R-19

Code: 19A132T

II B.Tech. I Semester Supplementary Examinations November 2023

Surveying
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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Marks

UNIT–I

1. a) Distinguish between closed and open traverse.   7M

   b) What is closing error' in a traverse?   7M

OR

2. A line was shown to a magnetic bearing of $38^015'$ in an old map, when the declination was $15^045'$ E. to what bearing should it be set now if the present magnetic declination is $6^015'$W.   14M

UNIT–II

3. The formulation width of a road is 10m and the side slopes is 2:1. The surface of the ground has a traverse slope of 1 in 10. If the depths of cutting at the centres of three sections 60m apart are 1.5, 2.5 and 2.0m respectively, determine the volume of earth work.   14M

OR

4. What does the term sensitiveness mean in the context of a bubble? How the sensitiveness of a bubble is is determined?   14M

UNIT–III

5. a) Describe the process of measuring the horizontal angle.   7M

   b) Describe how you would measure vertical angles.   7M

OR

6. a) How can the height of a tower be determined when it is inaccessible?   7M

   b) What are the methods of locating interior details in theodolite traversing? Describe the methods of checking the accuracy of close and open traverse.   7M

UNIT–IV

7. a) What is orientation? What are the methods of orientation? Describe the methods with a sketch.   7M

   b) What are the errors that may occur in plane tabling?   7M

OR

8. A fixed hair tacheometer fitted with an anallatic lens with an instrument constant of 100, was used to determine the slope between two points P and Q. the following readings were taken. If the staff was held vertically, compute the gradient from P to Q.

Instrument station	Staff Station	Bearing	Reading of stadia hair		Reading of Axial Hair	Vertical angle
A	P	$345^000'$	0.915	2.585	1.750	$+15^0$
	Q	$75^000'$	0.760	3.715	2.240	$+10^0$

14M

UNIT–V

9. What are the different types of curves? Draw neat sketches of each.   14M

OR

10. Show with neat sketches, the different types of vertical curves possible.   14M

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II B.Tech. I Semester Supplementary Examinations November 2023
Building Materials and Construction
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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Marks

UNIT–I
1. a) List out the precautions to be taken in blasting?   7M
   b) Briefly describe dressing of stone and preservation of stone?   7M
   OR
2. a) List the properties to be considered before selecting a stone for building? 7M
   b) Differentiate between clamp burning and kiln burning.   7M

UNIT–II
3. a) Describe about Glass, bitumen, alumina and its uses?   7M
   b) Classify the different types of gypsum and glass.   7M
   OR
4. a) Elucidate the process of manufacture of tiles.   7M
   b) Briefly explain the constituents of lime stones.   7M

UNIT–III
5. Write about uses of fiber reinforced plastics and aluminum with respect to construction   14M
   OR
6. a) Explain the types of preservatives used for timber in details   7M
   b) Write the alternate materials for wood?   7M

UNIT–IV
7. a) Explain the essentials of a good foundation?   7M
   b) Differentiate between rubble and ashlars masonry?   7M
   OR
8. a) Explain mat foundation and the situations where mat foundation is essential.   7M
   b) List the construction situations and choice of corresponding footings?   7M

UNIT–V
9. a) Explain about different water proofing materials used?   7M
   b) Explain the causes of dampness in buildings?   7M
   OR
10. a) Explain the procedure of painting for wood surfaces and plastered surfaces.   7M
    b) Explain about
            i) Scaffolding   ii) Form work   iii) White washing   7M
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II B.Tech. I Semester Supplementary Examinations November 2023
Fluid Mechanics
(Civil Engineering)

Max. Marks: 70 Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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Marks

UNIT–I

1. State Pascal's law. Derive the equation for the same. 14M

OR

2. Define total pressure and centre of pressure. Also derive the expressions for the same for an inclined immersed surface. 14M

UNIT–II

3. Classify the types of flows. 14M

OR

4. Given that $u = x^2-y^2$ and $v = -2xy$, determine the stream function and potential function for the flow. 14M

UNIT–III

5. a) Explain the terms 'Total Energy line' and 'Hydraulic gradient line'. 7M
   b) Distinguish between notch and weir ,orifice and mouth piece 7M

OR

6. a) During an experiment 95litres of water is flowing over a right angled notch was collected in two minutes. If the head of the still is 4cm, determine the coeffient of discharge of the notch. 8M
   b) Classify the various types of orifice? 6M

UNIT–IV

7. Derive the Hagen poiseuille equation for the loss of head in pipes. 14M

OR

8. The two reservoirs with surface level difference of 20m are to be connected by 1m dia pipe 6km long. Calculate the discharge when a cast iron pipe of roughness k=0.3mm is used. What will be the percentage increase in discharge if cast iron pipe were to be replaced by steel pipe of roughness k=0.1mm. neglect local losses 14M

UNIT–V

9. Explain different model laws. 14M

OR

10. a) Explain distorted and undistorted models. 6M
    b) Water is flowing through a pipe of diameter 30 cm at a velocity of 4m/s. Find the velocity of oil flowing in another pipe of diameter 10 cm if the condition of dynamic similarity is satisfied between the two pipes. The viscosity of water and oil is given as 0.01 poise and 0.025 poise. Take 'G' of oil as 0.8. 8M

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Code: 19AC34T

II B.Tech. I Semester Supplementary Examinations November 2023

Life Sciences for Engineers

(Common to CE, ME & CSE)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	BL
	UNIT–I				
1.		Describe meant by classification? Write the importance of Classification?	14M	CO1	2
		OR			
2.	a)	Explain the five kingdom classification of living organisms?	7M	CO1	2
	b)	Describe is Endoplasmic reticulum? Write their structure and important functions and draw the labelled diagram?	7M	CO1	2
	UNIT–II				
3.		Describe the mechanism of enzyme action?	14M	CO2	2
		OR			
4.		Define the antibodies and Write the types and functions of antibodies?	14M	CO2	1
	UNIT–III				
5.		Explain the Glycolysis pathway and importance?	14M	CO3	2
		OR			
6.		Discuss the mechanism of photosynthesis in plants?	14M	CO3	4
	UNIT–IV				
7.		Define the genetics? Explain the Mendel's Laws?	14M	CO4	1
		OR			
8.		Describe the meiosis cell division process?	14M	CO4	2
	UNIT–V				
9.	a)	Write short notes on restriction enzymes?	7M	CO5	1
	b)	Explain the Microbes in Human Welfare?	7M	CO5	2
		OR			
10.		Explain the various process of recombinant DNA technology?	14M	CO5	2

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R-19

Code: 19A133T

II B.Tech. I Semester Supplementary Examinations November 2023
Mechanics of Materials
(Civil Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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		Marks	CO	BL

UNIT–I

1. Mild steel rod of 25mm diameter and 300 mm long is enclosed centrally inside a hollow copper tube of external diameter 30 mm and internal diameter 25mm. The composite bar is subjected to an axial pull of 50 kN. If E for steel and copper is 200 GPa and 100 GPa respectively, find the stresses developed in the rod and the tube. Also find the extension of the rod.   14M   CO1   B4

OR

2. A bar is subjected to tensile test with a diameter of 30mm, tensile load is 54KN, gauge length 300mm and extension of the bar is 0.112mm and change in diameter 0.00366. Determine poisons ratio and three elastic constants.   14M   CO1   B4

UNIT–II

3. A simply supported beam of length 10 carries the uniformly distributed load and two point loads as shown in Fig. Draw the S.F. and B.M. diagram for the beam. Also calculate the maximum bending moment.
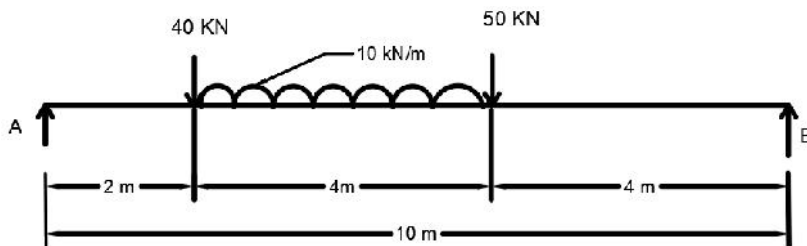

14M   CO2   B4

OR

4. A Simply supported beam 6 meter span carries UDL of 10 KN/m for left half of span and two point loads of 25 kN end 50 kN at 4 m and 5 m from left support. Find maximum SF and BM and their location drawing SF and BM diagrams.   14M   CO2   B4

UNIT–III

5. A beam is simply supported at its ends and having cross-section as shown in figure is loaded with a U.D.L., over whole of its span. If the beam is 8m long, find the U.D,L, if maximum permissible bending stress in tension is limited to 30MN/m² and in compression to 45MN/m². What are the actual maximum bending stresses set up in the section.
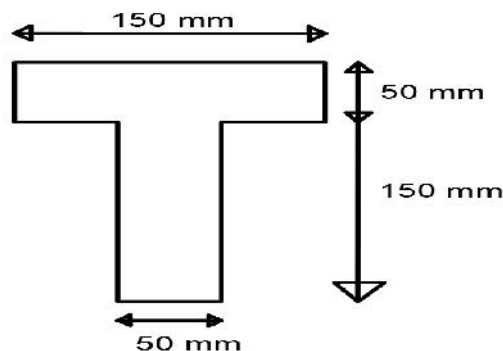
14M   CO3   B4

OR

6. Sketch the shear stress distribution across the circular section of dimension 100mm   14M   CO3   B4

UNIT–IV

7. State the significance and application of theories of failure. Derive an expression for distortion energy theory of failure   14M   CO4   B4

OR

8. A cantilever of length 3 m carries a uniformly distributed load of end 2.5KN/m run for a length of 1.25 m from the fixed end & a point load of 1KN at the free end. Find the deflection at the free end if the section is rectangular 12 cm wide & 24 cm deep & E =1 x 10^4 N/mm^2 14M   CO4   B4

UNIT–V

9. Derive the expression for maximum shear strain Energy theory.   14M   CO5   B1

OR

10. State and explain any three theories of elastic failure with neat sketch.   14M   CO5   B3

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R-19

Code: 19AC41T

II B.Tech. II Semester Supplementary Examinations November 2023
Numerical Methods & Probability and Statistics
(Common to CE & ME)

Max. Marks: 70   Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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	Marks	CO	BL

UNIT–I

1. Find a real root of the equation $x \log_{10}^{x} = 1.2$ by regula -falsi method correct to 4 decimal places   14M CO1 L3

OR

2. From the following table:

x^o	10	20	30	40	50	60	70	80
$\cos x$	0.9848	0.9397	0.8660	0.7660	0.6428	0.5000	0.3420	0.1737

Estimate the values of $\cos 25^o$ and $\cos 73^o$ using Newton's formulae.   14M CO1 L2

UNIT–II

3. Evaluate $\int_{0}^{1} \frac{1}{1+x} dx$ by using

   (i) Trapezoidal rule (ii) Simpson's 1/3 rule and (iii) Simpson's 3/8 rule.   14M CO2 L2

OR

4. Given that $\frac{dy}{dx} = x + y, y(1) = 0.$ Find an approximate value of y(0.3) taking h=0.1 by using modified Euler's method.   14M CO2 L3

UNIT–III

5. If Probability density of a random variable is given by

$$f(x) = \begin{cases} k\left(1-x^2\right), for\, 0 < x < 1 \\ 0,\ otherwise \end{cases}$$

then find (i) k (ii) P(0.1<X<0.2) (iii) P(x>0.5)   14M CO3 L1

OR

6. If the variance of a Poisson variate is 3, then find the probability that
(i) x=0   (ii) 0<x 3   (iii) x>3   (iv) 1 x<4.   14M CO3 L3

UNIT–IV

7. Random samples of 400 men and 600 women were asked whether they would like to have a flyover near their residence. 200 men and 325 women were in favour of the proposal. Test the hypothesis that proportions of men and women in favour of the proposal are same at 5% level.   14M CO4 L4

OR

8. The means of two large samples of sizes 1000 and 2000 members are 67.5 inches and 68.0 inches respectively. Can the samples be regarded as drawn from the same population of S.D. 2.5 inches?   14M CO4 L1

9. Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results.

Horse A	28	30	32	33	33	29	34
Horse B	29	30	30	24	27	29	----

Test whether the two horses have the same running capacity. 14M CO5 L4

OR

10. 1000 students at college level were graded according to their I.Q. and the economic conditions of their home. Use chi-square test to find out whether there is any association between condition at home and I.Q (= 0.05).

Economic Condition	High	Low	Total
Rich	460	140	600
Poor	240	160	400
Total	700	300	1000

14M CO5 L4

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Code: 19AC31T

II B.Tech. I Semester Supplementary Examinations November 2023
Partial Differential Equations and Complex Variables
(Common to CE, EEE, ME & ECE)

Max. Marks: 70　　　　　　　　　　　　　　　　　　Time: 3 Hours
Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)
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Marks　　CO　　BL

UNIT–I

1. a) Evaluate $L\{t\,\sin 3t\}$ — 7M CO1 L2

   b) Find the L.T of $L\{t\,e^{-2t}\cos t\}$ — 7M CO1 L1

   OR

2. a) Find $L\left\{\displaystyle\int_0^t\int_0^t \cosh at\,dt\,dt\right\}$ — 7M CO1 L1

   b) Using L.T, Evaluate $\displaystyle\int_0^\infty te^{-t}\sin t\,dt$ — 7M CO1 L3

UNIT–II

3. a) Find the inverse L.T of $\log\left(\dfrac{s^2+4}{s^2+9}\right)$ — 7M CO2 L1

   b) Find $L^{-1}\left\{\log\left(\dfrac{s+a}{s+b}\right)\right\}$ — 7M CO2 L1

   OR

4. Using L.T, solve $\left(D^2+4D+5\right)y=5$, given that
$Y(0)=0, Y'(0)=0$ — 14M CO2 L3

UNIT–III

5. Expand $f(x)=x^2,\ 0<x<2f$ as a Fourier series. — 14M CO3 L2

   OR

6. Find the Fourier Series of periodicity 3 for
$f(x)=2x-x^2$ in $0<x<3$ — 14M CO3 L1

UNIT–IV

7. Use separation of variables to solve $\dfrac{\partial^2 u}{\partial x \partial t} = e^{-t}\cos x,$

given that $u = 0$ when $t = 0$ and $\dfrac{\partial u}{\partial t} = 0$ when $x = 0$. 14M CO4 L3

OR

8. A tightly stretched string with fixed end points $x = 0$ and $x = l$ is initially in a position given by $y(x,0) = y_0 \sin^3\left(\dfrac{f\,x}{l}\right)$. If it is released from rest from this position, Find the displacement y at any time and at any distance from the end $x = 0$. 14M CO4 L3

UNIT–V

9. Prove that z^n (n is a positive integer) is analytic and hence find its derivative. 14M CO5 L5

OR

10. a) Evaluate $\displaystyle\int_c \dfrac{\log z}{(z-1)^3} dz$ $where$ $c : |z-1| = \dfrac{1}{2}$. Using Cauchy's integral formula. 7M CO5 L5

b) Evaluate $\displaystyle\int_c \dfrac{dz}{z^3(z+4)}$ where C is $|z| = 2$ using Cauchy's integral formula. 7M CO5 L5

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