MGM UNIVERSITY AURANGABAD
First Semester Examination (A.Y.2021-22) Jan Feb 2021-2022

Course: First Year B.Tech
Subject: Communication Skills
Subject Code: 20UCC016C

Semester: I
Marks: 60
Duration: 3 Hours

Instructions to the students

1. Each question carries 10 marks.

2 All questions are compulsory

Q1. Solve any two 10 Marks

a) Explain the chronemics in detail.

b) Explain the Mechanical barriers in communication.

c) State the five principles of effective communication.

Q2. Solve any two 10 Marks

a) Importance of facial expression in communication.

b) Write a short note feedback in communication?

c) Illustrate body language, dress and appearance, eye contact briefly.

Q3. Solve any two 10 Marks

a)Identify/ underline the sound /θ/ from the following words.
Thing, this,thief, they,thread, there,thigh, thrust,the

b) Write down the short note on diphthongs.

c) Write down five examples in words of the following sounds /ʃ/.

MGM University
Aurangabad-431003
First Term Exam A.Y. 2021-22

Program : B.Tech
Course: Programming and Introduction to Python
Course Code : BTIT1105

Sem –I
Marks : 60
Time : 3 Hr

Instructions to the students
1. Each question carries 10 marks.
2 All questions are compulsory
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	Solve any two:	
	a) Define Computer? Also explain the various features of computer system.	5
	b) What is software? List and explain the types of software. Give two example of each category.	5
	c) Distinguish between compiler and interpreter.	5
Q.2	Solve any two:	
	a) Define the term "algorithm". Explain characteristics of an algorithm.	5
	b) What do you mean by low level languages enlist and explain advantages and disadvantages?	5
	c) Construct a flowchart for multiplication of two numbers entered by the user.	5
Q.3	Solve any two:	
	a) Define python. List the features of python programming language.	5
	b) Elaborate the terms i) Arithmetic Operators ii) Membership and Identity operators	5
	c) What is a string ? Explain about string slicing with an example.	5
Q.4	Solve any two:	
	a) Summarize about Control flow structures in python.	5
	b) Write a python program to find if the given number is odd or even.	5
	c) Demonstrate the working of if-elif-else construct with an example.	5

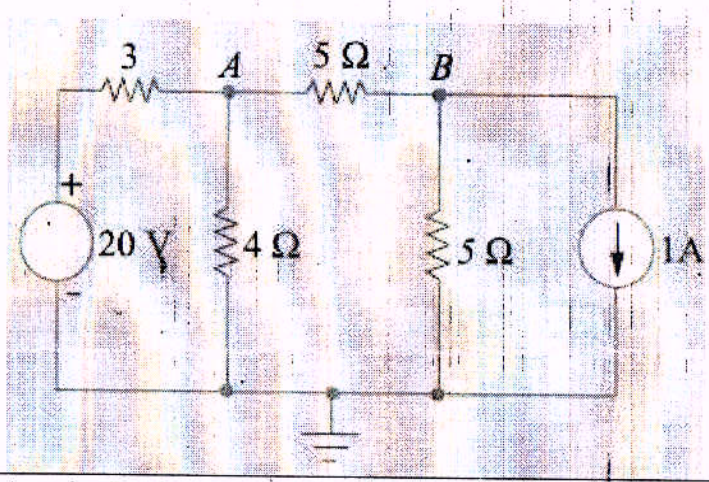
Chandrakant Ingole
Engg. & Technology
JNEC Aurangabad

Deepali Kshirsagar
Technology Aurangabad

02/07/21

Mahatma Gandhi Mission University
Jawaharlal Nehru Engineering College, Aurangabad
End-Semester Examination – 2021_22

Course: FY B. Tech
Subject: Electrical Technology
Maximum Marks: 60 **Date:** 01st March 2021
SEM: I
Course Code: (20UCC015B)
Duration: 3 Hr

Q.1	**Attempt any TWO of the following questions.**	CO	BL	PI	Marks (10)
1	State and prove maximum power transfer theorem.	CO1	L2	1.2.1	5
2	Find the node voltages at A and B. 	CO1	L3	1.2.1	5
3	A series RLC circuit containing a resistance of 12Ω, an inductance of 0.15H and a capacitor of 100uF are connected in series across a 100V, 50Hz supply. Calculate the total circuit impedance, the circuit's current, power factor and draw the voltage phasor diagram.	CO1	L3	1.2.1	5
Q.2	**Attempt any TWO of the following questions.**	**CO**	**BL**	**PI**	**Marks (10)**
1	Compare the similarities and dis-similarities of magnetic and electrical circuits.	CO2	L2	1.2.1	5
2	State Faraday's laws of electromagnetic induction. Distinguish between statically induced emf and mutually induced emf with examples.	CO2	L3	1.3.1	5
3	A single-phase transformer has 400 primary and 1000 secondary turns. The net cross sectional area of the core is 60 cm2. If the primary winding be connected to a 50Hz supply at 415 V, Calculate 1] The peak value of flux density in the core. 2] The voltage induced in the secondary winding.	CO2	L3	1.3.1	5

MGM University
Aurangabad - 431003
First Term Exam A.Y. 2021-22

Program: FY B. Tech. | Sem: I
Course: Engineering Chemistry | Marks: 60
Course Code: 20UCC013B | Time: 3 Hr

Instructions to the students:
1. Each question carries 10 marks.
2. All questions are compulsory.
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
Q1.		**Solve any two**	
	a)	What is hardness of water? Explain the disadvantages of hard water for domestic use.	(5)
	b)	Calculate temporary and total hardness of water containing $Mg(HCO_3)_2$ = 73mg/L, $Ca(HCO_3)_2$ = 162 mg/L, $MgCl_2$ = 95mg/L, $CaSO_4$ = 136 mg/L	(5)
	c)	What is scale and sludge? Explain their disadvantages.	(5)
Q2.		**Solve any two**	
	a)	Define the term polymer. Classify polymers on the basis of occurrence and structure.	(5)
	b)	Describe method of preparation, properties and applications of PMMA.	(5)
	c)	Write a short note on conducting polymers.	(5)
Q3.		**Solve any two**	
	a)	What is galvanic corrosion? Explain its mechanism with suitable example.	(5)
	b)	Differentiate between dry and wet corrosion.	(5)
	c)	Give reasons,	
		i) Corrosion of water filled metal tanks occurs below the water line.	(5)
		ii) Impure metal corrodes faster than pure metal under identical conditions.	
Q4.		**Solve any two**	
	a)	What are different types of fuels? What are the characteristics of good fuel?	(5)
	b)	Discuss the important properties of lubricants and indicate the significance of these properties.	(5)
	c)	What is meant by calorific value of fuel? Differentiate between gross and net calorific	(5)
Q5.		**Solve any two**	
	a)	Define the term specific and equivalent conductance. Discuss the effect of dilution of specific and equivalent conductivity of an electrolyte.	(5)
	b)	Give an account of the Deebye-Huckel theory of strong electrolytes. Explain in brief electrophoretic effect.	(5)
	c)	Explain construction, working and applications of lithium-ion battery.	(5)
Q6.		**Solve any two**	
	a)	What are pH metric titrations? How they are carried out? Explain with example.	(5)
	b)	What is the principle of conductometric titration? Explain in detail types of conductometric titrations.	(5)
	c)	What is thin layer chromatography? Discuss important applications of TLC in chemical analysis.	(5)

End of Paper

of light if the fibre is placed in air (2)

Q6. Solve any two

a) Find the packing density (APF) of SC, BCC and FCC lattices. (5)

b) Derive Bragg's law for X-ray diffraction (5)

c) (i) Define nanotechnology. Give two examples each of materials naturally occurring at nanoscale and man-made nanomaterials. (3)

(ii) Calculate the longest wavelength that can be analysed by a rock salt crystal of spacing $d=2.82A^0$ in the first order. (2)

********** End of paper **********

B. Tech. – First Year-(I-Semester) Examination

Full Title of the Paper: Engineering Physics **Paper Code:20UCC002B**

Time : 3 Hour **Max.Marks:** 60

Instructions to the students

1. Each question carries 10 marks.
2. All questions are compulsory
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

Q1. Solve any two

a) Explain interference of light in wedge shaped film and prove that for air film $\beta = \lambda/2\theta$ (5)

b) What is diffraction grating? How do you determine wavelength of an unknown source using grating? (5)

c) (i) Distinguish between Fresnel and Fraunhofer diffraction (3)

(ii) Monochromatic light of wavelength 6560×10^{-8} cm falls normally on a grating 2cm wide. The first order spectrum is produced at an angle 18.14^0 from the normal. What is the total No. of lines on the grating? (2)

Q2. Solve any two

a) What are ultrasonic waves? Explain the piezoelectric method for production of ultrasonic waves (5)

b) What is magnetic domain? Draw a neat diagram of B-H Curve and discuss its features. (5)

c) Explain in brief the effect of frequency and temperature on dielectrics (5)

Q3. Solve any two

a) What is De Broglie hypothesis? Show that the wavelength λ associated with an electron of mass 'm' and kinetic energy E is given by $\lambda = \frac{h}{\sqrt{2mE}}$ where, h is Plank's constant. (5)

b) Explain in detail the working of G-M counter. (5)

c) (i) What are positive rays? How they are produced? (3)

(ii) The position and momentum of a 1.0keV electron are simultaneously measured. If the position is located within 1 ^{0}A, what is percentage of uncertainty in momentum? (2)

Q4. Solve any two

a) What is Hall Effect? Derive an expression for Hall Coefficient and mobility of charge carriers. (5)

a) What is superconductor? Explain Meissner Effect and effect of external magnetic field on superconducting state of material (5)

c) (i) Distinguish between Type –I and II superconductor. (3)

(ii) The conductivity and the Hall Coefficient of N- Type semiconductor are 112 mho/m and $1.25 * 10^{-4}$ m^3/C respectively Calculate charge carrier density and electron mobility. (2)

Q5. Solve any two

a) Explain basic principles and construction of He-Ne gas laser. (5)

b) Derive an expression for acceptance angle and numerical aperture for an optical fibre (5)

c) (i) Define the terms Population Inversion. Pumping method and optical resonator (3)

(ii) Determine numerical aperture of a step index fibre when the core refractive index is n_1=1.5 and the cladding refractive index n_2=1.48. Find the maximum angle for entrance

MGM University
Aurangabad-431003
First Term Exam A.Y. 2021-22

Program : B.Tech — Sem –I
Course : Introduction to Blockchain, IoT and BDA — Marks : 60
Course Code : BTIT1104 — Time: 3 hr.

Instructions to the students

1. Each question carries 10 marks.
2. All questions are compulsory
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
Q1. Solve any two	
a) Write in brief about the history of Blockchain and blockchain technology.	(5)
b) Draw and explain the architecture of a Blockchain.	(5)
c) Discuss the security, integrity and privacy issues for decentralized systems.	(5)
Q2. Solve any two	
a) Explain Asymmetric key cryptography in brief.	(5)
b) Explain pros and cons of centralised, decentralised and distributed networks.	(5)
c) What are smart contracts? Explain Applications of blockchain technology.	(5)
Q3. Solve any two	
a) Give definition of IOT? Explain the characteristics of IOT in brief.	(5)
b) What are Wireless and Wired networks? Explain Bluetooth and Wifi.	(5)
c) Explain Different types of network models (LAN,WAN,MAN,INTERNET)	(5)
Q4. Solve any two	
a) What is Edge Computing? Explain with Advantages.	(5)
b) What is Arduino UNO? Define and explain sensors and actuators.	(5)
c) What are open source hardwares and softwares?	(5)
Q5. Solve any two	
a) Explain the concept of using big data in business.	(5)
b) Give 5 Applications of Big data.	(5)
c) What are the different types of digital data?	(5)
Q6. Solve any two	
a) How to use big data to get results?	(5)
b) Describe the process of text analysis in big data in your own words.	(5)
c) Enlist ten popular big data resources.	(5)

End of paper

FY(B.Tech.) All First Term Exam A.Y. 2021-22

Full Title of Paper: Engineering Graphics Course Code : BTFEG103/203

Feb-March 2022

Time : Four Hours Marks : 60

Instructions to the students

1. Each question carries 10 marks.
2 Solve any six questions out 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

1. A line AB 80 mm long has its end A 15 mm above the HP and 20 mm in front of VP. The end B is 40 mm above HP and 50 mm in front of VP. Draw the projections and find its inclination with HP and VP.
2. Draw the front view and top view for the component shown in the figure 1 below:

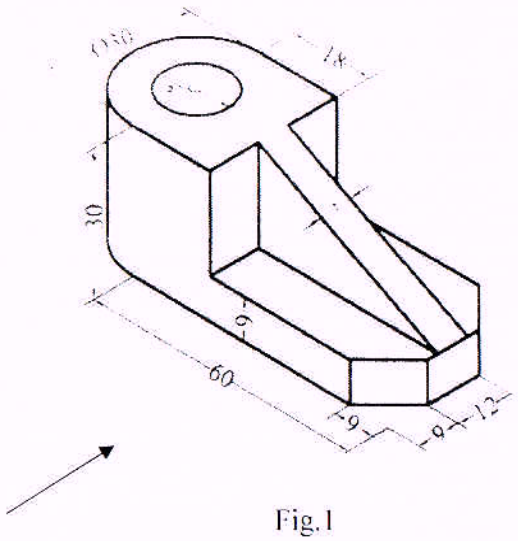


Fig.1

3. A circular plane of 50 mm diameter is resting on HP on end A of it's diameter AC which is 30^0 inclined to HP while it is 45^0 inclined to VP. Draw it's projections.
4. Two fixed straight lines OA and OB are at right angle to each other. A point "P" is at a distance of 20 mm from OA and 50 mm from OB. Draw a rectangular hyperbola passing through point "P".

5. A pentagonal prism of side of base equal to 40 mm and axis height 110 mm rests on one of its corners of its base on H.P. such that the axis is inclined at an angle of 40° with H.P. and 60° with the V.P. Draw its projection.
6. Front view and side view of an object are given in fig.2, draw it's isometric view.

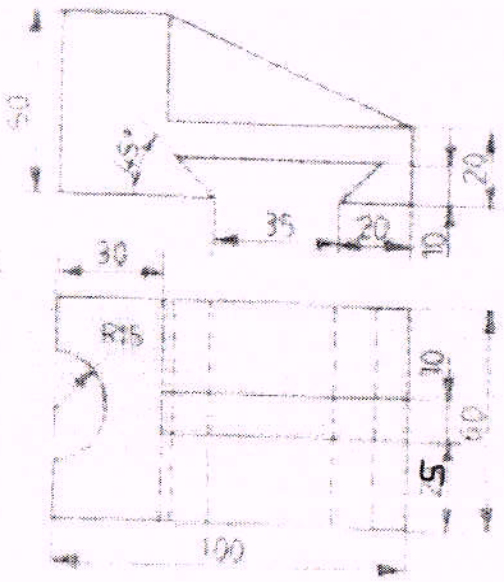


Fig.2

7. Draw the front view and top view for the component shown in the figure 3 below:

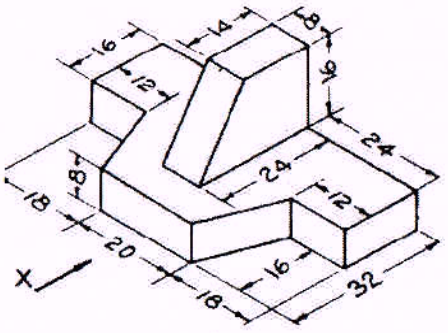


Fig. 3

8. Line AB is 95 mm long and it is 25^{0}& 45^{0} inclined to HP & VP respectively. End A is 10 mm above HP and 15 mm in front of VP. Draw Projections and locate traces. Line is in 1st quadrant.

9. A hexagonal prism of 25 mm side of base and 80 mm height, resting on the H.P. such that the axis is inclined at 35^0 to the H.P. and 60^0 to the V.P. Draw its projections. Keep the top end of the prism away from the V.P.

----------All the best----------

MGM University
Aurangabad-431003
First Term Exam A.Y. 2021-22

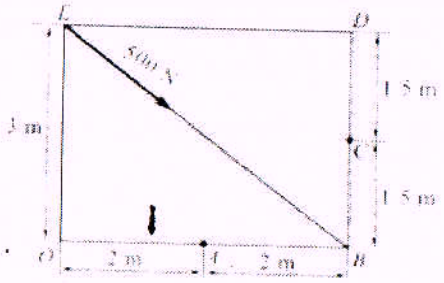
Program : Civil Engineering
Course : Engineering Mechanics
Course Code : 20UCC014B

Sem –I
Marks : 60

Instructions to the students
1. Each question carries 10 marks.
2 All questions are compulsory
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

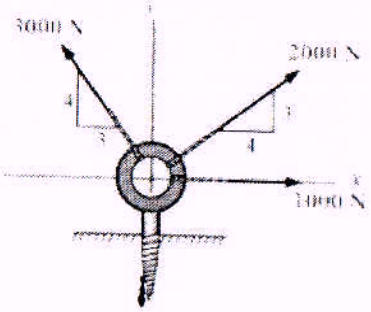
Q1. Solve any two Marks

a) Find the moment of 500 N force about point O, A, B and C respectively shown in fig. (5)

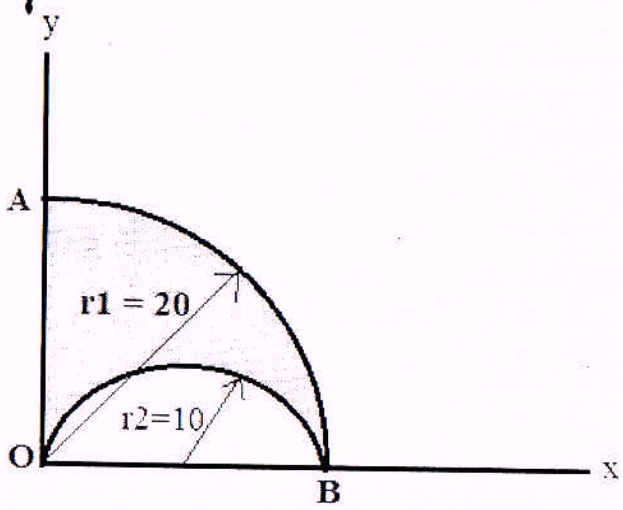


b) Explain the Characteristics of a force in detail? (5)

c) An eye bolt is being pulled from ground by three forces as shown in fig. Determine the resultant force R and angle of inclination of R with the horizontal? (5)

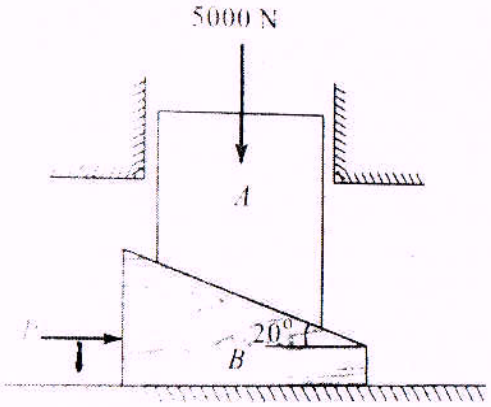


c) Find the coordinates of the centroid of the shaded area as shown in fig. ? (5)



Q4. Solve any two

a) The block as shown in fig. supports a load W = 5000 N and is to be raised by forcing the wedge B under it. The angle of friction for all surface for contact is Φ = 150. Determine the force P which is necessary to start the wedge have negligible weight. (5)



b) Define the Following Terms? (5)

i) Static Friction, ii) Kinetic Friction, iii) Limiting Friction, iv) Angle of Friction and v) Angle of Repose?

c) A weightless ladder of length 8 m is resting against a smooth vertical wall and rough horizontal ground as shown in fig. The coefficient of friction between ground and ladder is 0.25. A man of weight 500 N wants to climb up the ladder. The man can climb without slip. A second person weighting 800 N wants to climb up the same ladder. Would he climb less than the earlier person? Find the distance covered? (5)

Q6. Solve any two

a) A particle starts moving along a straight line with initial line with initial velocity of 25 m/s, from O under a uniform acceleration of -2.5 m/s^2. Determine

i) Velocity, displacement and the distance travelled at t = 5 sec.

ii) How long the particle moves in the same direction? What are it's velocity, displacement and distance covered then? (5)

b) State and Explain the D'Alemberts' Principle and give the difference between D'Alemberts' Principle and Newton's Second Law? (5)

c) Find out the impulse in different conditions as mentioned below (5)

Case-I: If the 2.0 kg object travels with a velocity of 10 m/s before it hits the wall and a velocity of -10 m/sec after the collision (Negative because it bounces back in the opposite direction). Find out the impulse?

Case-II: If the 2.0 kg object travels with a velocity of 10 m/s before it hits the wall and stops after hitting then the impulse can be calculated as?

End of paper

MGM University
Aurangabad-431003
First Term Exam A.Y. 2021-22

Program : Computer Programming
Semester: First
Course Code : 21UGE-101 Marks : 60

Instructions to the students
1. Each question carries 10 marks.
2 All questions are compulsory
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. Solve any two Marks
a) Define program. Why we need to write a program? Explain basic Structure of C program with execution steps of program. (5)
b) Explain the Features of C programming. (5)
c) Define Algorithm. Write an algorithm and draw flowchart to find greater number between two numbers.

Q2. Solve any two
a) Explain in detail Arithmetic, Relational and Logical Operator in C. (5)
b) Enlist the hierarchy of data types in C. Also write the amount of size required to store the basic data types in the memory. (5)
c) Define the variable in C. Give an example of variable declaration and variable initialization. (5)

Q3. Solve any two
a) Write difference between While loop, Do While loop and For loop. (5)
b) Write a C program to find the biggest of three numbers. (5)
c) Explain the switch statement with syntax and example. (5)

Q4. Solve any two
a) Differentiate between call by value and call by reference with examples. (5)
b) What is function? Write a function to find the sum of two numbers. (5)
c) Define a recursion. Write a C program to find the factorial of a number using recursion. (5)

Q5. Solve any two
a) What is array ? Explain the declaration and initialization of one dimensional and two dimensional array with an example. (5)
b) Define string. How string is declared and initialized ? (5)
c) Why do we use Arrays in C? What is Multidimensional Array? (5)

Q6. Solve any two
a) What is a pointer? Explain how the pointer variable declared and initialized? (5)
b) Write a C program to store and print name, roll number, subject and marks of students using structure (5)
c) Explain the difference between array and structures? (5)

End of paper

F Y B Tech (ALL)- First year- I Semester Examination

Full Title of the Paper: -Single Variable Calculus Paper Code: - 20UCC001B

Feb/March - 2022

Instructions to the students

1. Each question carries 10 marks.
2 All questions are compulsory
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. Solve any TWO

A) A stone is dropped into a lake, creating a circular ripple that travels outward at a speed of 60 cm/s.

i) Express the radius r of this circle as a function of the time t (in seconds).

ii) If A is the area of this circle as a function of the radius r, find $(A \circ r)(t)$. **(5)**

B) Suppose the graph of y=f(x) is given. Write equations for the graphs that are obtained from the graph of $y=f(x)$ as follows. **(5)**

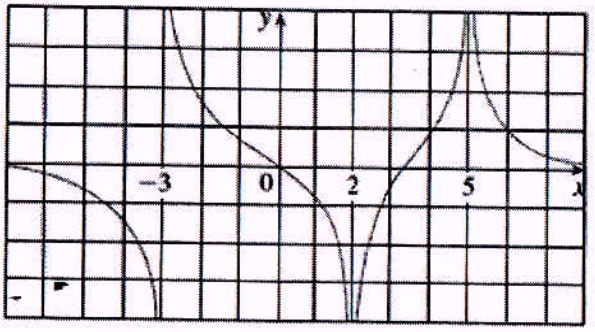
(i) Shift 3 units upward. (ii) Shift 3 units downward.
(iii) Shift 3 units to the right. (iv) Shift 3 units to the left.
(v) Reflect about the y -axis.

C) A Norman window has the shape of a rectangle surmounted by a semicircle. If the perimeter of the window is 30 ft, express the area A of the window as a function of the width x of the window. **(5)**

Q2. Solve any TWO.

A) For the function R(x) whose graph is shown, state the following.

(1) $\lim_{x\to 2} R(x)$ (2) $\lim_{x\to 5} R(x)$ (3) $\lim_{x\to -3^-} R(x)$ (4) $\lim_{x\to -3^+} R(x)$ **(5)**



B) State slope point form of straight line and hence find an equation of the tangent line to the parabola $y = x^2$ at the point P(1, 1). **(5)**

Q5. Solve any Two.

A) Solve : $\frac{dy}{dx} + \frac{y\cos x + \sin y + y}{\sin x + x\cos y + x} = 0.$ (5)

B) A coil having resistance of 20 Ω and an inductance of 10 henries is connected to 100 volts supply.

i) Determine an expression of current as function of time

ii)Determine current after t=2 seconds. (5)

B) ApplyRunge-Kutta fourth order method to find an approximate value of y when x=0.1,given that $\frac{dy}{dx} = x + y^2$; $y(0) = 1$, *take* $h = 0.1$. (5)

Q6. Solve any Two.

A) Test the convergence of the series: (5)

$$\sum_{n=1}^{\infty} (1 + \frac{1}{n})^{n^2}$$

B) Test the convergence of the series: $\sum_{n=1}^{\infty} \frac{n!}{n^n}$ (5)

C) Prove that $\log(1 + \sin x) = x - \frac{x^2}{2!} + \frac{x^3}{3!} + \ldots\ldots$ (5)

End of paper

Q.6. Draft the following using appropriate scale (any 2) **30 Marks**

a) Draw plan of odd and even course, elevation and isometric of one and half brick thick wall in double Flemish bond.

b) Draw plan of odd and even course, elevation and isometric view of two brick thick wall in English bond.

c) Draw a simple foundation for a hall admeasuring 3.0 x 4.0 mts. In stone masonry.

1. Take wall thk.350 mm
2. Depth of foundation 1.75 mt. below the ground.

Draw- (Use appropriate scale)

1. Key plan & section
2. Detail foundation section
3. Plan of footing
4. Isometric view of foundation.

----------End of Paper----------

Gandhian Studies

Third Semester Examination

Course Code : 20UCC302H

Two Credit Certificate Course on Gandhian Thought

Maximum Marks: 30 **Time : One hour**

Section 1: Match the following (write the matching alphabet in the box): **(Marks-10)**

1. Gandhiji's Mother	(.....)	a. Inner Temple
2. Name of the High School Gandhiji studied	(.....)	b. Harichandra
3. Gandhiji was thrown out of train at	(.....)	c. Diwan of Porbandar
4. Gandhiji finished his Bar-at-Law at	(.....)	d. Alfred
5. The play which influenced Gandhiji	(.....)	e. Unto This Last
6. Gandhiji's Autobiography	(.....)	f. Shravan's Pitru Bhakti
7. Gandhiji's Father	(.....)	g. Pietermaritzburg
8. The book that changed his life	(.....)	h. Coolie
9. Named Gandhiji's first Newspaper	(.....)	i. Putlibai
10. Indians in South Africa were called	(.....)	j. The Story of My Experiments with Truth

Section 2: Fill in the blanks using the correct word from the following: **(Marks-10)**

(Dadabhai, Tolstoy Farm; Sarva Dharma Prarthana; Song Celestial; Do or Die; Gopal Krishna Gokhale; Lord Mountbatten; Champaran; Law; Delhi)

1. The religious book Gandhiji read in England: .....
2. The leader Gandhiji met in Poona who immediately won his heart: .....
3. Gandhiji set up Harijan Ashram at: .....
4. Name of the Dalit person whose family joined Gandhiji in Kochrab Ashram: .....
5. Gandhiji's public prayer is called: .....

6. Slogan of the Quit India Movement: .....

7. Who called Gandhiji as 'One-Man Boundary Force'? : .....

8. Gandhi went to London to study: .....

9. Gandhi met Rajendra Prasad first time in : .....

10. The second Ashram Gandhiji established in South Africa: .....

Section 3: Select (Tick) the right answer from the given options: (Marks: 10)

1. Name of the first Ashram Gandhiji established in India:
   a. Tolstoy Farm; **b.** Kochrab Ashram; **c.** Phoenix Settlement; **d.** Sabarmati Ashram

2. Name of the book Gandhiji had written during his voyage in 1909:
   a. Unto This Last; **b.** Plea for Vegetarianism; **c.** Hind Swaraj; **d.** Key to Health

3. Gandhi translated the book 'Unto This Last' and named it as 'Sarvodaya' . It means:
   a. Welfare of the weak; **b.** Welfare of the rich; **c.** Welfare of all; **d.** Welfare of the poor

4. The first principle of the Sarvodaya says that "the good of the individual is contained in ....."
   a. good of family; **b.** good of the community; **c.** good of the nation; **d.** good of all

5. Satyagraha means: **a.** Insistence on freedom; **b.** Insistence on Justice; **c.** Insistence on Truth
   d. Insistence on Equality

6. The first satyagraha Gandhiji conducted in India was: **a.** Ahmedabad Mill Workers Satyagraha;
   b. Kheda Peasants Satyagraha; **c.** Champaran Indigo farmers Satyagraha; **d.** Salt Satyagraha

7. Swadeshi means, in the economic sense, connecting with: **a.** National producer;
   b. Global producer; **c.** Neighbourhood small producers; **d.** Local big producers

8. Sustainable living refers to 'Living in accordance with the .....'
   a. Law of the Society; **b.** Law of the Nation; **c.** Law of the UNO; **d.** Law of the Nature

9. Where the power should be vested with, according to Gandhiji, in a real democracy:
   a. Parliament ; **b.** State Assembly; **c.** Village Panchayat; **d.** None

10. Which is 'life worth living' according the third principle of Sarvodaya: Life of .....
    a. Doctor and Lawyer; **b.** Businessman and Industrialist; **c.** Farmer and Craftsman;
    d. Teacher and journalist

F Y B Tech (ALL)- First year- I Semester Examination

Full Title of the Paper: -Single Variable Calculus Paper Code: - 20UCC001B

Feb/March - 2022

Instructions to the students

1. Each question carries 10 marks.
2. All questions are compulsory
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. Solve any TWO

A) A stone is dropped into a lake, creating a circular ripple that travels outward at a speed of 60 cm/s.

i) Express the radius r of this circle as a function of the time t (in seconds).

ii) If A is the area of this circle as a function of the radius r, find $(A \circ r)(t)$. **(5)**

B) Suppose the graph of y=f(x) is given. Write equations for the graphs that are obtained from the graph of $y=f(x)$ as follows. **(5)**

(i) Shift 3 units upward. (ii) Shift 3 units downward.

(iii) Shift 3 units to the right. (iv) Shift 3 units to the left.

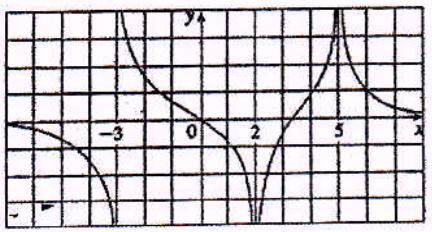
(v) Reflect about the y -axis.

C) A Norman window has the shape of a rectangle surmounted by a semicircle. If the perimeter of the window is 30 ft, express the area A of the window as a function of the width x of the window. **(5)**

Q2. Solve any TWO.

A) For the function R(x) whose graph is shown, state the following.

(1) $\lim_{x\to 2} R(x)$ (2) $\lim_{x\to 5} R(x)$ (3) $\lim_{x\to -3^-} R(x)$ (4) $\lim_{x\to -3^+} R(x)$ **(5)**



B) State slope point form of straight line and hence find an equation of the tangent line to the parabola $y = x^2$ at the point P(1, 1). **(5)**

FY (B.Tech.) All First Term Exam A.Y. 2021-22

Full Title of Paper: Engineering Graphics Course Code:

June-July 2022

Time: Four Hours Marks: 60

Instructions to the students

1. Each question carries 10 marks.
2 Solve any six questions out 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

1. A line AB 70 mm long is inclined at an angle of 30^0 to H.P. and 45^0 to the V.P. The point 'A' is 10 mm above H.P. and 20 mm in front of V.P. Draw the projections of the line when it is in first quadrant
2. Draw the front view in X direction and top view for the component shown in the figure 1 below:

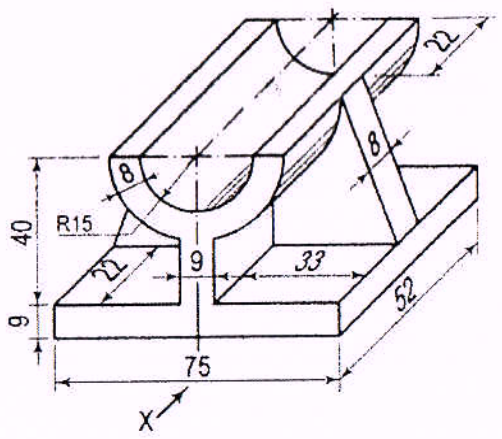


Fig.1

3. A rectangular plate ABCD of 30mm X 60mm dimensions has its shorter side AB on HP. Draw its projections when the surface of the plane is 45^0 inclined to HP and the side which is in HP making 30^0 to the VP . Draw Projections.
4. Draw an ellipse by concentric circle method when major axis is 100 mm and minor axis is 60 mm.

5. A square plate of 60 mm side is resting on HP on one of its corners in such a way that its surface makes an angle of 45^0 to the HP. Draw the projections of the square plate when diagonal passing through the corner on the HP makes an angle of 30^0 to the VP.
6. Front view and Left hand side view of an object are given in fig.2, draw it's isometric view.

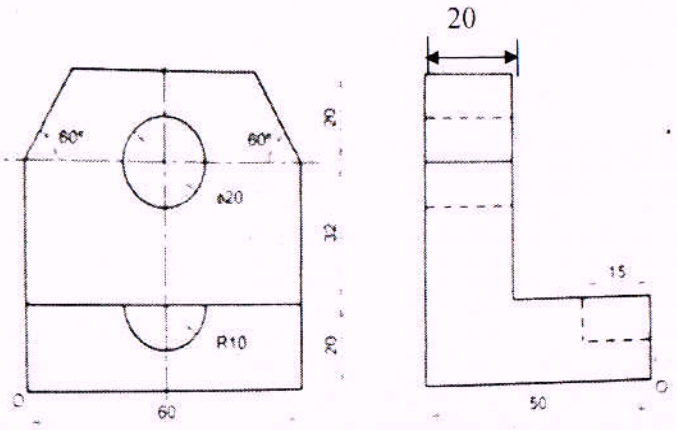


Fig.2

7. Draw the front view in X direction and top view for the component shown in the figure 3 below:

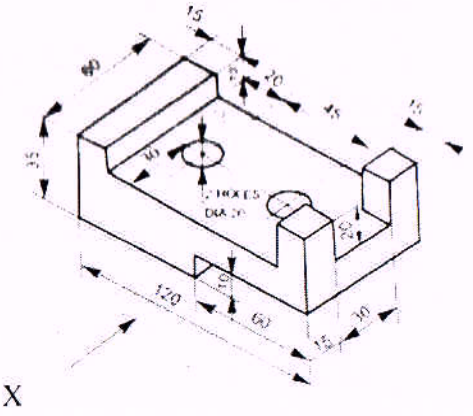


Fig. 3

8. (A) Differentiate between First angle Method of Projections and Third angle Method of Projections.

8 (B)Draw the Projections of the Following Points.

A) Point A is 20 mm above HP and 10 mm in front of VP
B) Point B is 10 mm above HP 15 mm behind VP
C) Point C is 15 mm below HP and 20 mm behind VP
D) Point D is 10mm below HP and 25mm in front of VP

E) Point E is on both HP and VP.

9. A Square pyramid of 40mm edge of base and 60mm length of an axis is resting in the HP on one of its base edges. The axis makes an angle of 30^0 with the HP. Draw its projections if the top view of an axis is inclined at 45^0 to the VP.

----------All the best----------

MGM University

Jawaharlal Nehru Engineering College, Aurangabad

Department of Computer Science and Engineering

Semester II

Course Code: 20PCS205E **Name of course: Big Data Analytics**

Max Marks: 60 **Time: 3Hrs**

Instructions:

1. Each question carries equal marks.
2 All questions are compulsory
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		**Attempt any 1 from following.**	
	A	Compute the mean, median and standard deviation for following exam scores Exam Numbers are from 1 to 10. Scores with respect to Exam Numbers are {20,40,60,60,75,80,70,65,70,90}	10
	B	Customer Anil purchases a certain product. The manual states that the lifetime T of the product, defined as the amount of time (in years) the product works properly until it breaks down, satisfies $P(T \geq t)=e^{-t/5}$, for all $t \geq 0$.For example, the probability that the product lasts more than (or equal to) 2 years is $(T \geq 2)=e^{-2/5}=0.6703$. Customer Suresh purchases the product and uses it for two years without any problems. What is the probability that it breaks down in the third year?	10
Q2		**Attempt any 1 from following.**	
	A	Consider some big data application like smart city project or any other; Identify the data sources and their type? How to preprocess this data?	10
	B	What is data wrangling? Describe different steps of it with some real time project	10
Q3		**Attempt any 2 from following.**	
	A	Explain the characteristics of big data with example.	5
	B	Write short note on "Fallbacks of traditional RDBMS in handling and processing Big data".	5
	C	Compare and contrast SQL with NoSQL?	5
Q4		**Attempt any 2 from following.**	
	A	Write a short note on of business intelligence?	5
	B	Explain in detail challenges to big data analytics?	5
	C	Explain the need of big data analytics with suitable example?	5
Q5		**Attempt any 2 from following.**	
	A	Explain the concept of MapReduce with suitable example?	5
	B	Write a short note on HDFS?.	5
	C	Explain the role and responsibilities of YARN in Hadoop ecosystem?	5
Q6		**Attempt any 2 from following.**	
	A	Write a short note on HBASE?	5
	B	What is SPARK? Explain the architecture of SPARK?	5
	C	How machine learning algorithms are implemented in SPARK?	5

----------**All d Best**----------

MGM University

Jawaharlal Nehru Engineering College, Aurangabad

Department of Computer Science and Engineering

Semester II

Course Code: 20UCC004B **Name of course:** Python Programming

Max Marks: 60 **Time: 3Hrs**

Instructions:

1. Each question carries equal marks.
2 All questions are compulsory
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 **Attempt any 2 from following.**

A Write in brief about the execution of Python code. 5

B Rajesh went to Mc'Donald and ordered following food 5

Sr. No	Item name	Rate per kg	Quantity in Kg
1	Aloo Tikki	49	2
2	Spicy Burger	172	3
3	Wrap Meal	350	2

Write a program to prepare the bill.

C Explain about Membership operators and Identity operators in python with appropriate examples. 5

Q2 **Attempt any 2 from following.**

A Explain for loop with suitable example. 5

B Write a program for checking the speed of drivers. If speed is less than 70, it should print "Ok". Otherwise, for every 5km above the speed limit (70), it should give the driver one demerit point and print the total number of demerit points. For example, if the speed is 80, it should print: "Points: 2". If the driver gets more than 12 points, the function should print: "License suspended". 5

C Explain Sentinel Controlled Statement with suitable example. 5

Q3 **Attempt any 2 from following.**

A Explain the use of join() and split() string methods with examples. Describe why strings are immutable with an example. 5

B Illustrate the following Set methods with an example. 5
a) intersection() b) union() c) difference() d) update() e) discard()

C Explain the following list methods with an example. 5
a) append() b) extend() c) insert() d) index() e) sort()

Q4 **Attempt any 2 from following.**

A Explain Lambda with suitable example. 5

B What is a function? How to define a function in python? Write a program using function to find out the given number is even or odd. 5

C Write a program to print Fibonacci series number using recursion. 5

Q5 **Attempt any 2 from following.**

A What is Data Preprocessing? How many Steps in Data Preprocessing and name those. 5

B Write a program in python to perform matrix addition. 5

C Explain different key operations on data frames. 5

Q6 **Attempt any 2 from following.**

A Explain binary search with suitable example. 5

B Explain insert, update, select all, delete query with syntax. 5

C What are the different SQL data types? Explain with suitable example. 5

MGM UNIVERSITY'S
Jawaharlal Nehru Engineering College
MGM CAMPUS, N-6, CIDCO, AURANGABAD

Course: F.Y B.Tech | Semester: II
Subject: Communication Skills | Marks: 60
Course Code: 20UCC016C | Duration: 3 Hours

Instructions to the students

1. Each question carries 10 marks.
2. All questions are compulsory

Q1. Solve any two **10 Marks**

a) Explain the Physical barrier in communication
b) Elucidate different ways of effective communication.
c) Differentiate between Verbal and Non verbal communication

Q2. Solve any two **10 Marks**

a) Explain the importance of eye contact in communication process.
b) Write dos and don`ts of participating in Group Discussion?
c) Illustrate gestures, postures, facial expression briefly.

Q3. Solve any two **10 Marks**

a) Identify/ underline the sound /tʃ/ from the following words.
charming, this,check, they,catch, there,teacher, thrust,chain

b) Write down the short note on diphthongs.
c) Write down five examples in words of the following sounds /p/.

Q4. Solve any two **10 Marks**

a) Explain the structure of Present Tense with one example.
b) Write down any five parts of speech with suitable examples.
c) Write the antonyms of the following words.
1. Admire2. Ancient 3.Complex 4. Honor5. Eradicate

Q5. Solve any two **10Marks**

a) Apply for the post Junior Engineer in a Multinational Company.
b) Write down different steps in email writing.
c) Explain the format of Application Letter writing.

Q6. Solve any two **10Marks**

a) Explain the role of Active listening in the process of effective communication.
b) What is listening? Explain the types of listening.
c) Write a short note on Skimming

Second Term Exam A.Y. 2021-22(Jun-Jul 22)

Program Name FY B.Tech (All) 2nd Sem Exam

Course Code :20UCC012B **Name of the Course: Multivariable Calculus**

Max. Marks:60 **Duration: 3 hours**

Instructions to the students

1. Each question carries 10 marks.
2. All questions are compulsory
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

Q1. **Solve any two**

a) The total resistance R produced by three conductors with resistances R_1,R_2 ,R_3 connected in a parallel electrical circuit is given by the formula:

$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ Find $\frac{\partial R}{\partial R_1}$. (5)

b) The length and width of a rectangle are measured as 30 cm and 24 cm, respectively, with an error in measurement of at most 0.1 cm in each. Use differentials to estimate the maximum error in the calculated area of the rectangle. (5)

c) Find Jacobian : $x = u(1-v)$; $y = uv$ (5)

Q2. **Solve any two**

a) Evaluate double integrals $\int_0^1 \int_0^{1-x} (x+y)\, dxdy$ (5)

b) Evaluate double integrals in Cartesian form when region is given

Evaluate $\iint_R xy(x+y)dxdy$ over region R bounded by the curves $y = x^2$ and line $y = x$, $x = 0$ and $x = 1$. (5)

c) Evaluate the triple integral $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dx\, dy\, dz$ (5)

Q3. **Solve any two**

a) Find area bounded by the curves $y^2 = 4x$ *and* $x^2 = 4y$. (5)

b) Find the total area included between two cardioids (5)

$r = a(1+cos\theta)$ *and* $r = a(1-cos\theta)$

c) Solve

i. The value of $\int_0^1 dx \int_0^2 dy \int_0^3 dz$ *is*.....

ii. The order of integration in

$\int_0^6 dx \int_0^{5z} dy \int_0^{2y-z} (x+y+z)dx\,dy\,dz$ *is*..... (5)

iii. Area between the circles $r = 1$ *and* $r = 2$ *is* ....

iv. Find the area bounded by $x = 0, y = 0$ *and* $x + y = 8$ *is* .....

v. $\int\int dx\,dy$ *gives* ....

Q4. Solve any two

a) Show that the vector $\bar{V} = (x+3y)i + (y-3z)j + (x-2z)k$ is solenoidal. (5)

b) Find the directional derivative of $f(x,y,z) = x^2yz + 4xz^2$ at (1,-2,-1) in the direction of $2i - j - 2k$. (5)

c) If $\bar{F} = (x^2 - yz)i + (y^2 - zx)j + (z^2 - xy)k$ then
(i) prove that $\bar{F}$ is conservative
(ii) find its scalar potential $\emptyset$ (5)

Q5. Solve any two

a) Use Green's theorem in a plane to evaluate

$\int_C[(2x^2 - y^2)dx + (x^2 + y^2)dy]$,where C is the boundary of the region enclosed by the x-axis and upper half of circle $x^2 + y^2 = 1$. (5)

b) If a force $\bar{F} = 2x^2yi + 3xyj$ displaces a particle in the xy-plane from (0,0) to (0,4) Along the curve $y = 4x^2$ then find the workdone. (5)

c) Use Stoke's theorem to evaluate $\int_C[(x^2 + y^2)dx + (x^2 - y^2)dy]$,where C is the boundary of the region enclosed by the circles $x^2 + y^2 = 4$ *and* $x^2 + y^2 = 16$. (5)

Q6. Solve any two

a) Solve $y'' + y' - 2y = sinx$ (5)

b) Solve $(x^2D^2 + 5xD + 3)y = \frac{logx}{x^2}$ (5)

c) Solve by using method of variation of parameters $y'' + 4y = sec2x$ (5)

End of Paper

Second Term Exam A.Y. 2021-22 (May-June 22)
Program : F.Y. B. Tech.(All) Semester –II

Course Code :20UCC012B Name of the Course : Multivariable Calculus
Max. Marks: 60 Duration:3 Hours

Instructions to the students
1. Each question carries 10 marks.
2 All questions are compulsory.
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. Solve any Two questions.

a) The length and width of a rectangle are measured as 30 cm and 24 cm, respectively, with an error in measurement of at most 0.1 cm in each. Use differentials to estimate the maximum error in the calculated area of the rectangle. [5M]

b) If the kinetic energy of a body with mass m and velocity v is $K=0.5mv^2$ then find the value of $\frac{\partial K}{\partial m}\frac{\partial^2 K}{\partial v^2}$. [5M]

c) Find the extreme values of the function $x^3 + y^3 - 63(x + y)+12xy$ [5M]

Q2. Solve any Two questions.

a) Evaluate: $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dxdydz$. [5M]

b) Evaluate $\iint y\, dx\, dy$ over the region enclosed by the parabola $x^2 = y$ and the line $y = x + 2$. [5M]

c) Evaluate the double integral $\int_1^4 \int_0^2 (6x^2y - 2x)\, dy\, dx$. [5M]

Q3. Solve any Two questions.

a) Find the area of region bounded x=0, y=0 ,x=2 and y=3 using double integration. [5M]

b) Find the area of the region enclosed by the parabola $x^2 = y$ and the line $y = x + 2$. [5M]

c) A swimming pool is circular with a 40-ft diameter.The depth is constant along east-west lines and increases linearly from 2 ft at the south end to 7 ft at the north end.Find the volume of water in the pool. [5M]

Q4. Solve any Two questions.

a) Answer the following questions: [5M]

i) If $\bar{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ then find the value of $(\nabla . 2\bar{r})$

ii) If $\bar{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ then *find the value of* $(\nabla \times \bar{r})$

iii) Find the divergence of $\bar{F} = (e^{xy})i - (cosy)j + (sin^2 z)k$ *at* $(0, \frac{\pi}{2}, 0)$

iv)Find the curl of vector field $\bar{F} = (x^2)i + (z)j - (y)k$

v) Find gradient of $\emptyset = e^{2x} \sin(yz)$ at (0,0,0)

b) Find directional derivative of $\emptyset = xy^2 + z^3y$ at (2,-1,1) in direction.direction parallel to the line: $2(x+2) = (y-1) = 1 - z$ [5M]

c) Show that $\bar{F} = (zy)i + (xz)j + (xy)k$ is irrotational .Find the corresponding scalar potential function $\emptyset$ such that $\bar{F} = \nabla\emptyset$. [5M]

Q5. Solve any Two questions.

a) Use Green's theorem in plane to evaluate $\oint_C (xy + y^2)dx + (x^2)\,dy$, where curve C is boundary of the region enclosed by $y = x^2$ *and* $y = x$ in xy plane [5M]

b) Answer the following questions: [5M]

i) State Green's theorem in plane

ii) State Stokes's theorem

iii)State Gauss divergence theorem..

iv)Represent line integral *of* $\bar{F}$ along curve C.

v) What is relation between Green's Theorem in plane and Stokes's theorem

c) If $\bar{F} = (x^2)i + (xy)j$ then evaluate $\oint_C \bar{F} . d\bar{r}$ over the rectangle bounded by lines x=0,y=0,x=a and y=b in xy plane using Stoke's theorem [5M]

Q6. Solve any Two questions.

a) Solve $(D^2+1)y = \text{cosec } x$ by method of variation of parameters. [5M]

b) Solve $(D^2 - 13D+36)y = e^{4x}$ [5M]

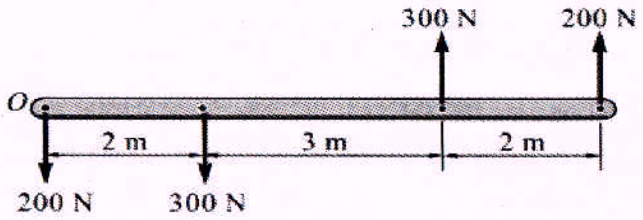
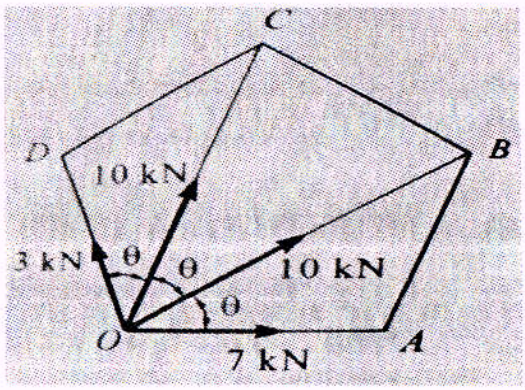
c) A spring with a mass of 2kg has natural length 0.5 m. A force of 25.6 N is required to maintain it stretched to alength of 0.7 m. If the spring is stretched to a length of 0.7 m and the released with initial velocity 0 m/s, find theposition of the mass at any time t. [5M]

End

Second Term Exam A.Y. 2021-22

Program: Engineering & Technology — **2nd Semester Examination**
Course Code: 20UCC014B — **Name of Course: Engineering Mechanics**
Maximum Marks: 60 — **Duration: 3 hrs**

Instructions to the students
1. Each question carries 10 marks.
2 All questions are compulsory.
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.

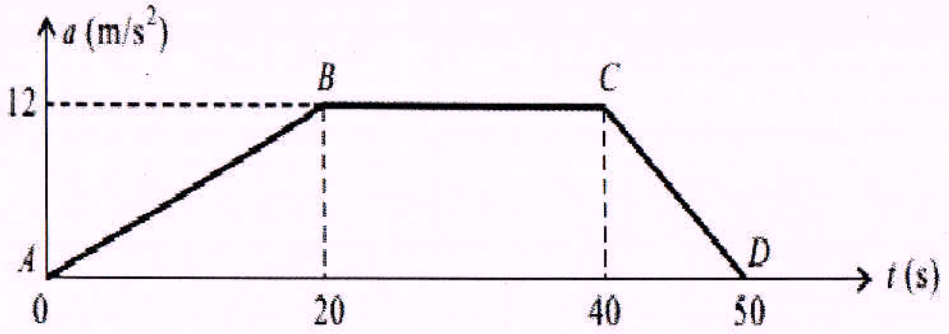
Q.1 Solve any two		**Marks**
a.	State and explain different characteristics of force with neat sketch?	5
b.	Find the resultant of the force systems. 	5
c.	Forces 7 kN, 10kN, 10 kN and 3kN, respectively act at one of the angular point of regular pentagon toward the other four point taken in order. Find their resultant completely. 	
Q.2 Solve any two		
a.	State and explain types of beams?	5
b.	A circular roller of weight 1000 N and radius 20 cm hangs by a tie rod AB = 40 cm and rests against a smooth vertical wall at C as shown in Fig. Determine the tension in the rod and reaction at point C.	5

Q.5 Solve any two

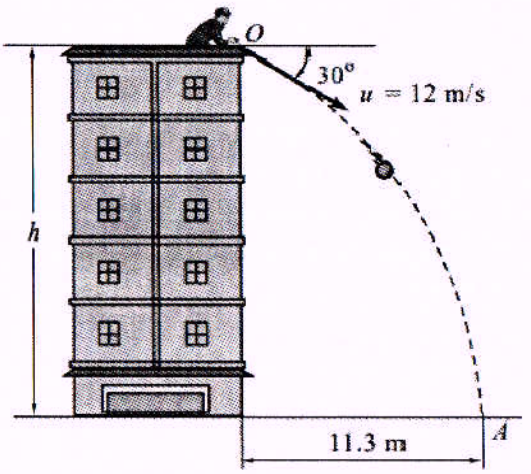
a. A particle moves in a straight line so that its displacement is given by the equation $S= 18t+ 3t^2- 2t^3$ determine — 5

1) Velocity and acceleration at start.
2) Time when particle reaches its max. velocity.
3) Max. Velocity of the particle.

b. Figure shows a plot of acceleration versus time for a particle moving along straight line. What is the speed and the distance covered by the particle after 50 sec? Also find the maximum speed and the time at which the speed is attained by the particle. — 5

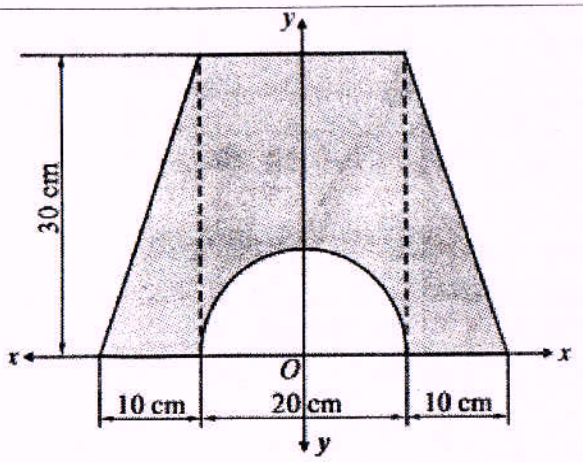


c. A ball thrown from top of building with a speed 12 m/s at angle of depression 30^0 with horizontal, strikes the ground 11.3 m horizontally from the foot of the building, as shown in Fig. Determine the height of building. — 5

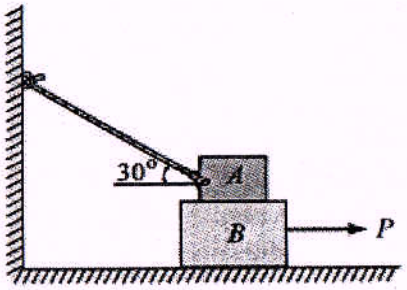
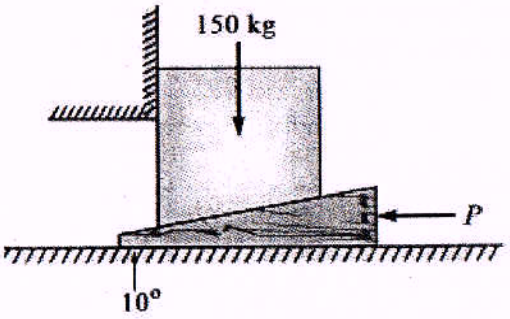


Q.6 Solve any two

a. What horizontal force is needed to give 70 kg block an acceleration of $2.5 m/s^2$ up the — 5



Q.4 Solve any two

a.	Find force P required to pull block B. Coefficient of friction between A and B is 0.3 and between B and floor is 0.25. Weights of A = 20 kg and B = 30 kg. 	5
b.	A block of mass 150 kg is raised by a 10^0 wedge weighing 50 kg under it and by applying a horizontal force at it as shown in Fig. Taking coefficient of friction between all surfaces of contact as 0.3, find minimum force that should be applied to raise the block. 	5
c.	A uniform ladder weighing 100 N and 5 meters long has lower end B resting on the ground and upper end A resting against a vertical wall as shown in Fig. The inclination of the ladder with horizontal is 60^0. If the coefficient of friction at all surfaces of contact is 0.25, determine how much distance (up along the ladder) a man weighing 600 N can ascent without causing it to slip.	5

Second Term Exam A.Y. 2021-22(Jun-Jul 22)

Program Name FY B.Tech (All) 2nd Sem Exam

Course Code : BTIT1201 **Name of the Course: Multivariable Calculus**

Max. Marks:60 **Duration: 3 hours**

Instructions to the students

1. Each question carries 10 marks.
2 All questions are compulsory
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

Q1. **Solve any two**

a) The total resistance R produced by three conductors with resistances R_1,R_2 ,R_3 connected in a parallel electrical circuit is given by the formula:

$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ Find $\frac{\partial R}{\partial R_1}$. (5)

b) The length and width of a rectangle are measured as 30 cm and 24 cm, respectively, with an error in measurement of at most 0.1 cm in each. Use differentials to estimate the maximum error in the calculated area of the rectangle. (5)

c) Find Jacobian : $x = u(1-v)$; $y = uv$ (5)

Q2. **Solve any two**

a) Evaluate double integrals $\int_0^1 \int_0^{1-x} (x+y)\, dxdy$ (5)

b) Evaluate double integrals in Cartesian form when region is given

Evaluate $\iint_R xy(x+y)dxdy$ over region R bounded by the curves $y = x^2$ and line $y = x$, $x = 0$ and $x = 1$. (5)

c) Evaluate the triple integral $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} dx\, dy\, dz$ (5)

Q3. **Solve any two**

a) Find area bounded by the curves $y^2 = 4x$ *and* $x^2 = 4y$. (5)

b) Find the total area included between two cardioids

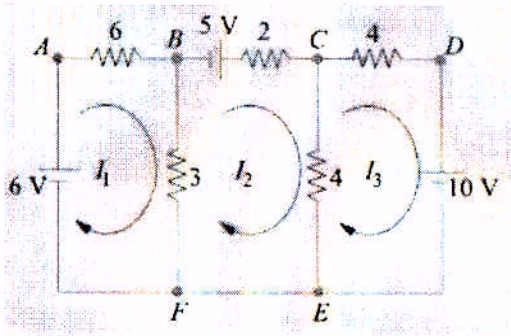
$r = a(1+cos\theta)$ *and* $r = a(1-cos\theta)$ (5)

MGM UNIVERSITY
Jawaharlal Nehru Engineering College
End Semester Examination – June 2022

Course: B. Tech FY **Class- FY (All)** **Sem: II**
Subject Name: Electrical Technology **Subject Code: 20UCC015B**
Max Marks: 60 **Date: - 29-06-2022**
Duration: - 3 Hr.

Instructions to the Students:

1. **All question should be compulsory**
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.**

		CO	BL	Marks
Q. 1	**Solve Any Two of the following.**			**10**
(A)	Apply loop analysis method to determine the loop currents I_1, I_2 and I_3 for given circuit. 	**2**	**1**	
(B)	Obtain the V-I relationship for Series RLC AC circuit. Also sketch the phasor diagrams.	**1**	**1**	
(C)	A series RLC circuit containing a resistance of 10Ω, an inductance of 0.15H and a capacitor of 100uF are connected in series across a 200V, 50Hz supply. Calculate the total circuit impedance, the circuit's current, power factor and draw the voltage phasor diagram.	**2**	**1**	
Q.2	**Solve Any Two of the following.**			**10**
(A)	Derive EMF Equation of single-phase transformer.	**2**	**1**	
(B)	Discuss the similarities and dis-similarities of magnetic and electrical circuits.	**2**	**1**	
(C)	A single-phase transformer has 500 primary and 1000 secondary turns. The net cross sectional area of the core is 60 cm2. If the primary winding be connected to a 50Hz supply at 400 V, Calculate 1] the peak value of flux density in the core. 2] The voltage induced in the secondary winding.	**3**	**3**	

Q.3	**Solve Any Two of the following.**			**10**
(A)	What is the working principle of battery? Discuss its types in detail.	**2**	**1**	
(B)	Discuss the working of Fuel cell in detail with neat sketch.	**2**	**3**	
(C)	What is primary cell? Discuss the working of any one primary cell in detail with neat sketch.	**1**	**1**	

		CO	BL	Marks
Q. 4	**Solve Any Two of the following.**			**10**
(A)	Explain the construction and working principle of a PMMC Instrument in detail.	**2**	**1**	
(B)	Explain the working principle of a Light Emitting Diode (LED).	**1**	**1**	
(C)	Differentiate between absolute and secondary instruments.	**2**	**1**	
Q.5	**Solve Any Two of the following.**			**10**
(A)	What is 'Dark Current'? Explain the working principle of a Photodiode.	**2**	**1**	
(B)	Draw the symbols of NPN and PNP transistors. List out the different regions of operation of BJT.	**2**	**1**	
(C)	Explain the I-V characteristics of a PN junction diode. Sketch and label the I-V characteristics of PN junction diode and Zener diode on the same graph.	**2**	**1**	
Q.6	**Solve Any Two of the following.**			**10**
(A)	Convert the 3-digit octal number 1573 to its equivalent binary number, hexadecimal number and decimal number.	**2**	**1**	
(B)	With the help of a neat labelled block diagram, explain the working of a Microwave Oven.	**2**	**1**	
(C)	With the help of a neat labelled block diagram, explain the working of an Air Conditioning System.	**2**	**1**	
	..... END.....			

MGM University
University Department of Information and Communication Technology, Aurangabad-431003
SecondTerm Exam A.Y. 2021-22

Program : UDICT (IT and AIML) | Sem –II
Course : Problem Solving Paradigm | Marks : 60
Course Code : BTIT1204 | Time: 3hr

Instructions to the students
1. Each question carries 10 marks.
2 All questions are compulsory
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

Q1. Solve any two
a) Explain any five array function using numpy liabrary. (5)
b) Define data. Explain the different types of data. (5)
c) Write a python program to read any text file using read, readline and readlines function. (5)

Q2. Solve any two
a) Decide whether following data sets types and specify reasons for mentioned type of data. (5)
I. No. of goals scored by each team in world cup
II. The crowd size of each of the games in world cup
III. The height of players in at the world cup
IV. Student attendance in a class
V. Blood group of family members

b) Enlist and explain levels of measurement with suitable examples. (5)
c) Write a short note on: i)ggplot ii) scatterplot (5)

Q3. Solve any two
a) Explain benefits of data visualization. Also explain when to use which type of chart. (5)
b) Write a program to create employee dataset with field's name, ID, gender, Department, Total salary. Also write a python script to visualize created dataset using any kind of chart. (5)
c) Explain histogram with suitable program. (5)

Q4. Solve any two
a) Write a program to replace missing values using interpolation function (5)
b) How to measure and calculate central values in python. (5)
c) Write a note on i) dropping rows ii)transformation of date values (5)

Q5. Solve any two
a) Explain Grouping and aggregation by multiple field? (5)
b) Define correlation and also explain its types with example. (5)
c) Define mean and median. Write a python script for: (5)
i) Calculating median for any dataframe
ii) Calculating row median in a dataframe
iii) Calculating column median in a dataframe
iv) Calculating specific column median in a dataframe

MGM University

Jawaharlal Nehru Engineering College, Aurangabad

Department of Information Technology

Semester II

Course Code: 20UIT406D **Name of course: Computer Network**

Max Marks: 60 **Time: 3hrs**

Instructions:

1.Each question carries 10 marks.
2 All questions are compulsory
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		**Attempt any 2 from following.**	
	A	What is a network model?	5M
	B	Explain Wired Local Area Networks	5M
	C	Explain what is logical address and port address	5M
Q2		**Attempt any 2 from following.**	
	A	What is physical layer? Discuss its objective.	5M
	B	Write a short note on Transmission Impairment.	5M
	C	Explain functionality of Routers	5M
Q3		**Attempt any 2 from following.**	
	A.	Explain error detection and correction.	5M
	B.	Write a short note on Ethernet Protocol	5M
	C.	Explain Cellular Telephony	5M
Q4		**Attempt any 2 from following.**	
	A	Explain network layer services	5M
	B	ExplainInternet protocol	5M
	C	Write a short note on Congestion control and QoS	5M
Q5		**Attempt any 2 from following.**	
	A	Discuss transport layer services.	5M
	B	What is flow control and buffering? Discuss.	5M
	C	Explain Stream Control Transmission Protocol (SCTP)	5M
Q6		**Attempt any 2 from following.**	
	A	What is the importance of application layer? Explain	5M
	B	What is Domain Name System (DNS)? Explain.	5M
	C	Explain Dynamic Host Control Protocol (DHCP)	5M

MGM University

Jawaharlal Nehru Engineering College, Aurangabad

Department of Information Technology

Semester II

Course Code: 20UIT405D **Name of course: Programing In Java**

Max Marks: 60 **Time: 3Hrs**

Instructions:

1.Each question carries equal marks.
2 All questions are compulsory
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		**Attempt any 2 from following.**	
	A	What are the properties of the Object Oriented Programming ? Why java is platform independent ?	5
	B	Write a program to accept the N numbers from user in array and find the greatest and smallest element and print it.	5
	C	Explain operators In java and give an example of each.	5
Q2		**Attempt any 2 from following.**	
	A	Explain constructor and its types with example	5
	B	Write a program to accept details of N employees (eid, ename, esalary) and find the average salary of N employees using arrays.	5
	C	What id function overloading give an example?	5
Q3		**Attempt any 2 from following.**	
	A	Define Interface. Design the program that uses interface to achieve multiple inheritance.	5
	B	Define package. Develop a program that consist of two packages, one package is used to calculate factorial of number and another package used to find square of number.	5
	C	Write a program demonstrating the use of multilevel inheritance	5

Q4		**Attempt any 2 from following.**	
	A	Define thread and multithreading? Explain the lifecycle of thread in detail	5
	B	What are the types of exception in java. Give an example with program	5
	C	Create two threads printing number 1 to 5 and write a program using runnable interface.	5
Q5		**Attempt any 2 from following.**	
	A	What is AWT? What are the AWT components we use for designing	5
	B	Write a program demonstrating the use of ActionListner in Java swing	5
	C	Give example of Graphics class methods from AWT package	5
Q6		**Attempt any 2 from following.**	
	A	Define InputStream. Write a program to read the content from the file using Input Stream class in java.	5
	B	DefinaOutputStream. Write a program to write the content to the fine using Ouputsream Class in java	5
	C	What is vector and what are the methods used for vector in java give an example with proragm.	5

----------**All the Best**----------