

Hall Ticket Number :									
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R-19

Code: 19A144T

II B.Tech. II Semester Supplementary Examinations December 2022

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)

	Marks	CO	BL
UNIT-I			
1. Find the displacement thickness, the momentum thickness and energy thickness for the velocity distribution in the boundary layer is given as $u/U = 2(y/\delta) - (y/\delta)^2$	14M	1	2
OR			
2. Derive equation for Momentum thickness ()	14M	1	1
UNIT-II			
3. a) Prove that Chezy's formula $Q = AC\sqrt{RS}$ where C=Chezy's Constant, R=Hydraulic Mean Radius, S is the slope, A is the area of cross section	6M	2	2
b) Prove that for a most economical trapezoidal section $(b+2ny)/2=y(n^2+1)$	8M	2	2
OR			
4. a) Explain about hydraulic jump	4M	2	1
b) The depth of flow of water at a certain section of a rectangular channel of 4 m wide, is 0.5 m. This discharge through the channel is 16 m ³ /s. If a hydraulic jump takes place on the downstream side, find the depth of the flow after the jump.	10M	2	2
UNIT-III			
5. Find the force exerted by a jet of water of diameter 75 mm on stationary flat plate, when the jet strikes the plate normally with velocity of 20 m/s.	14M	3	2
OR			
6. A jet of water of diameter 10 cm strikes a flat plate normally with a velocity of 15 m/s. The plate is moving with a velocity of 6 m/s in the direction of jet and away from the jet. Find the force exerted by the jet on the plate.	14M	3	2
UNIT-IV			
7. a) Define turbines	4M	4	1
b) Draw layout of a hydroelectric power plant	10M	4	2
OR			
8. A Kaplan turbine develops 24647.6 KW power at an average head of 39 m. Assuming a speed ratio of 2, flow ratio 0.6, diameter of the boss equal to 0.35 times the diameter of the runner and overall efficiency of 90%, calculate the diameter of the turbine.	14M	4	2
UNIT-V			
9. Define the heads and efficiencies of a centrifugal pump	14M	4	1
OR			
10. Explain about classification of hydro power plants	14M	4	1

Hall Ticket Number :

R-19

Code: 19AE41T

II B.Tech. II Semester Supplementary Examinations December 2022

Managerial Economics and Financial Accounting

(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)

UNIT-I

- | | | | | |
|-----------|---|-----|-----|----|
| 1. | Deliberate the importance and scope of Managerial Economics? | 14M | CO1 | L2 |
| OR | | | | |
| 2. | Determine the concept of cross elasticity of demand. Discuss the method to measure such elasticity? | 14M | CO1 | L3 |

UNIT-II

- | | | | | |
|-----------|---|-----|-----|----|
| 3. | Define Cost. Explain the different cost concepts used in the process of Cost Analysis | 14M | CO2 | L2 |
| OR | | | | |
| 4. | Discuss the following | | | |
| | a) Economies of scale | 7M | | L2 |
| | b) Least Cost Combination of Inputs | 7M | CO2 | L2 |

UNIT-III

- | | | | | |
|-----------|--|-----|-----|----|
| 5. | Describe the features, advantages and disadvantages of Sole trader form of Organization? | 14M | CO3 | L2 |
| OR | | | | |
| 6. | Briefly discuss the price-output determination in monopolistic competition. | 14M | CO3 | L2 |

UNIT-IV

- | | | | | |
|-----------|---|----|-----|----|
| 7. | Discuss the following | | | |
| | a) Working Capital & Its Affecting Factors | 7M | CO4 | L2 |
| | b) NPV Method advantages and disadvantages | 7M | CO4 | L2 |
| OR | | | | |
| 8. | Calculate Net Present Value (NPV) and Profitability Index (PI) for both the projects. | | | |

Years	Project-A Cash in flows	Project-B Cash in flows	PV@10%
1	2,50,000	3,50,000	0,909
2	1,80,000	1,50,000	0,826
3	1,20,000	1,80,000	0,751
4	1,10,000	80,000	0.683
5	75,000	60,000	0.621
5 (scrap)	50,000	40,000	0.621

Initial investment for the project-A; Rs.4,80,000 and project-B; Rs.6,00,000 and cost of capital assumed to be 10%.

14M CO4 L3

UNIT-V

- | | | | | |
|-----------|--|-----|-----|----|
| 9. | Briefly discuss various types of Accounts (Golden Rules of Accounting) with examples? | 14M | CO5 | L2 |
| OR | | | | |
| 10. | Define Capital Budgeting. Explain the Nature, Scope and Features of Capital Budgeting? | 14M | CO5 | L2 |

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Code: 19AC41T

II B.Tech. II Semester Supplementary Examinations December 2022

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)

Marks CO BL

UNIT-I

1. Find a root of the equation $x^3 - 4x - 9 = 0$ using the Bisection method correct to three decimal places. 14M 1 3

OR

2. Evaluate the following(correct to four decimal places) by Newton Raphson method:
 (i) $\sqrt{5}$ (ii) $\sqrt[3]{24}$ 14M 1 2

UNIT-II

3. Given that

x	1.00	1.05	1.10	1.15	1.20	1.25	1.30
y	1.000	1.025	1.049	1.072	1.095	1.118	1.140

- find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at (a) $x=1.05$ (b) $x=1.25$ 14M 2 1

OR

4. Evaluate $y(0.2)$ and $y(0.4)$ correct to four decimal places by Taylor's series method if $y(x)$ satisfies $\frac{dy}{dx} = 1 - 2xy$ and $y(0) = 0$. 14M 2 2

UNIT-III

5. A continuous random variable has the Probability density function

$$f(x) = \begin{cases} k x e^{-x}, & \text{for } x \geq 0, \\ 0, & \text{otherwise} \end{cases} > 0. \text{ Determine (i) } k \text{ (ii) Mean (iii) Variance}$$

14M 3 1

OR

6. Out of 800 families with 5 children each, how many would you expect to have (a) 3 boys, (b) 5 girls, (c) either 2 or 3 boys (d) at least one boy? (Assume equal probabilities for boys and girls.) 14M 3 2

UNIT-IV

7. In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers? (Assume that the number of smokers and non-smokers are equal in the city) 14M 4 1

OR

8. An ambulance service claims that it takes on the average less than 10 minutes to reach its destination in emergency calls. A Sample of 36 calls has a mean of 11 minutes and the variance of 16 minutes. Test the claim at 0.05 level of significance. 14M 4 4

UNIT-V

9. The average breaking strength of the steel rods is specified to be 18.5 thousand pounds .To test this sample of 14 rods were tested. The mean and standard deviations obtained were 17.85 and 1.955 respectively. Is the result of experiment significant? 14M 5 1

OR

10. From the following data, find whether there is any significant liking in the habit of taking soft drinks among the categories of employees.

Soft Drinks	Clerks	Teachers	Officers
Pepsi	10	25	65
Thumsup	15	30	65
Fanta	50	60	30

14M 5 4

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Code: 19A143T

II B.Tech. II Semester Supplementary Examinations December 2022

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)

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. Derive an expression for change in dimensions of a thin cylindrical shell due to internal pressure. 14M 1 4

UNIT-II

3. a) A closely coiled helical spring is made of 14.5 mm diameter steel wire and its ten coils have a mean diameter of 280 mm. Find the elongation, intensity of torsional and shearing stresses and strain energy per cubic cm when the spring carries an axial load of 200 N. (G = 84 x 10³ MPa). 7M 2 2

- b) Find the axial twist, intensity of bending stress and work stored per c.c. in the spring of question number 3(a), if an axial torque of 20 N-m is applied. E=205MPa. 7M 2

OR

4. Derive the expression for equivalent torque when shaft is subjected to combined bending & torsion 14M 2 4

UNIT-III

5. a) Derive an expression for Euler's crippling load for a column with both ends fixed. 7M 3 4

- b) Compare the crippling loads given by Rankine's and Euler's formulae for tubular strut 225 cm long having outer and inner diameters of 37.5 mm and 32.5 mm respectively and loaded through pin joints at both ends. Take yield stress=315MPa, E= 200 GPa and a = 1 / 7500. 7M 3 4

OR

6. a) List out the assumptions made by Euler's theory? 4M 3 2

- b) Compare the ratio of the strength of solid steel column to that of the hollow steel column of the same cross-sectional area. The internal diameter of the hollow column is 3/4th of the external diameter. The columns have the same length and are pinned at both ends. Use Euler's theory. 10M 3 4

UNIT-IV

7. A masonry chimney 24m high, of uniform circular section 3.5m external diameter and 2m internal diameter is subjected to a horizontal wind pressure of 1 KN /mm² on projected area. Find the maximum and minimum stress intensities at the base if the specific weight of masonry is 22 KN/m³. 14M 4 4

OR

8. A masonry retaining wall is 100 m high and retains earth weighing 1800 kg/m³. The top and bottom widths of the retaining wall are 1 m and 4 m respectively. The angle of repose is 30°. Weight of masonry is 2400 kg/m³. Determine the maximum and minimum stresses in the wall. 14M 4 4

UNIT-V

9. Derive the expression of bending stress and inclination of neutral axis for a beam subjected to unsymmetrical bending 14M 5 3

OR

10. a) How do you determine the total deflection and angle of deflection when a beam is subjected to Unsymmetrical bending? 7M 5 2

- b) Describe the Mohr's Circle method to locate the principal axis and determine the principal moment of Inertia of the section. 7M 5 1

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES, RAJAMPET
(AUTONOMOUS)**

II B.Tech I & II Semester **CE & ECE Mandatory Course Supplementary Examination**
19AC37T, 19AC47T-Constitution of India

H.T. No:-										
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Date:-26-12-2022

Duration: 3Hrs.

Answer all of the following.

5X20=100 Marks

- | | Marks |
|---|-------|
| 1 Define the word constitution and write about the history of Indian Constitution. | 20M |
| (OR) | |
| 2 Describe the administrative structure of Union Government in India. | 20M |
| 3 How do the powers are distributed between the central and state governments in India? | 20M |
| (OR) | |
| 4 Write about the powers and functions of Supreme Court of India. | 20M |
| 5 What are the rights and responsibilities of Prime Minister according to Indian Constitution? | 20M |
| (OR) | |
| 6 Illustrate the administrative structure of State Government. Explain the role of Council of Ministers in State Governance. | 20M |
| 7 Elaborate the Panchayat Raj System in India, and write about the salient features of 73 rd Constitutional Amendment. | 20M |
| (OR) | |
| 8 Explain the role of Mayor in Local Administration. | 20M |
| 9 What are the powers and functions of the Chief Election Commissioner of India? | 20M |
| (OR) | |
| 10 Explain the commissions made for the welfare of the Scheduled Castes, Scheduled Tribes, and Backward Castes. | 20M |

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R-19

Code: 19A141T

II B.Tech. II Semester Supplementary Examinations December 2022

Building Planning & Environment

(Civil Engineering)

Max. Marks: 70

Time: 3 Hours

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

UNIT-I

		Marks	CO	BL
1.	Quote and brief the classification of buildings as per NBC.	14M	1	L2

OR

		Marks	CO	BL
2.	Describe various requirements of i. Height of the Building ii. Wall Thickness	14M	1	L2

UNIT-II

		Marks	CO	BL
3.	Recall the minimum standards of i. Habitable room ii. Kitchen & iii. Bath room and water closet	14M	2	L2

OR

		Marks	CO	BL
4.	Recall and brief various types of residential buildings.	14M	2	L2

UNIT-III

		Marks	CO	BL
5.	Recall various factors considered while planning a hospital building.	14M	3	L2

OR

		Marks	CO	BL
6.	Explain the factors to be considered in planning of school building.	14M	3	L2

UNIT-IV

		Marks	CO	BL
7.	Discuss the difference between CPM and PERT.	14M	4	L2

OR

8. A project schedule has the following characteristics:

Activity	Time	Activity	Time
1-2	4	5-6	4
1-3	1	5-7	8
2-4	1	6-8	1
3-4	1	7-8	2
3-5	6	8-10	5
4-9	5	9-10	7

	14M	4	L3
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UNIT-V

		14M	5	L2
9.	Describe the air quality and quantity.			

OR

		14M	5	L2
10.	Explain the term green design with a case study.			

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Code: 19A142T

II B.Tech. II Semester Supplementary Examinations December 2022

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)

		Marks	CO	Blooms Level
	UNIT-I			
1.	Illustrate how hydration happens in cement with suitable chemical reactions.	14M	CO1	L2
	OR			
2.	Classify the aggregates on the basis of their shape, size and weight density	14M	CO1	L1
	UNIT-II			
3.	Discuss various workability tests for self-compacted concrete and explain any one test in detail.	14M	CO2	L2
	OR			
4.	Describe how slump cone test is conducted on fresh concrete in the laboratory.	14M	CO2	L2
	UNIT-III			
5.	Describe creep of concrete and factors influencing creep of concrete?	14M	CO3	L1
	OR			
6.	Define curing of concrete. How curing influences strength of concrete	14M	CO3	L2
	UNIT-IV			
7.	Explain the term durability and how to achieve durability of concrete as per IS 456?	14M	CO4	L2
	OR			
8.	Identify the factors that have influence on durability of concrete?	14M	CO4	L2
	UNIT-V			
9.	Explain cellular concrete and also list the applications of cellular concrete.	14M	CO5	L2
	OR			
10.	Discuss self-compacting concrete and its applications	14M	CO5	L2
