

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Mid Semester Examination – Oct 2018 Course: M.Tech in Mechanical Manufacturing Engineering Sem: I Subject Name: Elective 1 Quality Control and Reliability Subject Code: MME 14A Max Marks:20 Date:-11/10/2018 Duration:- 1 Hr.			
Instructions to the Students: 1. All questions are compulsory. 2. Figures to the right indicates full marks 3. Assume suitable data whenever necessary.			
		(Level/CO)	Marks
Q.1			6
	1. What is ANOVA?		
	2. What is the significance of Design and Analysis of Experiments?		
	3. Explain the new culture of TQM.		
	4. State hypothesis testing.		
	5. List the valuable tools for quality.		
	6. Why histograms are used?		
Q.2	Solve Any Two of the following.		3 X 2
(A)	Discuss various Axioms of TQM?		
(B)	What are steps to be taken in implementing TQM?		
(C)	What are the benefits of applying Kaizen as a continuous improvement tool?		
Q.3	Solve Any One of the following.		8
(A)	What are the seven essential Tools for Quality Control?		
(B)	Explain Demings approach to management.		
*** End ***			

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – Oct 2018

Course: M. Tech in Manufacturing

Sem: Ist

Subject Name: CNC Technology

Subject Code: MME12

Max Marks:20

Date:- 09/10/2018

Duration:- 1 Hr.

Instructions to the Students:

1. Assume suitable data wherever required.
2. Draw figure wherever necessary.
3. Figure to right indicates full marks.

Q. 1 Solve the following

Marks

6

1. Identify main component of CAM.
A. Part Program B. MCU C. MINI Computer D. None of Above
2. G-Codes & M-Codes are used in
A. NC B. CNC C. DNC D. Both B & C
3. Direct Numeric Control consist of.....
A. Central Computer B. Bulk Memory C. Machine Tool D. All Above
4. Machine Control Unit Consist of.....
A. Data Processing Unit B. Control Loop Unit C. Both A & B D. None of Above
5. In which system feedback sensors are used.
A. NC Machine B. CNC System C. Open Loop System D. Close Loop System
6. In which system optical fiber network are used for data transfer.
A. NC B. CNC C. DNC D. ALL of Above

Q.2 Solve Any Two of the following.

3 X 2

- (A) Explain various components of Computer Aided Manufacturing?
- (B) Explain types of CNC Machines?
- (C) Enlist advantages & disadvantages of NC & CNC Control System.

Q. 3 Solve Any One of the following.

8

- (A) Differentiate between NC/ CNC/ DNC with example & Layout ?
- (B) Explain In brief open loop & Close loop control system in detail ?

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Mid Semester Examination – Oct 2018 Course: M. Techn (Manufacturing) Subject Name: Theory of Machining Max Marks: 20			Sem: I Subject Code: MME11 Duration:- 1 Hr.	
Instructions to the Students: 1. Assume suitable data if necessary and state it clearly. 2. Figures to the right indicate full marks 3. Add suitable sketches.				
				Marks
Q. 1	Solve the following:			6
	1. Enlist names of machine using single point cutting tools.			
	2. Give definition of back rake angle.			
	3. List the names of cutting tool materials			
	4. Give definition of feed in metal cutting process.			
	5. Write down the equation for machining time in case of turning operation			
	6. List methods of measurement of cutting tool temperatures.			
Q.2	Solve Any Two of the following.			3 X 2
(A)	With neat sketch describe Mechanics of Metal Cutting.			
(B)	Write a short note on temperature distribution in metal cutting			
(C)	Explain various types of tool wear			
Q. 3	Solve Any One of the following.			8
(A)	Explain Merchant's force circle analysis for metal cutting processes			
(B)	Define tool life. Write down Taylor's tool life equation by considering speed, feed and depth of cut. Also define progressive tool wear.			
*** End ***				

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE**Mid Semester Examination – Oct 2018****Course: M. Tech in Manufacturing Engineering****Sem: I****Subject Name: Advanced Joining Technology****Subject Code: MME-13****Max Marks: 20****Date:-10 /10/2018****Duration:- 1 Hr.****Instructions to the Students:**

1. All question are compulsory
2. Assume suitable data, if necessary

(Level/CO) Marks**Q. 1 Solve following****1X6**

1. Define brazing
2. Explain scope of laser welding
3. Write application ultrasonic welding
4. Differentiate between Welding & soldering
5. Differentiate between GTAW & GMAW
6. What are types electrode coating

Q.2 Solve Any Two of the following.**3 X 2**

- (A) What is welding? describe the solidification mechanism occurred in fusion welding
- (B) What should be the basic characteristics of power source used for arc welding?
- (C) Explain the diffusion bonding

Q. 3 Solve Any One of the following.**8**

- (A) Explain with neat sketch GMAW PROCESS also explain applications.
- (B) Explain the laser beam welding with the help of diagram. What is the principle of laser generation?

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE Mid Semester Examination – Oct 2018 Course: M.Tech in Mechanical Manufacturing Engineering Sem: I Subject Name: Elective 1 Quality Control and Reliability Subject Code: MME 14A Max Marks:20 Date:-11/10/2018 Duration:- 1 Hr.			
Instructions to the Students: 1. All questions are compulsory. 2. Figures to the right indicates full marks 3. Assume suitable data whenever necessary.			
		(Level/CO)	Marks
Q.1			6
	1. What is ANOVA?		
	2. What is the significance of Design and Analysis of Experiments?		
	3. Explain the new culture of TQM.		
	4. State hypothesis testing.		
	5. List the valuable tools for quality.		
	6. Why histograms are used?		
Q.2	Solve Any Two of the following.		3 X 2
(A)	Discuss various Axioms of TQM?		
(B)	What are steps to be taken in implementing TQM?		
(C)	What are the benefits of applying Kaizen as a continuous improvement tool?		
Q.3	Solve Any One of the following.		8
(A)	What are the seven essential Tools for Quality Control?		
(B)	Explain Demings approach to management.		
*** End ***			

B

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

Mid Semester Examination – October - 2018

Branch:M.Tech (EPS)

Sem.:- I

Subject with Subject Code:- Advanced Power Electronics

MTEPS

Marks: 20

Date:- 10/10/2018

Time:- 1 Hr.

Instructions:- All The Best!

Q.No.1 Attempt any one of the following. (08 Marks)

- a.) Explain with suitable diagram and appropriate waveforms working of single phase semi converter with R-L load.
- b.) Draw and explain V-I characteristics and switching characteristics of SCR.
- c.) Explain buck-boost converters under continuous and discontinuous conduction operation in detail.

Q.No. 2 Attempt any three of the following. (12 Marks)

- a.) State and Explain Ratings of SCR.
- b.) Explain symmetrical angle control method for improving power factor.
- c.) Write a short note on Commutation.
- d.) Derive the expression for filter inductor for chopper.

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

Branch:M.Tech (EPS)

Sem.:- I

Subject with Subject Code:- PQA&M(MTEPS105)

Marks: 20

Date:- 12th Oct.2018

Time:- 1 Hr.

Instructions:- All The Best!

Q.No.1 Attempt any one of the following. (08 Marks)

a.)Discuss various power quality disturbances as per the IEEE standard 1159.

b.) What are the symptoms of poor power quality? Discuss in details characterization of power quality disturbances.

c.)Discuss the importance of earthing and various problems due to poor earthing practices.

Q.No. 2 Attempt any three of the following. (12 Marks)

a.) What are the different types of voltage variations in the power system.

b.) What is flicker? State various causes of voltage flicker.

c.) Discuss in detail the economic impacts of voltage sag.

d.) Discuss in detail CBEMA and ITIC curves.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE –

RAIGAD -402 103

Mid Semester Examination – October - 2018

Branch: M.Tech (EPS)

Sem.: - I

Subject with Subject Code: - Power System Modeling
MTEPS101

Marks: 20

Date:-08/10/2018

Time:- 1 Hr.

Instructions: - Assume suitable data if it is necessary.

(Marks)

Q.No.1 Attempt any one of the following (08)

a.) Elaborate need for modeling of power system & different areas of power system analysis.

b.) Write short note on need for modeling of Transformer such as auto-transformer, tap-changing & phase shifting transformer

Q.No. 2 Attempt any three of the following: (12)

a.) Write short note on Synchronous machine connected to an infinite bus.

b.) Analyze concept of rotating magnetic field in Synchronous machine. Draw resultant waveform.

c.) Write development of model required for dynamic of studies for Synchronous machine.

d.) Write expressions of stator voltage equation, stator & rotor flux linkages equation in $dq0$ component.

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

Mid Semester Examination – October - 2018

Branch:M.Tech (EPS)

Sem.:- I

Subject with Subject Code:- RENEWABLE ENERGY SYSTEM

MTEPS 102

Marks: 20

Date:-

Time:- 1 Hr.

Instructions:- All The Best!

Q.No.1 Attempt any one of the following.

(08 Marks)

- a) Give the classification of energy sources.
- b) what are conventional energy sources and its environmental impacts.
- c) Give the characteristics of PV system.

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

(12 Marks)

- a) How maximum power generation done using wind energy.
- b) What is the concept of clean development mechanism in power generation.
- c) How is PV integrated system built .Give its components.
- d) What are system design features of maximum power generation using solar system.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE -

RAIGAD -402 103

Mid Semester Examination – October - 2018

Branch:M.Tech (EPS)

Sem.:- I

Subject with Subject Code:- High Voltage Power Transmission (MTEPS104)

Marks: 20

Date:-

Time:- 1 Hr.

Q.No.1 Attempt any one of the following. (08 Marks)

- a.) Explain the effect of electric field intensity nearer to conductor surface and nearer to ground surface with respect to E.H.V. lines.
- b.) Discuss mechanical consideration in design of EHV -AC-lines. Also indicate measures to be taken to minimize the damage caused due to them.
- c.) State and explain different formulae used to calculate the power loss due to corona on E. H.V. lines.

Q.No. 2 Attempt any three of the following. (12 Marks)

- a.) Explain the voltage control in E.H.V.A.C. lines by using shunt and series compensation method.
- b.) How Audible Noise frequency spectra affects ac and dc transmission lines, and what are the limits for audible noise?
- c.) Discuss the effect of high electrostatic field on biological organisms and human beings.
- d.) When the transmission line is terminated by the capacitive load, how do you find out the expressions of reflected voltage and current wave?

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – Oct 2018

Branch: M. Tech in Computer Science and Engineering

Sem: I

Subject Name: Cloud Computing

Subject Code: MTCE1104

Max Marks: 20

Date: -11/10/2018

Duration:- 1 Hr.

Instructions to the Students:

1. Assume suitable data where necessary
2. Illustrate your answers with neat sketches, diagram etc., wherever necessary.

Marks

Q. 1 Attempt any one of the following

8

- (A) What is virtualization? What are its types? Explain in detail.
- (B) Explain in detail PaaS.

Q.2 Attempt any three of the following.

4 X 3

- (A) Enlist and explain disaster recovery challenges.
- (B) What are the advantages and disadvantages of virtualization?
- (C) What are the different deployment models of cloud computing? Explain in detail
- (D) Explain in detail distributed computing.

***** End *****

Mid Semester Examination – Oct 2018

Course: M. Tech in Computer Science and Engineering /CS/CS&IT/CE Sem: I

Subject Name: Advanced Computer Network

Subject Code: MTCE1103

Max Marks: 20

Date:- 10/10/2018

Duration:- 1 Hr.

Instructions to the Students:

1. Assume Suitable data where necessary

Marks

Q. 1 Attempt any one of the following

08

(A) Describe TCP/IP reference model with neat diagram?

(B) Write short note on SONET/SDH?

Q.2 Solve Any Three of the following.

12

(A) Specify the function of the Packet layer of X.25?

(B) What is DHCP? Explain how DHCPDISCOVER works?

(C) Specify the Frame relay frame format?

(D) Explain Key Attributes of optical fiber?

***** End *****

Branch: M.Tech (Computer Engineering)

SEM: - I

Subject with Subject Code: - Artificial Intelligence: knowledge Representation and Reasoning (MTCE1105)

Marks: 20

Date:-October 12, 2018

Time: -1 Hr.

Q1. Attempt any one of the following

(08)

- a.) Explain rule based system & working of Rete algorithm in detail.
- b.) How logic is used in knowledge representation explains with example.

Q2. Attempt any three of the following

(12)

- a.) Describe axiomatic system.
- b.) Analyze conceptual Dependency (CD) theory.
- c.) Explain depth first search technique.
- d.) Represent following sentence into propositional logic
 - 1. Everyone is seen by someone.
 - 2. Someone is seen by everyone.
 - 3. Someone sees everyone.
 - 4. Everyone girl sees merry.

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – Oct 2018

Course: M. Tech (Computer Engineering)

Semester: I

Subject Name: Computer Algorithm [MTCE1101]

Max Marks: 20

Date:- 08/10/18

Duration:- 1 Hr.

Instructions to the Students:

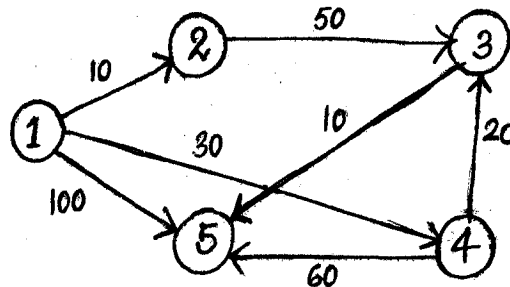
1. Read question carefully and write complete answers.
2. Draw neat diagram wherever necessary.

(Marks 20)

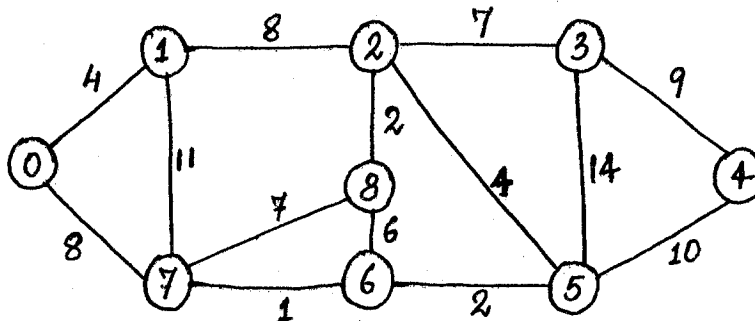
Q.1 Attempt any one of the following

a) Find shortest path

(08)



b) Find the minimum cost spanning tree for the given graph using Kruskal's algorithm.



Q.2 Attempt any three of the following

(12)

a) Insert the given set of keys in order into an empty B-tree with minimum degree 3.

[C, N, G, A, H, E, K, Q, M, F, W, L, T, Z, D, P, R, X, Y, S]

b) Explain binomial Heap. What are the properties of Binomial heap?

c) Write Preflow-push algorithm .

d) How to balance a B-tree. Explain with suitable example

***** End *****

Course: M. Tech (Computer Science & Engineering)

Sem: I

3

Subject Name: Machine Learning

Subject Code: MTCE1102

Max Marks: 20

Date:- 9th Oct 2018

Time:- 1 Hr.

Instructions to the Students:

- I. Assume appropriate data if necessary
- II. Draw neat diagram wherever necessary

Q. 1 Attempt any one of the following

(08)

a) Justify the use of Machine Learning to solve the following task

: Prediction of sale value of a Car based on the locality of the property.

b) Given the following statistics, what is the probability that a woman has cancer if she has a positive mammogram result?

- One percent of women over 50 have breast cancer.
- Ninety percent of women who have breast cancer test positive on mammograms.
- Eight percent of women will have false positives.

Q.2 Attempt any Three of the following

(12)

- a) What are issues in decision trees? How they are overcome?
- b) Write mathematical form of regression?
- c) Why it is necessary to estimate the accuracy of hypothesis?
- d) Explain the steps required for selecting right machine learning algorithm.

*****END*****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE –

RAIGAD -402 103

Mid Semester Examination – October - 2018

Branch:M.Tech (EC)

Sem.:- I

Subject with Subject Code:- Computational Methods (MTEEC101)Marks: 20

Date:- 08/10/2018

Time:- 1 Hr.

Instructions:-

(Marks)

1. Check whether you have got correct question paper.
2. Assume suitable data if necessary.
3. Figure to right indicates full marks.

- Q.No.1** Attempt any one of the following **(08)**
- a.) Compare and contrast all the iterative methods of computational technique?
 - b.) Calculate L.H.S and R.H.S of the given expression using 4 digits Mantissa. $(x^3-1)=(x-1)(x^2+x+1)$, $x=2.918$ Find absolute error in computing LHS&RHS?

- Q.No. 2** Attempt any three of the following: **(12)**
- a.) Using Secant Method find out the square root of '25' correct up to '3' decimal places?
 - b.) From the following table find the value of $f(x)$ at $x=0.7$ using Newton's backward formula

X	0.1	0.2	0.3	0.4	0.5
F(x)	1.1105	1.2150	1.3595	1.4888	1.7285

- c.) Solve the following equation by Gauss-Elimination Method
 $10x_1+x_2+x_3=18.141$, $x_1+x_2+10x_3=38.139$, $x_1+10x_2+x_3=28.140$.
- d.) Using bisection method finds the root of equation
 $x^3-1.8x^2-10x+17=0$ that lies between the interval (1.2) at the end Of 5th iteration?

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

(24)

Branch: M.Tech (Electronics Engineering)

Sem.: - I

Subject with Subject Code:- Microelectronics (MTEEC102)

Marks: 20

Date:-

Time:- 1 Hr.

(Marks)

Q.No.1 Attempt any one of the following

(08)

- a.) Draw & Explain the ideal IV characteristics of MOSFET
- b.) Draw & explain in brief the photolithography process.

Q.No. 2 Attempt any three of the following:

(12)

- a.) Draw & explain MOS diffusion capacitance model.
- b.) Draw & Explain complementary CMOS inverter DC characteristics.
- c.) Explain Gate & source-drain formation of CMOS.
- d.) Write short note on tri state inverter.

Mid Semester Examination – October - 2018

Sem.:- I

Marks: 20

Time:- 1 Hr.

(Marks)
(08)

- (12)

- a.) Give classification of medical equipments.
- b.) List two medical equipments related to diagnostic, therapeutic and with their use
- c.) Discuss the frequency range and voltage range of ECG & EEG signals
- d.) Explain resting and action potential.

(4)

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

Branch: M.Tech. (Electronics Engineering)

Sem.:- I

Subject :- VLSI System Design

Subject Code:- (MTEEC103)

Date:-

Marks:20

Time:- 1 Hr.

Instructions:- Assume suitable data

(Marks)

- Q.No.1 Attempt any one of the following (08)**
- a) Design the static Complementary pull up and pull down network for the following Function:
 - i) $F1 = \overline{(A+B+C)}$
 - ii) $F2 = (A+B)C$
 - b) What are the types of Design layout rule? Design and explain CMOS Inverter layout.
- Q.No. 2 Attempt any three of the following: (12)**
- a) What is mean by Pseudo NMOS Logic? Why use a Pseudo-NMOS Logic?
 - b) Assuming that $V_{gs}=3.3v$, $k'=73\mu A/v^2$, Compute the drain current through n-type transistors of the size $W/L=8/2$ at V_{ds} value of 2V.
 - c) Describe following terms:
 - i) Wire Parasitics
 - ii) MOSFET Structure
 - d) What is structure of a Differential cascade Voltage switch logic (DCVSL)? Explain in detail

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

Branch: M.Tech (...Electronics Engg.....)
Sem.:- I

Subject with Subject Code:- Elective II: Embedded System Design.
(MTEEE125)
Marks: 20

Date:- 12.10.2018

Time:- 1 Hr.

-
- | | | (Marks) |
|----------------|--|----------------|
| Q.No.1 | Attempt any one of the following | |
| | a.) Write ARM based program to evaluate the expression $3x^2 + 5y^2$ Where $X = 8$ and $Y = 5$ | (08) |
| | b.) What is switch bouncing? How it can be eliminated? | (08) |
|
 | | |
| Q.No. 2 | Attempt any three of the following: | |
| | a.) What is the difference between a big-endian and little-endian? Explain with example. | (04) |
| | b.) Implement peek() and poke() in assembly language For ARM | (4) |
| | c.) Give hardware architecture of a typical PC. | (04) |
| | d.) What is assembly and linking in compilation process? | (04) |

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

Branch:M.Tech (Electronics Engineering)

Sem.:- I

Subject with Subject Code:- Medical electronics(EL-I)
(MTEEE114)

Marks: 20

Date:- 11/10/2018

Time:- 1 Hr.

Q.No.1 Attempt any one of the following **(Marks)**
(08)

- a.) Describe operation of X-ray machine with block diagram.
- b.) Give classification of biopotential electrodes.Explain electrodes used for ECG & EEG

Q.No. 2 Attempt any three of the following: **(12)**

- a.) Give classification of medical equipments.
- b.) List two medical equipments related to diagnostic,therapeutic and with their use
- c.)Discuss the frequency range and voltage range of ECG & EEG signals
- d.)Explain resting and action potential.

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL
UNIVERSITY,
LONERE - RAIGAD -402 103
Mid Semester Examination - October - 2018**

Branch: M. Tech. (Structures)

Sem.:- I

Subject with Subject Code:- EI-II (Advanced Pre-stressed concrete)CVSE-E2-01 Marks: 20

Date:-12/10/18

Time:- 1 Hr.

Instructions:-

1. Assume any suitable data necessary.
2. State your assumptions clearly
3. All symbols have their usual meaning.

(Marks)

Q.No.1) Attempt any one of the following

(08)

a) A post tensioned concrete beam is spanning 10m and the cross section 230 x 300 mm deep prestress with a straight cable having the area 300mm². Located at the constant eccentricity 75mm. The Initial stress in the cable = 1000 N/mm². Calculate the percentage loss of stress. Take $E_s = 210$ kN/mm², $E_c = 35$ kN/mm², $K = 0.0015/m$. Shrinkage Stain = 2×10^{-5} , Creep Strain = 2×10^{-5} , Relaxation of steel wire = 4% of Initial Stress.

b) End block of a Pre-stressed concrete beam rectangular in cross section is 100 mm wide and 200 mm deep. The Pre-stressing force of 100 KN is transmitted to concrete by distribution plate of 100 mm wide and 50 mm deep located concentrically at the end. Calculate the position and magnitude of maximum tensile stress on horizontal section through the center line of anchor plate. For $x/h = 0.5$. $K_1 = -5$, $K_2 = 2$, $K_3 = 1.25$

Q.No. 2) Attempt any three of the following:

(12)

a.) A Post tensioned concrete beam of 100 x 300 mm is stressed by parabolic cable with zero eccentricity at support and 50 mm at center of span . The C/S of cable is 200 mm² and the initial stress in cable is 1200 N/mm². Find the loss of stress in steel due to creep of concrete. The ultimate creep strain = 30×10^{-6} , $E_s = 210$ KN/mm²

b.) A prestressed concrete beam 400X600 mm has a span of 6m subjected to udl of 16 KN/m including self-weight. The prestressing tendon which is located along longitudinal centroidal axis provide an effective prestressing force of 960KN. Find the extreme fiber stresses in concrete at the mid span section.

c.) Explain Pretensioning and Post tensioning systems

d.) Explain losses in post-tensioned prestressed member

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL
UNIVERSITY,
LONERE - RAIGAD -402 103
Mid Semester Examination - October - 2018**

Branch: M. Tech. (Structures)

Sem.:- I

Subject with Subject Code:- EI-II (Advanced Pre-stressed concrete)CVSE-E2-01**Marks: 20**

Date:-12/10/18

Time:- 1 Hr.

Instructions:-

1. Assume any suitable data necessary.
2. State your assumptions clearly
3. All symbols have their usual meaning.

(Marks)

Q.No.1) Attempt any one of the following

(08)

a) A post tensioned concrete beam is spanning 10m and the cross section 230 x 300 mm deep prestress with a straight cable having the area 300mm^2 . Located at the constant eccentricity 75mm. The Initial stress in the cable = 1000 N/mm^2 . Calculate the percentage loss of stress. Take $E_s = 210\text{ kN/mm}^2$, $E_c = 35\text{ kN/mm}^2$, $K = 0.0015/\text{m}$. Shrinkage Stain = 2×10^{-5} , Creep Strain = 2×10^{-5} , Relaxation of steel wire = 4% of Initial Stress.

b) End block of a Pre-stressed concrete beam rectangular in cross section is 100 mm wide and 200 mm deep. The Pre-stressing force of 100 KN is transmitted to concrete by distribution plate of 100 mm wide and 50 mm deep located concentrically at the end. Calculate the position and magnitude of maximum tensile stress on horizontal section through the center line of anchor plate. For $x/h = 0.5$. $K_1 = -5$, $K_2 = 2$, $K_3 = 1.25$

Q.No. 2) Attempt any three of the following:

(12)

a.) A Post tensioned concrete beam of 100 x 300 mm is stressed by parabolic cable with zero eccentricity at support and 50 mm at center of span . The C/S of cable is 200 mm^2 and the initial stress in cable is 1200 N/mm^2 . Find the loss of stress in steel due to creep of concrete. The ultimate creep strain = 30×10^{-6} , $E_s = 210\text{ KN/mm}^2$

b.) A prestressed concrete beam 400X600 mm has a span of 6m subjected to udl of 16 KN/m including self-weight. The prestressing tendon which is located along longitudinal centroidal axis provide an effective prestressing force of 960KN. Find the extreme fiber stresses in concrete at the mid span section.

c.) Explain Pretensioning and Post tensioning systems

d.) Explain losses in post-tensioned prestressed member

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

18

Branch: M.Tech (Civil Structure)

Sem.: I

Subject with Subject Code:- Matrix Methods of Structural Analysis (CVSE102) Marks: 20

Date:- 09/10/2018

Time:- 1 Hr.

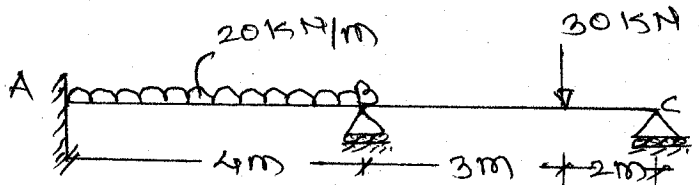
- Instructions:-
1. All questions are compulsory.
 2. Respective marks for question are indicated at right.

Q.No.1

Attempt any one of the following

(Marks)
(08)

- a) Explain the properties of Stiffness Matrix Method
- b) Analyse the given beam by flexibility Matrix Method.

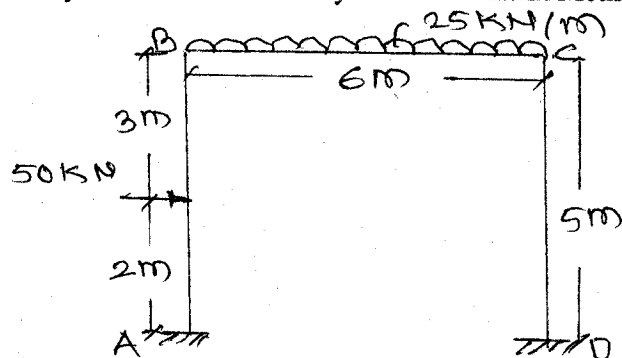


Q.No. 2

Attempt any one of the following:

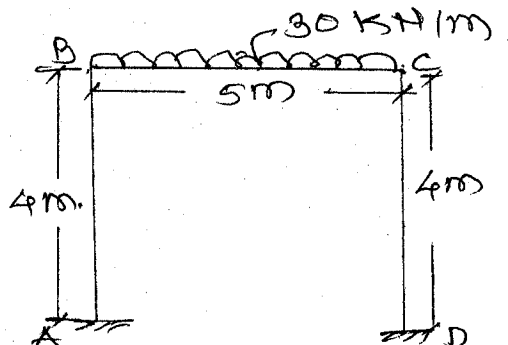
(12)

- a) Analyse the Portal Frame by Stiffness Matrix Method.



OR

- b) Analyse the Portal Frame by Stiffness Matrix Generalized Method.



DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE -

RAIGAD -402 103

Mid Semester Examination – October - 2018

Branch:M.Tech (CivStr)

Sem.:- I

Subject with Subject Code:- Structural Dynamics (CVSE103)

Marks: 20

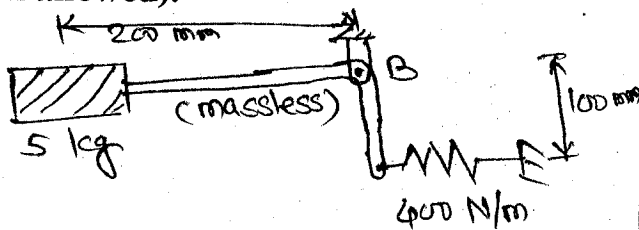
Date:- 10/10/2018

Time:- 1 Hr.

Instructions:- 1. All questions are compulsory.

2. Respective marks for question are indicated at right. All sub-questions in a question carry equal marks.

(Marks)

Q.No.1	Attempt any one of the following	Level (CO)	(08)
	<p>a) Derive value of dynamic amplitude of single degree of freedom system if it is subjected to harmonic excitation $F = 5 \sin (10t)$ (in kN). Note that system is having mass, $m = 50$ kg and stiffness $k = 40 \times 10^5$ N/m and damping ratio $\xi = 5\%$.</p>	Application (1)	
	<p>b) Derive governing differential equation for the system shown below. Assume rod is perfectly rigid and support at point B is hinged (rotation allowed).</p> 	Analysis (3)	
Q.No. 2	Attempt any three of the following:		(12)
	<p>a) A structure is modeled as a damped oscillator with spring constant $k = 40 \times 10^5$ N/m and undamped natural frequency $\omega_n = 40$ rad/s. Experimentally it was found that a force 10 kN produces relative velocity of 10 m/s in the damping element. Find (a) damping ratio (b) logarithmic decrement (c) damped period T_d.</p>	Application (1)	

	b)	Derive response of undamped single degree of freedom system subjected to a constant force F_0 by Duhamel Integral. Note that system is having initial displacement = 0 and initial velocity = v_0 .	Application (2)	
	c)	Derive relation for calculating natural frequency of the undamped single degree of freedom system by Rayleigh's method.	Application (3)	
	d)	Derive expression for displacement transmissibility ratio for single degree of freedom system.	Understand (1)	

Course: M. Tech. in Structural Engineering

Semester I

Subject Name: Numerical Methods

Subject Code: CVSE-E1/02

Max Marks: 20

Date:

Duration: 1 hr

Instruction to the students:

- Write brief and to-the-point answers.
- Draw neat and labelled diagrams where necessary
- The answers to the parts of a question should be together.
- Do your calculations upto the fourth place of decimal.

Marks

8

1. Answer any one of the following questions

A. A function $f(x)$ is given where $f(x) = \frac{x^2}{1+x^4}$. Consider the values $X = \{-2, -1, 1, 2\}$, and determine $Y = \{y : y = f(x), x \text{ belongs } X\}$. Using these values of X and Y , find the interpolation function using Lagrange's method of interpolation.

B. For the following set of equation, find the values of the variables x, y, z and w , using the Gauss-Siedel method. Do the iteration upto 5 steps.

$$x + 7y + z = 10$$

$$x + y - 8z = -5$$

$$11x - y + z = 22$$

2. Solve any three of the following:

4 x 3

A. In a certain system a given octal number 543.322 is stored as 543.33, by mistake. Calculate the percentage error arising due to such a mistake.

B. Use the following data to fit a linear regression model between the variables X and Y :

X	1	2	3	4	5
Y	2.5	4.9	7.9	9.8	13.4

C. Find the roots of equation $f(x) = x^3 - 8.2$ using the Newton Raphson method. Take $x = +1$, as the initial value. Do upto 5 steps.

D. Explain the regula-falsi method.

*** END ***

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD -402 103
Mid Semester Examination – October - 2018**

Branch: M. Tech (Structural Engineering)
Subject with Subject Code:- CVSE101
Date:- 08/10/18

Sem.:- I
Marks: 20
Time:- 1 Hr.

Instructions:- 1. Figures to right indicate marks
2. Assume suitable data if required

(Marks)

Q.No.1 Attempt any one of the following

- a.) Derive equilibrium equations in Cartesian coordinates for a three dimensional problem 8
- b.) What is Airys stress function 'φ'? Prove that for constant body forces, the Airy's stress function satisfies the biharmonic equation $\nabla^4 = 0$ 8

Q.No. 2 Attempt any three of the following:

- a.) Explain plane strain condition in theory of elasticity 4
- b.) Derive the expression for octahedral normal stress 4
- c.) What is a deviatoric state of stress 4
- d.) Determine whether following strain fields are compatible 4

$$\epsilon_{xx} = 2x^2 + 3y^2 + z + 1, \epsilon_{yy} = 2y^2 + x^2 + 3z + 1, \epsilon_{zz} = 3x + 2y + z^2 + 1, \epsilon_{xy} = 8zy, \epsilon_{yz} = 0, \epsilon_{zx} = 0$$

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY LONERE
Mid Semester Examination – October 2018

Course: M. Tech. in Structural Engineering
Subject Name: Numerical Methods
Max Marks: 20

Semester I
Subject Code: CVSE-E1/02
Duration: 1 hr

Instruction to the students:

- (a) Write brief and to-the-point answers.
- (b) Draw neat and labelled diagrams where necessary
- (c) The answers to the parts of a question should be together.
- (d) Do your calculations upto the fourth place of decimal.

Marks
8

1. **Answer any one of the following questions**

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*** END ***