Hall Ticket Number :

Code: 19A142T

II B.Tech. II Semester Supplementary Examinations April 2023
Concrete Technology
(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.	Enumerate different properties of aggregates and testing procedures for any three of those properties.	14M	CO1	L1

OR

2.	Explain the factors that promote alkali aggregate reaction.	14M	CO1	L2

UNIT–II

3.	Discuss the various factors that affect workability of concrete.	14M	CO2	L1

OR

4.	Describe the rebound hammer test procedure on concrete.	14M	CO2	L2

UNIT–III

5.	Explain the relation between time and creep and nature of creep	14M	CO3	L2

OR

6.	Discuss effects of improper curing of concrete and also explain which method of curing gives the best result.	14M	CO3	L2

UNIT–IV

7.	Discuss briefly about IS 10262-2009 code method of concrete mix proportioning?	14M	CO4	L2

OR

8.	Discuss different factors to be considered in the choice of mix proportions.	14M	CO4	L1

UNIT–V

9.	Discuss the factors affecting the properties of the fiber reinforced concrete.	14M	CO5	L2

OR

10.	Discuss light weight concretes. Write advantages and disadvantages	14M	CO5	L2

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R-19

Code: 19A144T

II B.Tech. II Semester Supplementary Examinations April 2023

Hydraulics Engineering

(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. Oil with a free stream velocity of 2 m/s flows over a thin plate 2 m wide and 2m long. Calculate the boundary layer thickness and the shear stress at the trailing end point and determine the total surface resistance of the plate. Take specific gravity as 0.86 and kinematic viscosity as 10^{-5} m^2/s   14M   1   2

OR

2. Explain about drag force and lift force.   14M   1   1

UNIT–II

3. Describe the classification of flow in channels   14M   2   1

OR

4. A sluice gate discharges water into a horizontal rectangular channel with velocity of 10 m/s and depth of flow of 1 m. Determine the depth of flow after the jump and consequent loss in total head.   14M   2   2

UNIT–III

5. Derive the force exerted by the jet on stationary inclined flat plate   14M   3   2

OR

6. A Jet of water having velocity of 15 m/s, strikes a curved vane which is moving with a velocity of 5 m/s in the same direction as that of the jet at inlet. The vane is so shaped that the jet is deflected through 135°. The diameter of the jet is 100 mm. Assuming the vane to be smooth, find the force exerted by the jet on the vane in the direction of the motion.   14M   3   2

UNIT–IV

7. Define the heads and efficiencies of a turbine   14M   4   1

OR

8. A Pelton wheel has a mean bucket speed of 10 m/s with a jet of water flowing at the rate of 700 l/s under a head of 30 m. The buckets deflect the jet through an angle of 160°. Calculate the power given by water to the runner. Assume coefficient of velocity as 0.98.   14M   4   2

UNIT–V

9. Explain about main parts of a centrifugal pump with a neat sketch   14M   4   1

OR

10. Derive the equation for the work done by the centrifugal pump   14M   4   1

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Code: 19AE41T

II B.Tech. II Semester Supplementary Examinations April 2023

Managerial Economics and Financial Analysis

(Common to CE and 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. | Deliberate the importance and scope of Managerial Economics? | 14M | CO1 | L2 |

OR

| 2. | Explain the following
  a) Types of Demand   b) Determinants of Demand | 14M | CO1 | L2 |

UNIT–II

| 3. | Define Cost. Explain the different cost concepts used in the process of Cost Analysis | 14M | CO2 | L2 |

OR

| 4. | Outline the Cobb-Douglas production function. What are the properties of this function? | 14M | CO2 | L4 |

UNIT–III

| 5. | Explain the following
  a) Partnership Deed   b) Formation of Company | 14M | CO3 | L2 |

OR

| 6. | Define Company, what are the characteristics of Company and Explain the contrast between public company and private company? | 14M | CO3 | L3 |

UNIT–IV

| 7. | Compare merits & demerits of Pay Back Period & Accounting Rate of Return Methods of capital budgeting. | 14M | CO4 | L5 |

OR

8. Kumar & Co ltd is contemplating the purchase of machinery. Two machines A and B are available each at Rs. 2,50,000. Net cash inflows (Amt, in Rs.)

Year	Machine A	Machine B
1	75,000	25,000
2	1,00,000	50,000
3	1,25,000	1,00,000
4	75,000	1,50,000
5	50,000	1,00,000

Calculate NPV @10%

(14M   CO4   L3)

UNIT–V

| 9. | Define accounting. What do you understand by Double Entry System of book-keeping? Explain | 14M | CO5 | L1 |

OR

10. Journalize the following transactions and prepare a cash ledger.
Jan 1st 2021(Jan1st, Jan2nd.)
   1. Ram invests Rs. 10, 000 in cash.
   2. He bought goods worth Rs. 2000 from shyam.
   3. He bought a machine for Rs. 5000 from Lakshman on account.
   4. He paid to Lakshman Rs. 2000
   5. He sold goods for cash Rs.3000
   6. He sold goods to A on account Rs. 4000
   7. He paid to Shyam Rs. 1000
   8. He received amount from A Rs. 2000

(14M   CO5   L4)

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II B.Tech. II Semester Supplementary Examinations April 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 $x^3 - 2x - 5 = 0$ by the method of false position correct to three decimal places. — 14M CO1 L3

OR

2. Using Lagrange's formula, calculate f(9)from the following table:

x	5	7	11	13	17
f(x)	150	392	1492	2366	5202

14M CO1 L3

UNIT–II

3. Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using
   (i) Trapezoidal rule (ii) Simpson's 1/3 rule and (iii) Simpson's 3/8 rule. — 14M CO2 L2

OR

4. Using Runge-Kutta method of fourth order, solve $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}$ with y(0)=1 at x=0.2,0.4 — 14M CO2 L3

UNIT–III

5. A random variable X has the following Probability function:

X	0	1	2	3	4	5	6	7
P(x)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2$+K

   (i) Determine K   (ii) Mean   (iii) Variance   and
   (iv) Evaluate P (X<6), P (X 6), P (0<X<5) and P (0 X 4). — 14M CO3 L1

OR

6. If the masses of 300 students are normally distributed with mean 68 kgs and standard deviation 3 kgs, how many students have masses
   (i) Greater than 72 kg   (ii) less than or equal to 64 kg
   (iii) Between 65kg and 71 kg inclusive. — 14M CO3 L1

UNIT–IV

7. Experience had shown that 20% of a manufactured product is of the top quality. In one day's production of 400 articles only 50 are of top quality. Test the hypothesis at 0.05 levels. — 14M CO4 L4

OR

8. In two large populations, there are 30%, and 25% respectively of fair haired people. Is this difference likely to be hidden in samples of   1200 and 900 respectively from the two populations? — 14M CO4 L1

UNIT–V

9. A random sample of six steel beams has a mean compressive strength of 58,392 pounds per square inch with a standard deviation of 648 pounds per square inch. Use this information and the level of significance =0.05 to test whether the true average compressive strength of the steel from which this sample came is 58,000 pounds per square inch, Assume normality. — 14M CO5 L4

OR

10. In one sample of 8 observations from a normal population, the sum of the squares of deviations of the sample values from the sample mean is 84.4 and in another sample of 10 observations it was 102.6. Test at 5% level whether the populations have the same variance. — 14M CO5 L4

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II B.Tech. II Semester Supplementary Examinations April 2023
Strength 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.		A Spherical shell of internal diameter 25cm, wall thickness 6cm is subjected to an internal pressure of 850N/mm².Calculate the values of maximum and minimum circumferential stresses and radial stresses.	14M	1	2
		OR			
2.	a)	Derive expressions for change in diameter, length and volume of a thin cylindrical shell subjected to internal pressure	7M	1	4
	b)	A compound thick cylinder is formed by shrinking a hollow cylinder of 150 mm External Diameter over another hollow cylinder of 130 mm Internal Diameter. The common diameter after shrinking is 140 mm. If the radial pressure at the junction is 120 N/mm² and E = 200 kN/mm² , find the original difference in diameter of the two cylindrical shells before shrinking.	7M	1	2

UNIT–II

3.		A weight of 250N is dropped on to a helical spring made of 20 mm wire, closely coiled to a mean diameter of 180mm with 25 coils. Determine the height of drop if the instantaneous compression is 70mm. C= 90 GN/m².	14M	2	4
		OR			
4.	a)	Derive the elongation of close coiled helical spring subjected to axial pull of W, with a diameter d, number of coils n and modulus of rigidity c.	7M	2	4
	b)	A close coiled helical spring is to be made out of 6mm diameter wire that is 3.0m long so that it deflects by 24mm under an axial load of 60KN. Determine the mean diameter of the coils. Take C=88GN/m²	7M		4

UNIT–III

5.	a)	The connecting rod (CR) of a small petrol engine is made up of a mild steel tubular section 2.5 cm OD and 1 cm ID. Calculate the safe load on the CR if it is designed as a column with both ends pinned. Assume that the length of the CR is 60 cm. Safe buckling stress is 8 kN/cm² . Factor of safety is 6.	10M	3	5
	b)	Define: Euler's stress, slenderness ratio, equivalent length, buckling factor.	4M	3	2
		OR			
6.		Derive the expression for maximum bending moment for a long column subjected to eccentric loading.	14M	3	3

UNIT–IV

7.	a)	Illustrate the bending stress and net stress for a trapezoidal section dams with vertical water face?	7M	4	2
	b)	The theoretical profile of concrete straight gravity dam is a right angled triangle with the water face vertical. The depth of water retained is the same as the height of dam. Show that the resultant thrust to act with in the middle third, the base width should be H where H is the vertical height of the dam and s is the specific gravity of the concrete dam.	7M	4	4
		OR			
8.		A short column of external diameter 45 cm and internal diameter 25 cm carries an eccentric load of 90 kN. Find the greatest eccentricity which the load can have without producing tension on the cross-section	14M	4	4

UNIT–V

9.		Write the assumptions made for the analysis of beam subjected to unsymmetrical bending. Determine the stresses due to unsymmetrical bending and deflection?	14M	5	2
		OR			
10.	a)	Define flexural rigidity, section modulus, bending axis of a beam and shear centre of a section.	7M	5	2
	b)	Determine the shear centre for a channel section having dimensions of 15 cm X 2cm for web and 8 cm X 2 cm for each flange	7M	5	3

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