) Explain the energy band structure of metals, semiconductors and insulators with neat sketch.

Q. 2. Answer the following: (12)
   a) Explain the effect of the impurity concentration on Fermi level in n-type and p-type semiconductor with neat sketch.
   b) Explain the zener breakdown and avalanche breakdown with neat sketch.

Q. 3. Answer the following: (12)
   a) The intrinsic carrier concentration in Ge at room temperature is $n_i = 2.5 \times 10^{19}/m^3$ and that of Si is $n_i = 1.5 \times 10^{16}/m^3$. If doping level in both types of materials are the same to the extent of $N_D = N_A = 10^{21}/m^3$. Find the build in voltage.
   b) Explain the common base configuration of the transistor with input and output characteristics with neat sketch.

Q. 4. Answer the following: (12)
   a) Explain the different types of the resistors with neat sketches.
   b) What distance apart should the two plates each of area 0.2 m × 0.1 m of a parallel plate air capacitor be placed in order to have the same capacitance as a spherical conductor of radius 0.5m?

Q. 5. Answer the following: (12)
   a) Explain the different types of the frequency metes.
   b) Explain the construction and operation of LVDT with neat sketch.

Q. 6. Answer the following: (12)
   a) Perform the following binary divisions i) 11011 ÷ 100, ii) 1110011 ÷101, iii) 1100010 ÷ 111
   b) Subtract using 2's complement i) $(+1020)_{10} - (-1017)_{10}$ ii) $(4F.B)_{16} - (29.A)_{16}$

------ **END OF PAPER** ------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: B. Tech.   Semester: I

Subject with Subject Code: Energy and Environmental Engineering   Marks: 60
(CHE106)

Date: 07 / 05 / 2018   Time: 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram, etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1. Solve any Two of the following: (6×2=12)

(a) How is energy released from Uranium atoms? Explain with a neat sketch how the nuclear power plant generates electricity. Label all the major parts of the plant and their functions.

(b) What are the fossil fuels used for generation of conventional power? List the auxiliary equipment's of Diesel engine power plants and state any five advantages of diesel engine power plants

(c) What are the Mini and Micro Hydro power plants. Compare the Hydroelectric plants with the diesel power plant in respect of site requirement, initial cost, fuel transportation, reliability, operating cost, simplicity and cleanliness.

Q. 2. Solve any Two of the following: (6×2=12)

(a) What are the most favourable sites for installing wind turbines? What range of wind speed is considered favourable for wind power generation? Explain briefly about the functioning of horizontal wind mills with neat sketch?

(b) Explain mechanism of photoconduction in a PV cell with a simple sketch? State at least four limitations of solar energy.

(c) Describe the basic principle of operation of an MHD generator. Enumerate any three major advantages and limitations of MHD generating plant?

Q. 3. Attempt the following: (6×2=12)

(a) Define energy conservation and energy efficiency. How these two terms are different? Discuss the various benefits derived from energy conservation.

(b) What are the energy conservation opportunities available in industry? Briefly explain. How the energy is saved while using electric motor?

Q. 4. Attempt the following: (6×2=12)

(a) What are some sources of air pollution in developing areas? What is particulate matter? What are the control measures to be taken to minimize the air pollution in respect of particulate matter?

(b) What is noise pollution? What are the effects of noise pollution on children's health? Enlist the engineering as well as legislative approach of curbing the noise pollution.

Q. 5. Solve the following. (6×2=12)

(a) What are the objectives of water conservation? What is watershed? What are its characteristics? Explain.

(b) What are the six criteria pollutants in the original clean air act? Why are they chosen? What is marble cancer? How is Taj Mahal turning yellow?

Q. 6. Solve the following: (6×2=12)

(a) Define and discuss the salient features of Air pollution prevention and control act 1981.

(b) Give a broad classification of water pollutants. What are the causes of water pollution in cities and that of villages?

----- **END OF PAPER** -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: B. Arch (First Year Architecture)   **Semester: I**

Subject: Building construction Technology & Materials-I   **Marks: 50**

Subject Code: AR1010003

Date: 07 / 05 / 2018   **Time: 2 Hrs.**

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Instructions:
1. All Questions are compulsory.
2. Do not erase construction lines.
3. Solve all questions on drawing sheets.

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Q. No. 1 Solve any TWO of the following: (10 Marks)

A) What is bearing capacity of soil?

B) State the uses of lime in construction.

C) Define lintel and mention the materials commonly used to construct it.

OR

Q. No. 1 Explain manufacturing process of cement (any one) and uses with   (10 Marks)
Water cement ratio.

Q. No. 2 Attempt any ONE of the following: (20 Marks)

A) Draw Plan, and isometric view with three successive courses of 1 and ½ bk thk wall in English bond. (1:100)

B) Draw plan and isometric view of one & half external and one bk.thk.internal wall in T junction. (1:100)

Q. No. 3 Attempt any ONE of the following: (20 Marks)

A) Draw a detail section and plan of Load bearing foundation showing all its important nomainclature.

Thickness of bk.wall is 350-mm and depth of foundation 1.65 m below the ground.(1:10)

B) Draw plan and isometric view of 2 bk thk pier in English bond, with coping details.(1:100)

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, MAY – 2018

Branch: M. Arch. (General)   Semester: I

Subject with Subject Code: Tall Building (Elective – I)   Marks: 80
MAR10100005

Date: 07 / 05 / 2018   Time: 3 Hrs.

Instructions: 1] Questions No. 1 is compulsory and Attempt any FOUR from Question No. 2 to Question No. 6.
2] Figures / structures to the right indicate full marks.
3] Assume suitable data, if necessary.
4] Neat diagrams must be drawn wherever necessary.

Q. No. 1 Answer the following Questions: [20]

a] What are tuned mass dampers? How are they used in tall buildings?

b] List out the loads that a tall building can be subjected to.

c] List out the loads that the façade of a tall building can be subjected to.

d] Why are refuge floors provided in tall buildings?

Attempt any FOUR of the following. (Long Questions)

Q. No. 2 Describe the various structural systems used to design tall buildings.   [15]

Q. No. 3 What criterion is used to decide the number of lifts and their location in tall buildings?   [15]

Q. No. 4 Describe the foundation systems on a tall building.   [15]

Q. No. 5 Describe the various materials used to create a façade and its supporting systems for tall   [15]
buildings.

Q. No. 6 Describe the methods used to improve the fire resistance of tall buildings.   [15]

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: M.Tech. (SE)   Semester: I

Subject with Subject Code: **Advanced Prestressed Concrete**   Marks: 60
                                    CVSE-E2/01
Date: 07 / 05 /2018   Time: 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Use of IS: 1343, IS: 3370 and IS: 784 are permitted.

                                                                (Marks)

Q.1. (a) Discuss in brief the different forms of Prestressing Steel.   **(06)**
          OR
   (a) Explain load balancing concept applied to analyse basic behaviour of prestressed concrete.
                                                                (06)

(b) A concrete beam of dimension 100 mm × 300 mm is post-tensioned with 5 straight wires of 7 mm diameter. The average prestress after short-term losses is $0.7f_{pk} = 1200$ N/mm² and the age of loading is given as 28 days. Given that $E_p = 200 \times 10^3$ MPa, $E_c = 35000$ MPa, find out the losses of prestress due to creep, shrinkage and relaxation. Neglect the weight of the beam in the computation of the stresses.   **(06)**
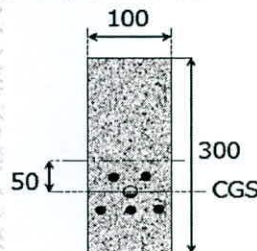
**Q.2. (a)** Write a short note on anchorage zone with evenly distributed forces using Guyon's approach.
                                                                (06)

(b) Explain: Bursting tensile stresses in the anchorage zones of bonded, post tensioned members.
                                                                (06)

Q.3.

(a) A rectangular beam 400 x 600 mm has a span of 6 m and is subjected to an udl of 16 kN/m including the self weight. The prestressing tendons which are located along the longitudinal centroidal axis provide an effective prestressing force of 96 kN. Determine the extreme fibre stresses in concrete at the mid span section. **(06)**

(b) For a two span continuous prestressed concrete beam obtain a concordant cable profile. Each span is 15m in length. An udl of 20kN/m is acting on the entire first span. The second span carries a point load of 200kN at its centre. **(06)**

Q.4.

The mid-span section of a composite beam is shown in the figure. The precast web 300 mm × 920 mm (depth) is post-tensioned with an initial force (P_0) of 2450 kN. The effective prestress (P_e) is estimated as 2150 kN. Moment due to the self weight of the precast web (MSW) is 270 kNm at mid-span. After the web is erected in place, the top slab of 150 mm × 920 mm (width) is casted (unpropped) producing a moment (MCIP) of 135 kNm. After the slab concrete has hardened, the composite section is to carry a maximum live load moment (MLL) of 720 kNm. Compute stresses in the section at various stages. **(12)**
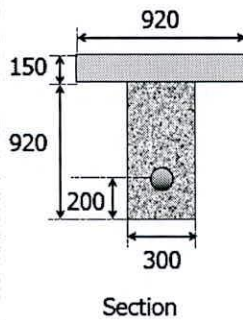
Section

Q.5.

The section shown is designed as a Type 1 member with MT = 435 kNm (including an estimated MSW = 55 kNm). The height of the beam is restricted to 920 mm. The prestress at transfer f_{p0} = 1035 N/mm^2 and the prestress at service f_{pe} = 860 N/mm^2. Based on the grade of concrete, the allowable compressive stresses are 12.5 N/mm^2 at transfer and 11.0 N/mm^2 at service. The properties of the prestressing strands are given below.

  Type of prestressing tendon : 7 - wire strand
  Nominal diameter = 12.8 mm
  Nominal area = 99.3 mm^2

For the section, find the acceptable zone by Magnel's graphical method. Compare the designed values of eccentricity (e) and the inverse of prestressing force at transfer (1/P_0) with the acceptable zone. **(12)**

(10) 7-wire strands with P_0 = 994 kN
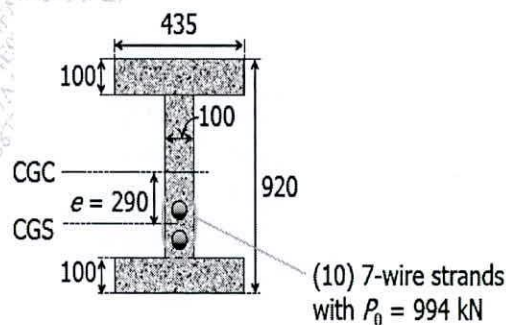
OR

Q. 5 Design a non-cylinder pre-stressed pipe for the following specifications: R = 300 mm, p = 1.05 MPa, f_i = 1000 MPa, f_e = 800 MPa, f_{ct} = -14 MPa, f_{cw} = - 0.7 MPa, E_s = 2.1×10^5 MPa, E_c = 0.35×10^5 MPa and 2.5 mm wires are used. And what would be the internal pressure 'p' required to balance the pre-stress at transfer before losses to maintain a stress of -0.7 in concrete?

(12)

Q.6. Explain any **three** from the following: **(4 x 3 = 12)**
   (a) Corrosion of Prestressing steel
   (b) Grouting of Post Tensioned Tendons
   (c) Different types of shear failures in prestressed concrete beams.
   (d) Concrete Crushing at End Anchorages.

End of Paper

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M. Tech. (Manufacturing Engineering)   **Semester:** I

Subject with Subject Code: CNC Technology   **Marks:** 60
                                       (MMF102)

Date: 07 / 05 / 2018   **Time:** 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1. Attempt following questions. (12)
    a) Explain with neat sketch Open loop and close loop Control System and explain the purpose of Feedback in CNC.
    b) Write Short note on 'Back Emf type Serve motor'.

Q. 2. Attempt following questions. (12)
    a) Why Reciprocating Ball Screw are used in CNC machine over conventional machine lead screw?
    b) Explain with neat sketch different types of slide ways used in advance CNC machines.

Q. 3. Write short notes on (12)
    a) Interpolator   b) Circular Interpolation
    c) Linear Interpolation   d) Point-to-point Control

Q. 4. Attempt following questions. (12)
    a) Write short note on 'Automatic Tool Changer'.
   b) Write a short note on Turret punch press and its advance features.

Q. 5. Attempt following questions. (12)
    a) What is the part programming? Describe the general form of program with example.
    b) Explain relative advantages and limitations of various types of drives used for CNC machines.
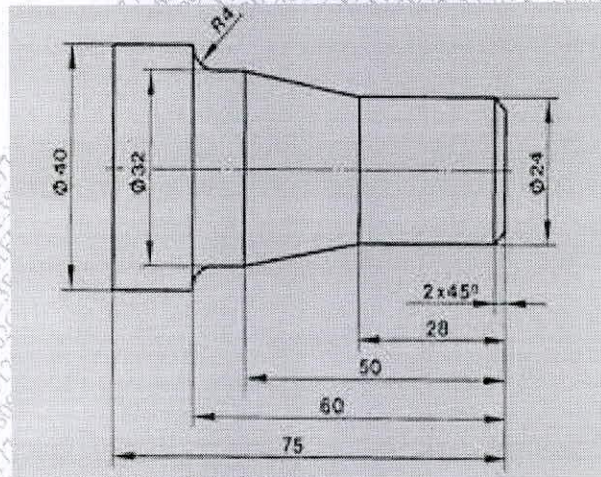
Q. 6. Attempt following questions.   (12)

a) Write an NC program to machine the aluminum part shown in figure. A 50mm diameter blank, 65mm long, is to be used
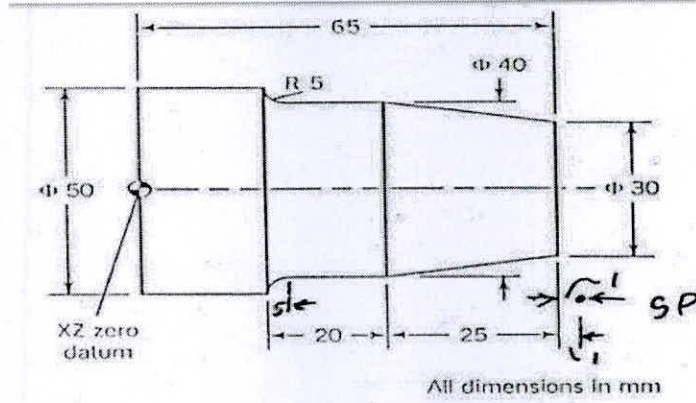
b) Write an NC program to machine the aluminum part shown in figure. A 40mm diameter blank, 75mm long, is to be used.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M. Tech. (Electrical Power System)   Semester: I
Subject with Subject Code: Power Quality Assessment and Mitigation   Marks: 60
[MTEPS105]
Date: 07 / 05 / 2018.   Time: 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1. a) Define the term power quality. Explain the need for power quality study.   **[6]**
b) Define grounding. Discuss on typical grounding problems.   **[6]**

Q. 2. a) Explain various causes of voltage flicker and their effects on power system.   **[6]**
OR
a) Define voltage regulation. Discuss reactive power management in a power system network.   **[6]**
b) Enlist different sources of transient overvoltage. Explain method limiting overvoltage with capacitor switching on utility system.   **[6]**

Q. 3. a) Differentiate clearly between voltage sag and interruption. Explain economic impact of voltage sag on system network.   **[6]**
b) Briefly explain principle of protection to reduce severity of voltage sags.   **[6]**

Q. 4. a) Enlist various harmonic indices. Explain THD.   **[6]**
b) Briefly explain various sources of harmonics in power system network.   **[6]**
OR
b) Enlist methods of harmonics mitigation. Explain passive filter method.   **[6]**

Q. 5. a) Explain power quality monitoring? Discuss its objectives.   **[6]**
b) Enlist different power quality monitoring equipment. Discuss on how to select power quality monitoring locations.   **[6]**

Q. 6. a) Enlist different power quality measuring instruments. With neat sketch explain the features of hand held oscilloscope used for PQ measurement.   **[6]**
b) With neat figure explain online power quality data assessment.   **[6]**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M.Tech. (CS / CS&IT / CE / CSE)   **Semester: I**

Subject with Subject Code: Artificial Intelligence and   **Marks: 60**
                            Knowledge Reasoning [MTCE1105]

Date: 07 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1. What is knowledge representation and reasoning explain with example?   **(12)**

Q. 2. Assume following facts: convert the following axioms into clauses & answer the   **(12)**
question using Resolution: "what food does Ana eat"?
    (a) Mary likes all kinds of food.
    (b) Pizza is a food.
    (c) Apple is food.
    (d) Anything anyone eat is food.
    (e) Ana eats everything Mary eats.

Q. 3. Illustrate Script Applier Mechanism (SAM).   **(12)**

Q. 4. A) What is Description Logic?
    B) Explain Structure Matching and its algorithm.   **(12)**

Q. 5. Explain reasoning in multi-agent system   **(12)**

Q. 6. A) Write a Note on   **(12)**
        i) Axiomatic System
        ii) Recourse Description Framework
        iii) Semantic Net

    B) Explain Conceptual Dependency Theory.

----- END OF PAPER -----

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M. Tech. Electrical (Electrical Power System)   **Semester:** I

Subject with Subject Code: High Voltage Power Transmission   **Marks:** 60
[MTEPS104 -1]

Date: 05 / 05 / 2018   **Time:** 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1 What do you mean by reactive power compensation? Why reactive power compensation necessary in HV transmission? Explain with neat diagram different methods of reactive power compensation. **(12)**

Q. 2 What do you mean by travelling wave on transmission line? What are the specifications of travelling waves? Derive the expression for surge impedance and wave velocity. **(12)**

Q. 3 What are the causes of high electric field generation on transmission line? What is the safe value of this electric field? Explain the various biological effects of this electric field in detail. **(12)**

Q. 4 Sketch and explain the configuration of three phase six pulse bridge converter. Draw the voltage and current waveforms. Explain the effect of delay angle and phase control in six pulse bridge converter. **(12)**

Q. 5 What is the necessity of reversal of power flow in HVDC? Explain the method of reversal of power flow in HVDC system. **(12)**

OR

Q. 5 Discuss configuration and types of multi-terminal HVDC system. **(12)**

Q. 6 What are the faults and abnormal conditions occurs in bipolar HVDC system. Explain the fault clearing and reenergizing methods in HVDC system. **(12)**

OR

Q. 6 What do you mean by hierarchical level of control in HDVC system. Draw a schematic diagram and explain control of each unit of HVDC system. **(12)**

****** @@@@@ *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103
Summer Semester Supplementary Examination, May – 2018

Branch: M. Tech. (MEP/ME/MPE/Production)   Semester: I

Subject with Subject Code: Theory of Machining (MMF101)   Marks: 60

Date: 05 / 05 / 2018   Time: 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram, etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

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Q.1.   Solve any Two of the following: (6×2=12)

(a) In a slab milling operation the length of the workpiece is 150 mm, its width is 50 mm, and a layer of 10 mm in thickness is to be removed from its upper surface. The diameter of the cutter is 40 mm and it has 10 teeth. The workpiece is of medium carbon steel, the feed speed selected is 2 mm/sec and the cutter speed is 2.5 rps. Estimate the power required in kW and the machining time for the operation. Assume Ps = 5 GJ/m3.

(b) What are the types of chips formed during machining? Write the machining conditions under which these chips are produced. Explain the formation of built up-edge while machining. What are the detrimental effects of built up-edge?

(c) Derive the expression of cutting strain in machining. Explain the possible disadvantages of a machining operation if a discontinuous chip is produced.

Q.2. Solve any Two of the following: (6×2=12)

(a) How the cutting forces are measured using strain gauge based dynamometer? During machining of C-25 Steel with 0-10-6-6-8-90-1 mm ORS shaped triple carbide cutting tool, the following observations have been made:
Depth of cut: 2 mm, feed: 0.2 mm/rev, speed: 200 m/min, tangential cutting force: 1600 N, Feed thrust force: 850 N, Chip thickness: 0.39 mm.
Calculate Shear force, Normal force at shear plane, Friction force, Kinematic coefficient of friction, and Specific cutting energy.

(b) What are the various methods of measurement of machining temperature?. Describe any one of them with a neat sketch.

(c) Define surface integrity. Discuss any two surface alterations that are observed after turning of the workpiece with a free hand schematics.

Q.3. Attempt the following: (6×2=12)
(a) Can high-speed machining be performed without the use of cutting fluids? Explain. What are the advantages and disadvantages of dry machining?

(b) Using the Taylor equation for tool wear and letting n =0.3, calculate the percentage increase in tool life if the cutting speed is reduced by (a) 30% and (b) 60%.

Q.4. Attempt any one of the following: (12×1=12)

(a) Derive the expression for cutting speed that gives minimum production cost. Write the suitable assumptions and define the terms used in the expression.

(b) Discuss how the choice of feed rate influences the economics of machining process.
In an attempt to appraise the cost-cutting speed relationship, the following three tests were conducted:

Test 1 V_1=120 m/min C_p = 2.25
Test 2 V_2=150 m/min C_p = 1.80
Test 3 V_3=180 m/min C_p = 2.00

Assuming a parabolic relationship, write an equation that describes the operation between the given points.

Q.5. Solve any two of the following. (6×2=12)

(a) Explain the micro-milling analogy of the grinding process. Show with a suitable diagram. Write the expression for geometric contact length in grinding operation.

(b) Explain the characteristics of Grinding process in terms of various interactions. Show with a necessary diagram.

(c) Describe the types of grinding wheel wear. Also draw a grinding wheel wear curve and show the appropriate zones.

Q.6. Solve any two of the following: (6×2=12)

(a) Estimate the cutting time and feed rate for removal of 2.0 mm from a flat of 15*30 mm from cutting steel equivalent to carbide grade, using Electro Chemical Grinding.

(b) Explain the working principle of abrasive flow machining, AFM with a neat sketch. What are the machine, media and workpiece related parameters of the process. Give any four applications of AFM.

(c) Briefly discuss the following:
    i) Unit event in surface integrity
    ii) Working principle of AWJM
    iii) Advantages of Laser Beam Machining

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Supplementary Semester Examinations – May – 2018

Branch: M.Tech. (Structural Engineering)   **Semester: I**

Subject with Subject Code:- Numerical Methods CVSE-E1/02   **Marks: 60**

Date:- May 05, 2018   **Time: 3 Hrs.**

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.
5. Show all computations up to the fourth place of decimal.

Q1	(a) Write a short note on the different representations of numbers in different bases.	4
	(b) The numerical representation in the octal number system for a certain number is 435.231. However, in a certain computer, the limitation for storage of numbers is only upto the fourth place after the floating point. Find the percentage error incurred in the storage of the number.	4
	(c) Write short notes on (i) mantissa and (ii) exponent.	4

Q2   (a) Use the Gaussian Jordan method to solve the following system of equations.   4

$$3x + 5y + 4z + 5w = 17$$
$$7x + 2y - 3z + 8w = 14$$
$$3x + 8y - 2z - 2w = 7$$
$$5x + 7y - 3z - 3w = 6$$

     (b) What is the requirement of the Gauss Siedel method for convergence?   4

     (c) Explain the bisection method with a diagram. Explain the mathematical theory behind the method.   4

Q3   (a) Use the following data to create the Newton interpolant polynomial to determine the value of the interpolant at x= 1.   6

x	-5	-2	0	2	5
y	0.0385	0.2000	1.0000	0.2000	0.0385

     (b) Find the quadratic polynomial $y = ax^2 + bx + c$, which fits the following data, using the least squares method: 6

x	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
y	8.9708	8.4743	8.0494	8.2300	8.2635	8.5345	8.3241	9.0896	8.5293	8.8433	9.9670

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Q4   (a) Use the Simpson's $1/3^{rd}$ rule to compute the value of the following integral   6

$$\int_5^6 \frac{4x^3 + 14x}{x^4 + 7x^2 + 10} dx$$

.Use 6 segments for the calculation. Compute the percentage error with respect to the value obtained using classical methods.

(b) Use appropriate Gaussian Quadrature to solve the integral: 6

$$\int_0^\infty e^{-x^2} \left(\frac{3x^2 + 10x}{x^3 + 5x^2 - 6} \right) dx$$

Q5   (a) Solve the following differential equation with the Euler method: 6

$$\frac{dy}{dx} = xy^2 + x^2y + 1, \qquad y(x = 0) = 0.1$$

Find the value of y at x = 1. Use a step size of 0.1.

(b) Write a short note on the Wilson Theta method.   6

Q6   (a) Write a short note on eigen values and eigen vectors.   6

(b) Solve the boundary value problem using the shooting method: 6

$$\frac{d^2y}{dx^2} - 2y = 8x(9 - x)$$

with the boundary conditions $y(x = 0) = 0$, and $y(x = 1) = 0$. Use a step size of 0.25.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M. Tech. (CE/CS/CS&IT/CSE)   **Semester:** I
Subject with Subject Code: Cloud Computing (MTCE1104)   **Marks:** 60
Date: 05 / 05 / 2018   **Time:** 3 Hrs.

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Q. No. 1   Attempt the following: (12)

a)   Compare and contrast Cloud Computing services as per the Characteristics, Product Type and Vendors and Products.

b)   Define following terms:
(i) Platform as a Service,   (ii) Infrastructure as a service,   (iii) Hypervisor,
(iv) Virtualization,   (v) Cloud Computing,   (vi) Data Privacy

Q. No. 2   Attempt the following: (12)

a.)   What are the types of cloud service development? Explain with the help of an example of each.

b.)   Discuss classification or taxonomy of virtualization at different levels.

Q. No. 3   Attempt the following: (12)

a)   What do you mean of Cloud Disaster Recovery? Explain the fail-over and fail-back mechanism in cloud disaster recovery.

b)   What is MapReduce programming model? Also explain the overall flow of MapReduce program.

Q. No. 4   Attempt the following: (12)

a)   What is the security aspects provided with cloud? Explain the security laws which take care of the data in the cloud?

b)   What is the purpose of Secure Software Development Life Cycle (SecSDLC)? Explain the various phases of Secure Software Development Life Cycle.

Q. No. 5   Attempt the following: (12)

a)   How to build private cloud environment using Eucalyptus (An Open Source Software)? State various requirements for it.

b)   Explain full virtualization and paravirtualization with suitable example.

Q. No. 6   Attempt the following: (12)

a)   What is Open Nebula Cloud? Explain main components of Open Nebula.

b)   Compare and Contrast the *on-premise* deployment of an application i.e. **formfilling.dbatuapps.in** with the *cloud* deployment. Which will be preferable mode of deployment for the educational applications such as "Enrollment of students in University courses".

***** END OF PAPER *****

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Supplementary Semester Examination, May – 2018

Branch: B. Tech.

Semester: I

Subject with Subject Code: Engineering Chemistry (CHM103)

Marks: 60

Date: 04 / 05 / 2018

Time: 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

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Q. 1.

a) Explain in detail ion exchange method for softening of hard water. **(6 M)**

b) Explain the determination of hardness of water by EDTA method. **(6 M)**

Q. 2.

a) State Gibb's phase rule. Explain terms involved in it with examples. **(6 M)**

b) Explain phase diagram of two component Silver-lead alloy system. **(6 M)**

Q. 3.

a) What do you mean by concentration of ore. Explain magnetic separation and froth floatation method of ore dressing. **(6 M)**

b) What is smelting? Explain reduction of ore by pyrolysis process. **(6 M)**
OR
b) Explain occurrence and types of ore. **(6 M)**

Q. 4.

a) How analysis of N and S in coal can be determined? **(6 M)**
OR
a) State characteristics of good fuel. **(6 M)**

b) Explain physical properties of lubricants. **(6 M)**

Q. 5.

a) Explain Haworth synthesis of Naphthalene. (4 M)

b) Explain physical and chemical properties of Pyridine. (4 M)

c) Write uses of Anthracene and Naphthalene. (4 M)

OR (4 M)

c) State Huckel's rule of aromaticity with different examples of aromatic compound.

Q.6.

a) Write a note on conductometric titration. (6 M)

b) What is transport number and how it can be determined by moving boundary method. (6 M)

OR

b) Explain asymmetric and electrophoretic effect of strong electrolyte as per Debye Huckel theory. (6 M)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402103.

Summer Supplementary Semester Examination, May 2018

Branch: F.Y. B. Tech.
Subject with Subject Code: Engineering Physics [PHY 103]
Date: 04 / 05 / 2018

Semester: I
Marks: 60
Time: 3 Hrs.

Instructions to the Students:
1. Each question carry 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagrams etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1 **Attempt the following.**

a) Which are the forces involved in Damped Oscillations? Obtain the differential equation of Damped Oscillations. **06**

b) Define Ultrasonic Waves. Write any two applications of Ultrasonics. **06**
Calculate the frequency of the fundamental note emitted by a piezoelectric crystal, using the following data.

Vibrating length = 3 mm
Young's Modulus = 8×10^{10} N/ m^2
Density of crystal = 2.5 gm/ cm^3

Q. 2 **Attempt any two of the following.**

a) In case of Newton's rings show that the radii of dark rings are proportional to the square root of natural numbers. **06**

b) What is polarising angle? Explain how plane polarized light can be produced by reflection. **06**

c) With a neat diagram explain construction and working of Ruby Laser. **06**

Q. 3 **Attempt the following.**

a) Explain Millikan's Oil Drop method for determination of charge on an electron. **06**

b) Obtain an expression for de-Broglie's wavelength of an electron. **06**
What is the de-Broglie's wavelength of an electron when accelerated through a p.d of 10,000 volts?

Q. 4 **Attempt the following.**

a) What is packing density? Calculate the packing density in SC, BCC, FCC lattices. **06**

OR

a) Derive the relation between crystal density 'ρ' and lattice parameter 'a'. **06**
A substance with FCC lattice has density 6250 kg/m3 and Molecular weight 60.2, calculate the lattice constant.

b) Explain continuous and characteristics X-ray spectrum with neat diagram. **06**

Q. 5 **Attempt the following.**

a) On the basis of dipole moments explain different types of magnetic materials. **06**

<div align="center">**OR**</div>

a) Prove Bohr magnetron $\mu_B = e\hbar/2m$ and find the magnetic moments of Fe, Mn. **06**

b) Derive an expression for conductivity of conducting materials interms of relaxation time. **06**

Q. 6 **Attempt any two of the following.**

a) Derive an expression for conductivity in intrinsic and extrinsic semiconductor. **06**
Calculate the conductivity of pure silicon at R.T. when the concentration of carriers is $1.5 \times 10^{16}/m^3$ and the mobilities of electrons and holes are 0.12 and 0.05 $cm^2/V\text{-}s$ respectively.

b) What is dielectric constant? Prove $\varepsilon_r = 1 + \chi$. **06**

c) Derive an expression for electromagnetic wave in free space and hence calculate the velocity of light in free space. **06**

<div align="center">##### @@@@ #####</div>

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: B. Arch (First Year Architecture)   **Semester: II**

Subject: Architectural Design II   **Marks: 60**

Subject Code: AR1020001

Date: 04 / 05 / 2018   **Time: 6 Hrs.**

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Instructions: 1. All Questions are compulsory.
2. Do not erase construction lines.
3. Solve all questions on drawing sheets.

Q – 1   (60 Marks)

Doctor's Residence in Nashik city.

A well-known Doctor (Surgeon) in the city has his own plot in exclusive locality of Nashik city and is planning to construct his Residence.

The Doctor is a highly educated, decent, soft spoken and shy person. His hobbies include watching Hollywood movies and music (he himself plays flute). His family consists of his wife and children (aged 7&10). The Doctor has a flourishing practice in Nashik.

The Doctor wants his Residence to be a space for relaxation with his family, after his daily busy schedule throughout the day in his Hospital. His special requirement is that he needs privacy in his bunglow from the adjoining development surrounding the plot. He needs calm and peaceful ambience in his bunglow.

Design requirements:

1. Entrance lobby..........5.0 sq.m
2. Living..........25.0 sq.m
3. Kitchen..........20.0 sq.m
4. Dining..........25.0 sq.m
5. Store..........3.0 sq.m
6. Puja..........5.0 sq.m
7. Toilet..........3.0 sq.m
8. Bedroom with attached toilet (3 nos.)..........15.0 sq.m each
9. Family seating..........25.0 sq.m
10. Adequate areas for parking, garden, utility and any exclusive requirement for luxury life is allowed.

Drawing requirements:
1. Sketches showing concept / thought process
2. Site plan (showing roof plan and landscaping).......1:100
3. Floor plan(s)..........1:50
4. Section (1 no.)........1:50
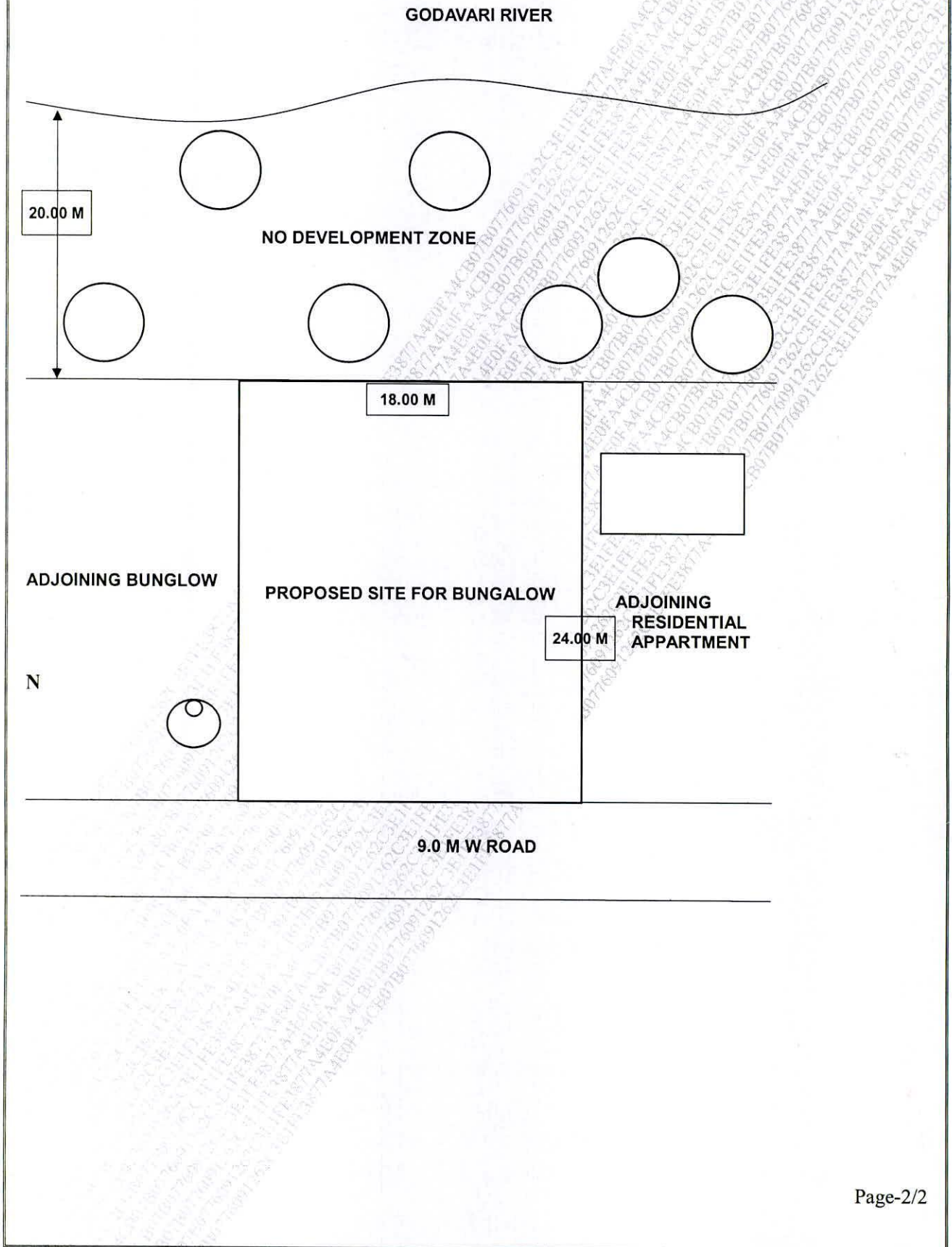5. Elevation (1 no.).........1:50

Students can present 3d sketch view or any specific details if necessary (These sketches are not compulsory)

Note: 1. Suitable rendering and neat drawings will carry 10 % marks

2. Tracings required for rough work on design should be submitted along with answer sheets.

- **PROPOSED SITE FOR DESIGN:**

GODAVARI RIVER

20.00 M

NO DEVELOPMENT ZONE

18.00 M

ADJOINING BUNGLOW

PROPOSED SITE FOR BUNGALOW

ADJOINING RESIDENTIAL APPARTMENT

N

24.00 M

9.0 M W ROAD

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M.Tech. Civil (Structural Engineering)   **Semester:** I

Subject with Subject Code: Structural Dynamics   **Marks:** 60
                               [CVSE103]

Date: 04 / 05 / 2018   **Time:** 3 Hrs.
==

Instructions to the Students:
    1. Each question carries 12 marks.
    2. Attempt any five questions of the following.
    3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
    4. If some part or parameter is noticed to be missing, you may appropriately assume it and should
       mention it clearly.

Q. 1. Derive an equation of motion for single degree of freedom system if it is subjected to
           external force.   **(12)**

Q. 2.
           a) Discuss and derive the Duhamel's integral approach to the solution of single degree
              of freedom system subjected to general type of loading   **(05)**

           b) Explain in brief the frequency response curve   **(07)**

Q. 3. Explain the following methods of dynamic analysis.   **(12)**
          a) Holzer's method

          b) stodola's method to find frequencies and mode shapes for multi degree freedom
             system

Q. 4. Derive expression for mode shapes and frequencies of a uniform cantilever beam and
          determine the first three frequencies and mode shapes.   **(12)**

Q. 5. Explain (i) Lumped mass model and (ii) Continuous mass model   **(12)**

Q. 6.   **(12)**
A block of mass 0.0650 kg is suspended from a spring having a stiffness of 50 N/m. The
block is displaced downwards from its equilibrium position through a distance of 50 mm and
released with an upward velocity of 50mm/s. Determine: (a) the natural frequency, (b) the
period of oscillation, (c) the maximum velocity, (d) the maximum acceleration and (e) the
phase angle.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103
Summer Semester Examination, May – 2018

Branch: M.Tech (CE / CSE / CS / CS&IT)　　　　　　　　**Semester:** I

Subject with Subject Code: Advanced Computer Networks　　**Marks:** 60
　　　　　　　　　　　　　[MTCE1103]

Date: 04 / 05 / 2018　　　　　　　　　　　　　　　　**Time:** 3 Hrs.
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Instructions to the Students
　　1. Each question carries 12 marks.
　　2. Attempt **any five** questions of the following.
　　3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
　　4. If some part or parameter is noticed to be missing, you may appropriately
　　　　assume it and should mention it clearly

==

Q. 1.

　　a) Explain TCP/IP reference model.　　　　　　　　　　　　　　　**(06)**

　　b) What is the need of DHCP? Explain the working of DHCPDISCOVER.　**(06)**

<div align="center">OR</div>

　　b) What are the key functions of X.25 and what limitation of X.25 is overcome
　　　　in Frame Raley.　　　　　　　　　　　　　　　　　　　　**(06)**

Q. 2.

　　a) Explain in detail SONET frame structure with its bit rate.　　　　**(06)**

　　b) Assume that a SONET receiver resynchronizes its clock whenever a 1 bit
　　　　appears; otherwise, the receiver samples the signal in the middle of what it
　　　　believes is the bit's time slot.

　　　　(i) What relative accuracy of the sender's and receiver's clocks is
　　　　　　required in order to receive correctly 48 zero bytes (one ATM cell's
　　　　　　worth) in a row?

　　　　(ii) Consider a forwarding station A on a SONET STS-1 line, receiving
　　　　　　frames from the downstream end B and retransmitting them upstream.
　　　　　　What relative accuracy of A's and B's clocks is required to keep A from
　　　　　　accumulating more than one extra frame per minute?　　　　**(06)**

<div align="center">OR</div>

b) A stream of data is being carried by STS-l frames. If the data rate of the stream is 49.540 Mbps, how many STS-l frames per second must let their H3 bytes carry data? **(06)**

Q. 3.

a) Explain the key nodes in the optical network. **(06)**

b) How Optical System was Evoluted. **(06)**

Q. 4.

a) Explain the basic components of fiber optic system. **(06)**

b) Explain the distribution of timing using SONET and DS1. **(06)**

Q. 5.

a) Differentiate CWDM with DWDM. **(06)**

b) Explain WDM networks elements. **(06)**

Q. 6.

a) How to protect point-to-point link in Optical Network. **(06)**

b) How does MPLS and GMPLS work. **(06)**

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE - RAIGAD - 402 103
Summer Supplementary Semester Examination, May – 2018

Branch: M. Tech (Manufacturing Engineering)   **Semester:** I
Subject with Subject Code: Advanced Joining Technology   **Marks:** 60
                         [MMF103]
Date: 04 / 05 / 2018   **Time:** 3 Hrs.

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Instructions:-

     i)   Attempt any 5 questions.
     ii)   There are total 6 questions.
     iii) Figures to the right indicate full marks.
     iv) Assume suitable data if necessary and mention it clearly.

==

Q. No. 1   Attempt the following.   (12)

   a)   In LASER welding, which gases are most commonly used as a basis of gaseous system? Elaborate with neat sketch the principle of operation of CO_2 laser and state most commonly delivered range of power.

   b)   What is the basic mechanism involved in Electron Beam Welding? Discuss the various parameters that affect the final beam spot size produced.

Q. No. 2   Attempt any THREE of the following.   (12)

   a)   Discuss in short common advantages and limitation of welding as a fabrication technique.

   b)   Describe the factors that affect the quality of welds produced in an ultrasonic welding process.

   c)   Explain in brief at least four industry segments having applications of welding techniques.

   d)   Explain with neat sketch the heat affected zone in a typical fusion welding process.

Q. No. 3   Attempt the following.   (12)

   a)   Explain the diffusion bonding process in detail with the help of suitable example.

   b)   Describe the principle of adhesive bonding. Enlist and discuss in short the factors that affect the strength and other mechanical properties of adhesive bonded joint.

Q. No. 4 Attempt any THREE of the following. (12)
- a) Discuss the factors commonly considered for selection of a welding process.
- b) Which are the various techniques of brazing? Explain any one of them in short.
- c) Discuss heat treatment of welded joints in brief.
- d) Write in short about weld design and surface preparation.

Q. No. 5 Attempt the following. (12)
- a) Which parameters should be considered while selecting a non-destructive technique for weld inspection? Justify your answer with proper reasons.
- b) What are different failures modes observed in welded joints? Discuss any two weld defects in detail.

Q. No. 6 Attempt any THREE of the following. (12)
- a) Discuss the residual stresses control process with respect to welded joints.
- b) Enlist different methods used for plastic welding. Elaborate the high frequency welding process.
- c) Discuss joining glass-ceramics and metals and alloys with respect to features and properties.
- d) Elaborate with neat sketch the mechanism involved in soldering.

------- **END OF PAPER** -------

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Supplementary Semester Examination, May – 2018

Branch: M. Tech. (Electrical Power System)   **Semester:** I

Subject with Subject Code: Renewable Energy Sources   **Marks:** 60
[MTEPS102]

Date: 04 / 05 / 2018   **Time:** 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1. a) Write Shorts notes on Energy Security.   (04)
   b) Write advantages and disadvantages of renewable energy Sources?   (04)
   c) Explain the concept of clean development mechanism (CDM)?   (04)

Q. 2. a) Draw and explain the impact of temperature and insolation on I-V curve?   (08)
   b) Define thin-film photovoltaic.   (04)

Q. 3. Attempt any one sub-question of the following.   (12)
   a) Discuss the advantages and disadvantages of horizontal and vertical axis windmill. What methods are used to overcome the fluctuating power generation of windmill?
   b) Write short notes on
   i) Darrius rotor   (04)
   ii) Tip speed ratio (TSR)   (04)
   iii) Wind energy storage   (04)

Q. 4. Attempt any ONE sub-question of the following.   (12)
   a) i) Describe the main types of turbines in brief, which may be used for geothermal energy conversion.   (08)
   ii) What are the advantages and disadvantages of geothermal energy forms?   (04)

   b) i) Write short notes on small head hydro power development.   (06)
   ii) What are the limitations of tidal power generation?   (06)

Q. 5. a) Explain the Solar-wind hybrid system with neat block diagram in detail.   (06)
   b) What are the factors affect to battery performances? Describe in detail.   (06)

Q. 6. a) What is the need for improvement of grid interface? Also explain methods of improvement of grid interface.   (08)
   b) Describe the issues of synchronization of renewable energy sources with grid.   (04)

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination, May – 2018

Branch: M.Tech. (Electrical Power System) **Semester:** I
Subject with Subject Code: Advance Power Electronics **Marks:** 60
[MTEPS103 / MTEE102]
Date: 03 / 05 / 2018 **Time:** 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1. a. Compare Transistor, MOSFET, IGBT.	**(06)**
b. Write a short note on SIT and MCT.	**(06)**
Q. 2. a. Explain three phase full converter with RL Load.	**(07)**
b. Write a short note Power Factor improvement techniques.	**(05)**
Q. 3. a. Explain buck boost converter.	**(08)**
b. Write a short note on non isolated DC to DC Converter.	**(04)**
Q. 4. a. Draw and Explain 180 degree mode operation of three phase inverter.	**(08)**
b. Write a short note on current source inverter.	**(04)**
Q. 5. a. Explain diode clamped Multilevel Inverter.	**(08)**
b. Write a short note on hybrid multi level inverter.	**(04)**
Q. 6. a. Write a short note on energy saving in AC and DC Drives.	**(06)**
b. Write a short note on photo voltaic array.	**(06)**

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY
LONERE – RAIGAD, 402103
Summer Semester Examination, May – 2018

Program: M. Tech. (CE /CS/CS&IT/CSE)   **Semester:** I

Subject with Subject Code: Introduction to Machine Learning   **Marks:** 60
                      [MTCE1102]

Date: 03 / 05 / 2018   **Time:** 3 Hrs.

Instructions to the Students:

1. Solve any Five Questions of the following

2. Illustrate your answers with neat sketches, diagrams, examples etc. wherever necessary.

3. Necessary data is given in the respective questions. If such data is not given, it means that the knowledge of that part is a part of examination.

4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. No.1 a) What is the difference between supervised and unsupervised machine learning?   (04)

     b) What's the trade-off between bias and variance?   (04)

     c) You are given a data set. The data set has missing values which spread along 1 standard deviation from the median. What percentage of data would remain unaffected? Why?   (04)

Q. No.2 a) How is KNN different from k-means clustering?   (04)

     b) Define Recall and Precision   (04)

     c) What cross-validation technique would you use on a time series dataset?   (04)

Q. No.3 a) You are given a data set on cancer detection. You've build a classification model and achieved an accuracy of 96%. Why shouldn't you be happy with your model performance? What can you do about it?   (06)

     b) Let us say you're running a company, and you want to develop learning algorithms to address each of two problems   (06)

Problem1: You have large inventory of identical items. You want to predict how many of these items will sell over the next 3 months.

Problem2: You'd like software to examine individual customer accounts, and for each account decide if it has been hacked / compromised.

Should you treat these as classification or as regression problems? Choose options from below and justify your answer.

     i)   Treat both as classification problems.

     ii)   Treat Problem 1 as a classification problem, Problem 2 as a regression Problem.

     iii)   Treat Problem 1 as a regression problem, Problem 2 as a classification Problem.

     iv)   Treat both as regression problems

Q. No.4 a) Considering the long list of machine learning algorithm, given a data set, how do you decide which one to use? (04)

b) A linear regression model is generally evaluated using Adjusted R^2 or F value. How would you evaluate a logistic regression model? (04)

c) How is a decision tree pruned? (04)

Q. No.5 a) How would you handle an imbalanced dataset? (04)

b) Of the following examples, which would you address using an *Unsupervised Learning* (06) Algorithm? Choose multiple options if applicable and justify your answer.

    i)   Given email labeled as spam /not spam, learn a spam filter

    ii)   Given a set of news articles found on the web, group them into set of articles about the same story

    iii)   Given Database of customer data, automatically discover market segment and group customers into different market segments.

    iv)   Given a dataset of patients diagnosed as either having diabetes or not, learn to classify new patients as having diabetes or not.

c) Name an example where ensemble techniques might be useful. (02)

Q. No. 6 Attempt any TWO of following: (12)

a) You have been asked to evaluate a regression model based on R^2, adjusted R^2 and tolerance. What will be your criteria?

b) What is differentiable threshold unit for multilayer networks?

c) In hierarchical clustering, how can we have locally adaptive distances? What are the advantages and disadvantages of this?

------ END ------

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Branch: M. Tech. (Structural Engineering)   **Semester: I**

Subject with Subject Code: Matrix Methods of Structural Analysis   **Marks: 60**

                 (CVSE 102)

Date: 03 / 05 / 2018   **Time: 3 Hrs.**

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Instructions to the Students

     1. Each question carries 12 marks.

     2. Attempt any five questions of the following.

     3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.

     4. If some part or parameter is noticed to be missing, you may appropriately assume it and should
        mention it clearly.

Q.1. Solve any one from Q. 1 (a) or (b) only.   **(12)**

     a) Analyse the cantilever beam as shown in the figure 1 using **Moment Area Method** and hence find the
        Slope and Deflection at the free end. Use *E = 210 GPa*. Also, draw the deflected shape of the structure.
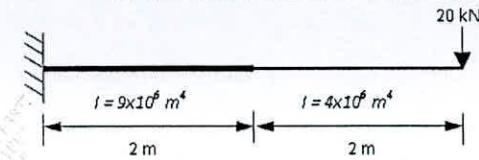
Figure No. 1

     b) Analyse the cantilever beam as shown in the figure 1 using **Conjugate Beam method** and hence find the
        Slope and Deflection at the free end. Use *E = 210 GPa*. Also, draw the deflected shape of the structure.

Q. 2. Solve any one from Q. 2 (a) or (b) only.   **(12)**

     a) Analyse the continuous beam as shown in figure 2 using **Direct Flexibility Method** and hence draw the
        BMD.
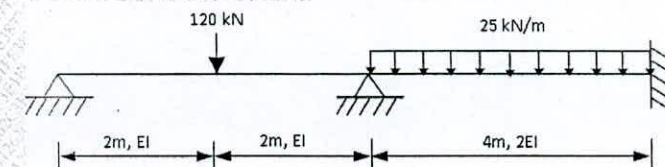
Figure No. 2

b) Analyse the rigid jointed frame as shown in figure 3 using **Direct Flexibility Method** and hence draw the BMD.
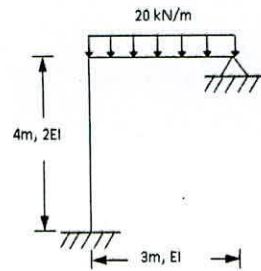
Figure No. 3

Q.3. Solve any one from Q. 3 (a) or (b) only. (12)

a) Analyse the rigid jointed frame as shown in figure 4 using **Direct Stiffness Method** and hence draw the BMD.
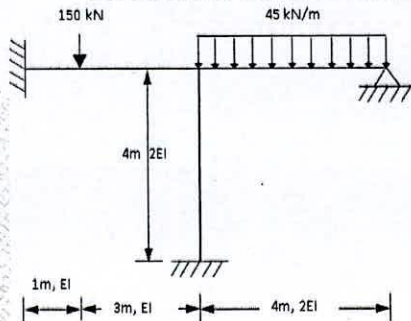
Figure No. 4

b) Analyse the pin jointed frame as shown in figure 5 using **Direct Stiffness Method** and find the forces in the members. Axial Stiffness = 60 kN/mm.
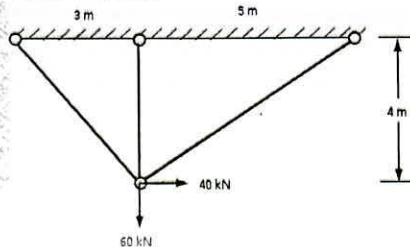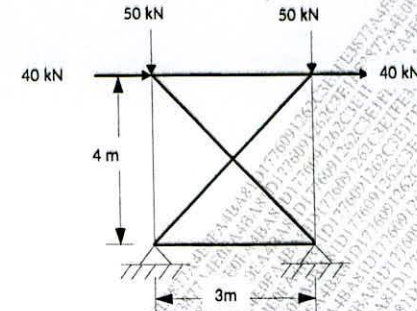

Figure No. 5

Q.4. Analyse the continuous beam as shown in figure 2 using **Generalised Flexibility Method** and draw the BMD. (12)

Q. 5. Analyse the pin jointed frame as shown in figure 6 using **Generalised Stiffness Method** and find the forces in the members. (12)

Figure No. 6

Q. 6.

a) What do you understand by Non-Linear Analysis? What are different sources of Non Linearity? (03)

b) A beam has a rectangular cross section 80 mm wide and 200 mm deep. The material has the stress strain curve as shown in figure 7. Find and draw the relation between moment and curvature. (09)
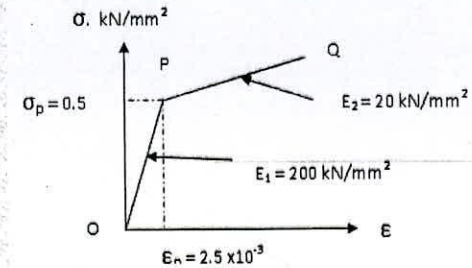
Figure No. 7

Branch: B.Tech   Semester: I

Subject with Subject Code: Engineering Mechanics (ME102)   Marks: 60

Date: 03 / 05 / 2018   Time: 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Attempt the following: (06X2=12)

a) State and explain law of Triangle of forces.

Two forces of 50 N and 100 N act away from a point. If the angle between the forces is 30^0 and first force 50 N will be at an angle of 15^0 to the ground level. Find the magnitude and direction of the resultant.

b) The rectilinear motion of a particle has its position defined by the relation $X=t^3-3t^2-9t+12$.

Determine i) Position, time and acceleration of the particle when its velocity becomes zero.

Q.2. Attempt the following   (06X2=12)

a) State and define free body diagram with few types of supports and support reactions.

b) A beam is supported and located as shown in the figure 1. Find the reactions at A and B.
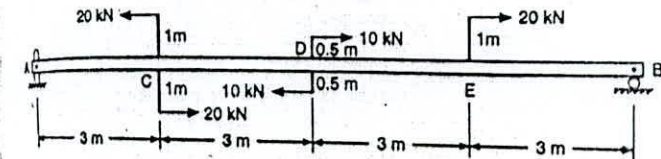

Figure 1

Q.3. Attempt the following   (06X2=12)

a) Three spherical balls of mass 2 kg, 6 kg and 12 kg are moving in the same directions with velocities 12m/s, 4m/s and 2m/s respectively. If the ball of mass 2 kg impinges with the ball of mass 6 kg which in turn impinges with the ball of mass 12 kg prove that the balls of masses 2 kg and 6 kg will be brought to rest by the impact. Assume the balls to be perfectly elastic.

b) What do you understand by trusses and frames? How will you determine the axial forces in the members? Explain method of Joints and method of sections.

Q.4. Attempt the following   (06X2=12)

a) Two cylinders A and B rest in a horizontal channel as shown in figure 2. The cylinder A has a weight of 1000 N and radius of 9cm. The cylinder B has weight of 400 N and a radius of 5 cm. the channel is 18 cm wide at the bottom with one side vertical. The other side is inclined at an angle 60° with the horizontal. Find the reactions at the points L, N and P.
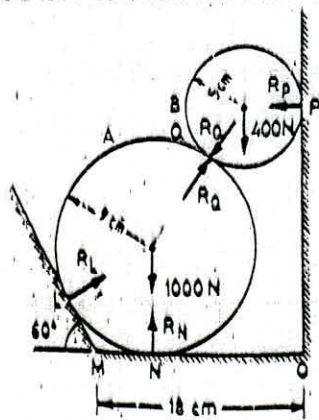
Figure 2

b) Locate the centroid of the shaded area obtained by removing semicircle of diameter a from a quadrant of a circle of radius as shown in Figure 3.
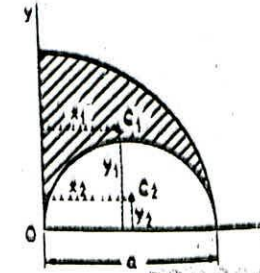

Figure 3

Q.5. Attempt the following   (06X2=12)

a) What is meant by impulse of a force and momentum? State and prove the principle of impulse and momentum.

b) A elevator has an upward acceleration of 1m/s² what pressure will be transmitted to the floor of the elevator by man weighing 600N travelling in the elevator? What pressure will be transmitted if the elevator has downward acceleration of 2m/s²? Also find the upward acceleration of the elevator which would cause the man to exert a pressure of 1200N on the floor.

Q.6. Attempt the following   (06X2=12)

a) Define and explain the Coulomb's law of friction. Block A weighing 1000N is to be raised by means of a 15° wedge B weighing 500N. Assuming the coefficient of friction between all contact surfaces to be 0.2. Determine what minimum horizontal force should be applied to raise the block.

b) Explain and prove D'Alembert's principle. How will you explain the concept of dynamic equilibrium?

END OF QUESTION PAPER

Dr. Babasaheb Ambedkar Technological University,
Lonere – Raigad, 40103
Summer Supplementary Examination, May – 2018
Class: B.Tech. First Year
Subject with Subject Code: Communication Skills (HS102)

Time: 03 hours **Max. Marks:** 60
Date: 03 / 05 / 2018 **Semester:** I

Instructions for students:
  Attempt any five questions.
===

Q. 1 a) Write a detailed note on forms and functions of communication. **(06)**
   b) Present the comparison between verbal and non-verbal communication. **(06)**

Q.2 a) Assume that you are discussing the political tensions between the USA and Korea due to nuclear weapons. Defense experts are talking about the World War III. Write the dialogue between four friends (including you) about the possibility of such war, possible alliances of the countries and the political situation in the world. **(06)**

   b) Write a note on the do's and don'ts while delivering a presentation. **(06)**

Q.3 a) Transcribe the following words using phonemic script: **(06)**
   i) sovereign   ii) smile   iii) symbol   iv) bite   v) keyboard
   v) syllabi

   b) Answer the following questions:
   i) To what extent the study of phonemic symbols has helped you learn the standard pronunciation English words? Present your views. **(03)**
   ii) Write six three pairs of words where there is difference between the American and British pronunciation. **(03)**

. 4 a) Write the antonyms for the following words: **(06)**
   i) condemn   ii) justify   iii) describe
   iv) compute   v) resolve   vi) discourse

   b) Rewrite the following sentences using appropriate articles wherever required **(06)**
   i) .... study of any Indian language is challenging.
   ii) .... many foreigners are coming to .... India to study .... Sanskrit.
   iii) .... minister was invited as .... chief guest for the function.

Q.5 Write a job application for the post of Finance Manager in Mahindra & Mahindra, Pune. Address the application to the Vice-President of the organization. Include your bio-data with the application.
(12)

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Q.6 a) What are the different types of reading you have studied and state and explain which type did you find more useful for you while learning the language. **(06)**

b) Read the following passage and answer the questions below: **(06)**

The issue of road rage requires serious attention. Day by day, it is becoming a great concern. Call it the negligence of the government or the rashness of the drivers, the underlying fact is that at the end of the day, the common man is the one who suffers the most. The commoner driving a two-wheeler who is hit by a speeding SUV, even though the former was following the traffic rules, has nowhere to go in order to seek redressal for his grievances or his injury. A recent case in point is the accident caused by the speeding luxury car owned by Hema Malini. A family of four driving a modest Alto was hit by the overspeeding car driven by the actress's driver. It resulted in the death of the youngest child of the family and several injuries to the other family members. To add insult to injury, Malini posted negative comments on a famous social networking website.

Part of the problem lies with the attitude and mentality of the driver behind the steering wheel. The car is a personal vehicle and one possesses the freedom to drive it independently and at one's own will. But one must understand that the road on which one drives is open to the public. This blurring of the dichotomy between the public and the private leads to reckless behaviour on the roads. Respect for the elderly and pedestrians, so common in countries abroad, is a thing of rarity to be found in our land. A little consideration to road rules and adoption of simple safety measures such as fastening of the seat belt, can go a long way in reducing this menace.

Questions:

_____

i) Suggest a suitable title to the passage.

ii) Why does the common man suffer grievously in instances of road rage?

iii) What should the driver understand?

iv) What is the solution to this problem of road rage?

****

INSTRUCTION: Attempt any FIVE of the following questions. All questions carry equal marks.

Q.1

(a) Find the rank of the matrix $A = \begin{bmatrix} 1 & -1 & -1 \\ 1 & 1 & 1 \\ 3 & 1 & 1 \end{bmatrix}$ by reducing it to normal form.   [6 Marks]

(b) Using Cayley-Hamilton theorem, find A^{-1} where the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$.   [6 Marks]

Q.2

(a) If $y = x \log(1 + x)$, prove that $y_n = \dfrac{(-1)^{n-2}(n-2)!(x+n)}{(x+1)^n}$.   [6 Marks]

(b) If $\cos^{-1}\left(\dfrac{y}{b}\right) = \log\left(\dfrac{x}{n}\right)^n$, prove that $x^2 y_{n+2} + (2n + 1)xy_{n+1} + 2n^2 y_n = 0$.   [6 Marks]

Q.3   Solve any Two:

(a) If $u = \log(x^3 + y^3 + z^3 - 3xyz)$, show that $\left(\dfrac{\partial}{\partial x} + \dfrac{\partial}{\partial y} + \dfrac{\partial}{\partial z}\right)^2 u = -\dfrac{9}{(x+y+z)^2}$.   [6 Marks]

(b) If z is a homogenous function of degree n in x and y, prove that   [6 Marks]

$$x^2 \frac{\partial^2 z}{\partial x^2} + 2xy \frac{\partial^2 z}{\partial x \partial y} + y^2 \frac{\partial^2 z}{\partial y^2} = n(n - 1)z.$$

(c) If $r^2 = x^2 + y^2 + z^2$ and $V = r^m$, prove that   [6 Marks]

$$\frac{\partial^2 V}{\partial x^2} + \frac{\partial^2 V}{\partial y^2} + \frac{\partial^2 V}{\partial z^2} = m(m + 1)r^{m-2}.$$

P.T.O

Q.4

(a) Using Taylor's theorem for two variables, expand the function $f(x, y) = e^x \cos y$ in [4Marks]
the powers of $(x - 1)$ and $\left(y - \frac{\pi}{4}\right)$.

(b) If the sides and angles of a plane triangle vary in such a way that its circum-radius [4Marks]
remains constant, prove that

$$\frac{da}{\cos A} + \frac{db}{\cos B} + \frac{dc}{\cos C} = 0,$$

where da, db and dc are smaller increments in the sides a, b and c, respectively.

(c) If $u = a^3 x^2 + b^3 y^2 + c^3 z^2$ where $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 1$, show that the stationary value of [4Marks]
u is given by $x = \frac{\sum a}{a}$, $y = \frac{\sum a}{b}$, $z = \frac{\sum a}{c}$.

Q.5 Solve any Two:

(a) Evaluate the integral $I = \int_0^1 \int_{\sqrt{x}}^1 \frac{y^2 \, dx \, dy}{\sqrt{y^4 - x^2}}$ by changing the order of integration. [6 Marks]

(b) Evaluate the integral $I = \int_0^4 \int_0^{2\sqrt{z}} \int_0^{\sqrt{4z - x^2}} dy \, dx \, dz$. [6 Marks]

(c) Change to polar co-ordinates to evaluate $I = \int_0^\infty \int_0^\infty e^{-(x^2 + y^2)} \, dx \, dy$. [6 Marks]

Q.6 (a) State D'Alembert's ratio test, and hence check the convergence of the series: [6 Marks]
$\sum_{n=1}^\infty \left(\frac{n^2}{2^n} + \frac{1}{n^2}\right)$.

(b) State Cauchy's root test, and hence check the convergence of the series: $\sum \frac{(n+1)^n x^n}{n^{n+1}}$. [6 Marks]

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Summer Semester Examination – May – 2018

Branch: M. Tech. Electrical (Specialization)　　　　　　Semester: I

Subject with Subject Code: Power System Modeling　　　Marks: 60
[MTEPS101/ MTEE101]

Date: 02 / 05 / 2018　　　　　　　　　　　　　　　Time: 3 Hrs.

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

　　　　　　　　　　　　　　　　　　　　　　　　　　　(Marks)

Q.1. Explain the underlying principle behind the park's transformation. Write the equations for synchronous generation in d-q-o forms. 　　**(12)**

Q.2. Attempt any TWO of the followings:　　　　　　　**(12)**
　a) Explain modeling of transmission line.

　b) What is need for power system modeling?

　c) Explain modeling of phase shifting transformer.

Q.3. State & Explain Synchronous machine connected to an infinite bus.　　**(12)**

Q.4. Attempt any TWO of the followings:　　　　　　　**(12)**
　a) Explain primitive systems of Excitation systems.

　b) Explain types of excitation system with neat labeled block diagrams.

　c) Explain basic principle of Excitation systems of syn. Machine.

Q.5. Attempt any TWO of the following　　　　　　　**(12)**
　a) Explain modeling of excitation system components.

　b) Explain modeling of AC Exciter and rectifier.

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c) Explain separately excited dc exciter.

Q.6. Attempt any TWO of the following: (12)
  a) Explain need of static VAR compensators.

  b) Explain classification of static VAR compensators.

  c) Explain load modeling parameters acquisition methods.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Supplementary Semester Examination – May – 2018

Branch: M. Tech. (CE / CSE / CE&IT / CS)   **Semester:** I

Subject with Subject Code: Computer Algorithms (MTCE1101)   **Marks:** 60

Date: 02 / 05 / 2018

Time: 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1

a) Show the results of inserting the keys 20, 10, 5, 30, 24, 48, 14, 43, 29, 31, 32 in Binomial tree after insertion delete key 24. specify the case at the time of insertion as well as time of deletion.   **[8]**

b) Show all legal B-trees of minimum degree 2 that represent {1, 2, 3, 4, 5}.   **[4]**

Q. 2
Write the Bellman-Ford algorithm. What is the run time of the Bellman-Ford algorithm? Solve the following problem by using Bellman-Ford algorithm.   **[12]**
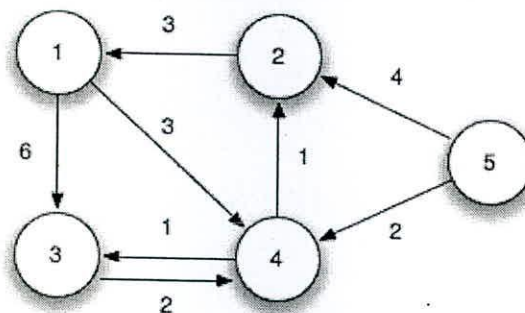
$$(1,3) = 6$$
$$(1.4) = 3$$
$$(2,1) = 3$$
$$(3,4) = 2$$
$$(4,2) = 1$$
$$(4,3) = 1$$
$$(5,2) = 4$$
$$(5,4) = 2$$

Q. 3

a) In the on-line convex-hull problem, we are given the set Q of n points one point at a time. After receiving each point, we are to compute the convex hull of the points seen so far. Obviously, we could run Graham's scan once for each point, with a total running time of $O(n^2 \lg n)$. Show how to solve the on-line convex-hull problem in a total of $O(n^2)$ time.   **[6]**

b) Prove that in the procedure GRAHAM-SCAN, points P1 and Pm must be vertices of CH(Q). **[6]**

Q. 4

a) How many spurious hits does the Rabin-Karp matcher encounter? **[6]**
T = 2894623403723923 45 and
P = 234
modulo q = 5

b) Write Knuth- Morris -Pratt algorithm. Explain its running time analysis. **[6]**

Q. 5

a) Solve the following matrix multiplication by using Strassen's algorithm. **[8]**

	A					B		
5	3	0	2		3	2	4	7
4	3	2	6		2	5	2	9
7	8	1	4		3	9	0	3
9	4	6	7		7	6	2	1

b) Find an LU decomposition of the matrix. **[4]**

$$\begin{matrix} 4 & -5 & 6 \\ 8 & -6 & 7 \\ 12 & -7 & 12 \end{matrix}$$

Q. 6

a) Draw the 8-point DFT-FFT flowgraph for **[4]**
$$x_n = \{-1, 0, 2, 0, -4, 0, 2, 0\}$$

b) Compute the values (d, x, y) that the call EXTENDED-EUCLID(899, 493) returns. **[4]**

c) Prove that the equation $ax \equiv ay \pmod{n}$ implies $x \equiv y \pmod{n}$ whenever gcd(a, n)=1. Show that the condition gcd(a, n) = 1 is necessary by supplying a counterexample with gcd(a, n) > 1. **[4]**

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DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
Summer Supplementary Semester Examinations – May 2018

Branch: M.Tech (Electronics Engineering)   **Semester: I**
Subject with Subject Code: - Computational Methods (MTEEC101)   **Marks: 60**
Date:- May 02, 2018   **Time:- 3 Hr.**

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Instructions to the Students
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Answer the following   **(12)**
  a. Explain the concept of the absolute error, relative error and machine epsilon with suitable example.

  b) Find the absolute and relative error in evaluating i) $\sqrt{x^2 + y^2}$ ii) xe^x.

Q. 2   Answer the following   **(12)**
  a. Use the factorization to solve the system $10x_1 - 7x_2 + 3 x_3 + 5x_4 = 6$, $-6x_1 + 8x_2 - x_3 - 4x_4 = 5$, $3x_1 + x_2 + 4x_3 + 11x_4 = 2$, $5x_1 - 9x_2 - 2x_3 + x_4 = 7$

  b. Show that $f(x) = x^3 + 4x^2 - 10 = 0$ has a root in $[1, 2]$ and use the Bisection method to determine an approximation to the root that is accurate to 5 iteration.

Q. 3   Answer the following   **(12)**
  a. The temperature of metal strip was measured at various time intervals during heating and the data is given below

Time, t(min)	1	2	3	4
Temp, T(°C)	70	83	100	124

If the relationship between the temperature T and time t is of the form $T = be^{t/4} + a$, estimate the temperature at t=6 minute.

  b. For the following data set ,find the cubic spline

x	1	1	2	3
y	2	-6	-8	2

Q. 4   Answer the following   **(12)**
  a. Compute the approximate derivatives of $f(x) = \sin(x)$, at x=0.45 radians, at increasing values of h from 0.01 to 0.04, with a step size of 0.005. Analyze the total error. What is optimum step size.

  b. Use the trapezoidal rule to numerically integrate $f(x) = 0.2 + 2x + 90x^2\ 120x^3 + 25x^4$ from a = 0 to b = 0.8.

Q. 5   Answer the following (12)

   a. Evaluate the integral $\int_{-1}^{1} e^x \, dx$ using Simpson's $1/3^{rd}$ rule. Compare the error with the exact value.

   b. For the equation y'(x)=2y/x, with y(1) =2, estimate y(2) by Euler's method using h=0.25 and compare the results with exact answer.

Q. 6   Answer the following (12)

   a. Using shooting method, solve the equation $\frac{d^2 y}{dx^2} = 6x$ y(1)=2, y(2)=9 in the interval (1,2)

   b. For $\frac{d^2 y}{dx^2} = e^x$ with y(0)=0,y(1)=0 estimate the y(x) at x=0.25,0.5,0.75 using finite difference method.

@#$%.$#@

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD – 402 103
Supplementary Semester Examination, May – 2018

Branch: M.Tech. Civil(Structural Engineering) **Semester:** I
Subject with Subject Code: Theory of Elasticity & Plasticity **Marks:** 60
[CVSE101]
Date: 02 / 05 / 2018 **Time:** 3 Hrs.

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Instructions to the Students:
1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q. 1
(a) Explain the state of Pure Shear and Decomposition of an arbitrary state of stress into Hydrostatic and Pure Shear State of Stress. **(06)**

(b) The state of stress at a point is characterized by the components $\sigma_{xx} = 120MPa$, $\sigma_{yy} = -50MPa$, $\sigma_{zz} = 90MPa$, $\tau_{xy} = \tau_{yz} = \tau_{xz} = 0$. Determine the extremum values of the shear stresses, their associated normal stresses, the Octahedral Shear Stress and associated normal stress. **(06)**

Q. 2
(a) Explain Generalised Hooks law for Linearly Elastic and Isotropic material. **(06)**
(b) Compute Lame's coefficients λ and μ for steel having $E = 210GPa$ and $v = 0.25$ **(06)**

Q. 3. Two carbon steel balls, each 30 mm diameter are pressed together by a force 20 N. At the center of the area of contact determine the values of the Principal Stresses and the maximum Shear Stress. For carbon steel $E = 210GPa$ and $v = 0.28$ **(12)**

Q. 4. Explain the membrane analogy introduced by Prandtal for analysis of Torsion problem of Thin Walled Structures. **(12)**

Q. 5. Explain Prandtl-Reuss equations and Levy-Mises equations in Plastic Stress Strain relations. **(12)**

Q. 6
(a) Explain maximum Principal Stress Failure Theory and state the applications and limitations of this theory. Draw neat and labeled diagram for the same. **(06)**
(b) 2-D states of stress under different conditions are as below: **(06)**

   i) $\sigma_{xx} = 25000Pa, \sigma_{yy} = -5000Pa, \tau_{xy} = 0$,

   ii) $\sigma_{xx} = 30000Pa, \sigma_{yy} = 0, \tau_{xy} = 0$,

   iii) $\sigma_{xx} = 20000Pa, \sigma_{yy} = -20000Pa, \tau_{xy} = 0$

According to Rankine's theory which loading condition will yield first?