Hall Ticket Number :										

R-20

Code: 20A143T

II B.Tech. II Semester Regular & Supplementary Examinations July 2023

Engineering Geology

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	BL
1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)		
a)	What is Weathering?	CO1	L4
b)	What are the Physical Properties of Rock forming Minerals?	CO2	L3
c)	Define Dip and Strike.	CO3	L4
d)	What is an Aquifer?	CO4	L4
e)	Mention types of Dams.	CO5	L3

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL
		UNIT–I			
2.	a)	Explain importance of Geology in Civil Engineering practices.	6M	CO1	L3
	b)	Describe effects of Weathering	6M	CO1	L3
		OR			
3.	a)	Discuss any one case history of failure of Civil construction due to Geological drawback.	7M	CO1	L3
	b)	Explain importance of Structural Geology in Civil work.	5M	CO1	L3
		UNIT–II			
4.	a)	Explain the properties of Minerals.	6M	CO2	L4
	b)	Explain the different types of Hardness in Minerals.	6M	CO2	L3
		OR			
5.	a)	Describe classification of Minerals.	8M	CO2	L4
	b)	Explain different uses of Minerals.	4M	CO2	L4
		UNIT–III			
6.	a)	Explain classification of Igneous rocks.	5M	CO3	L3
	b)	Discuss different types of Folds.	7M	CO3	L3
		OR			
7.	a)	What is Metamorphism? Explain types of Metamorphism.	6M	CO3	L3

	b)	What is Rock deformation? Discuss factors responsible for deformation.	6M	CO3	L4

UNIT–IV

8.	a)	Explain Vertical Distribution of subsurface water with sketch.	8M	CO4	L3
	b)	Give a brief note on Cone of Depression.	4M	CO4	L4

OR

9.	a)	Discuss causes and effects of Landslides.	6M	CO4	L4
	b)	Explain Seismic zones of India.	6M	CO4	L4

UNIT–V

10.	a)	Explain Reservoir Siltation and remedial measures.	6M	CO5	L4
	b)	Discuss feasibility of Dam site in bedded formation.	6M	CO5	L4

OR

11.	a)	What are the remedial measures taken for Tunneling in soft rock formation?	7M	CO5	L4
	b)	Discuss suitability of Dam site in deformed rock basement.	5M	CO5	L4

*** End ***

Hall Ticket Number :										

R-20

Code: 20A142T

II B.Tech. II Semester Regular & Supplementary Examinations July 2023

Materials, Testing and Evaluation

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

			CO	BL
1.		Answer ALL the following short answer questions (5 X 2 = 10M)	CO	BL
	a)	Differentiate clamp burning and kiln burning.	CO1	L3
	b)	Explain the importance of slump in concrete.	CO2	L2
	c)	Compare plastering and pointing.	CO3	L3
	d)	List the types of shrinkage.	CO4	L1
	e)	Define high density concrete and high strength concrete.	CO5	L1

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL
		UNIT–I			
2.	a)	Write the classification of stones.	6M	CO1	L1
	b)	Explain characteristics of good tile.	6M	CO1	L2
		OR			
3.	a)	Explain properties and seasoning of timber.	6M	CO1	L2
	b)	Compare mud brick and cement brick	6M	CO1	L3
		UNIT–II			
4.	a)	Illustrate with neat sketch English and Flemish bond.	6M	CO2	L2
	b)	Compare white washing and distempering.	6M	CO2	L3
		OR			
5.	a)	Draw neat sketch of mat footing. Explain its advantages and disadvantages.	6M	CO2	L2
	b)	Explain different types of paints	6M	CO2	L2
		UNIT–III			
6.	a)	Classify the types of admixtures and explain	6M	CO3	L2
	b)	Explain any two tests of fresh concrete with its significance.	6M	CO3	L2
		OR			

7.	a)	Enumerate the importance of mixing and curing of concrete.	6M	CO3	L2
	b)	Explain any one test to find the properties of fine and coarse aggregate with its significance	6M	CO3	L2

UNIT–IV

8.	a)	Explain the factors in the choice of mix proportions.	6M	CO4	L2
	b)	Compare creep and shrinkage of concrete	6M	CO4	L3

OR

9.	a)	Enumerate any one test to check the durability of concrete.	6M	CO4	L2
	b)	Compare proportioning of concrete mixes by IS 10262:2019 and ACI method.	6M	CO4	L3

UNIT–V

10.	a)	Enumerate the factors affecting properties of Fiber Reinforced Concrete.	6M	CO5	L2
	b)	Explain the significance of different lightweight materials in concrete.	6M	CO5	L1

OR

11.	a)	Describe the properties of polymer concrete.	6M	CO5	L1
	b)	Enumerate the importance of self consolidating concrete.	6M	CO5	L2

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC41T

II B.Tech. II Semester Regular & Supplementary Examinations July 2023

Probability and Statistics

(Common to CE, ME, CSE, AI&DS and AI&ML)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)	CO	BL
a)	Write the formula for Rank correlation coefficient with repeated ranks.	CO1	L1
b)	Two cards are drawn from a well shuffled pack of cards .Find probability that they are both aces if the first card is (i) replaced (ii) not replaced	CO2	L2
c)	If the mean of a Poisson variable is 1.8, then find P(X>1)	CO3	L3
d)	Define Type-I and Type-II Errors.	CO4	L3
e)	Explain briefly the Variance Ratio test(F-Test)	CO5	L2

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	BL

UNIT–I

2. Calculate Mean, Median and Mode from the following data.

Class interval	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	5	9	13	21	20	15	8	3

12M CO1 L3

OR

3. Find Karl Pearson's coefficient of correlation from the following data

Wages	100	101	102	102	100	99	97	98	96	95
Cost of living	98	99	99	97	95	92	95	94	90	91

12M CO1 L3

UNIT–II

4. a) State Baye's Theorem 2M CO2 L-1

b) In a bolt factory machines A, B, C manufacture 20%, 30% and 50% of the total of their output and 6%, 3% and 2% are defective. A bolt is drawn at random and found to be defective. Find the probabilities that is manufactured from (i) Machine A (ii) Machine B (iii) Machine C 10M CO2 L-3

OR

5. a) A random variable X is defined as the sum of the numbers on the faces when two dice are thrown. Construct Probability distribution table. 3M CO2 L-3

b) For the continuous probability function $f(x) = kx^{-e^{-x}}$ n x≥0,find (i) k (ii) Mean (iii) Variance 9M CO2 L-2

UNIT–III

6. a) Out of 800 families with 5 children each, how many would you expect to have (i) 3 boys (ii) either 2 or 3 boys (iii) atleast one boy? Assume equal probabilities for boys and girls 6M CO3 L-3

b) In a Normal distribution 7% of the items are under 35 and 89% are under 63. Determine the mean and variance of the distribution — 6M CO3 L-3

OR

7. a) Average number of accidents on one day on a national highway is 1.6. Determine the probability that the number of accidents are (i) at least one (ii) Atmost one — 6M CO3 L-3

b) In a sample of 1000 cases the mean of a certain test is 14 and standard deviation is 2.5.Assuming the distribution to be normal, find (i) how many score between 12 and 15? (ii) how many score above 18? (iii) how many score below 18? — 6M CO3 L-3

UNIT–IV

8. a) The mean life of a sample of 10 electric bulbs was found to be 1456 hours with standard deviation of 423 hours. The second sample of 17 bulbs chosen from a different batch shoed a mean life of 1280 hours with standard deviation of 398 hours. Is there a significant difference between the means of two batches at 5% level of significance? — 8M CO4 L-4

b) A random sample of 400 items is found to have mean 82 and Standard deviation of 18. Determine maximum error of estimation at 95% confidence interval. Also construct 95% confidence interval. — 4M CO4 L-4

OR

9. a) An oceanographer wants to whether the depth of the ocean in a certain region is 57.4 fathoms, as had previously been recorded. What can he conclude at the 0.05 level of significance, if readings taken at 40 random locations in the given region yielded a mean of 59.1 fathoms with standard deviation of 5.2 fathoms? — 4M CO4

b) In a random sample of 1000 persons from town A, 400 are found to be consumers of wheat. In a sample of 800 from town B, 400 are found to be consumers of wheat. Do these data reveal a significant difference between town A and town B, so far as the proportion of wheat consumers is concerned? Consider level of significance as 1%. — 8M CO4 L-4

UNIT–V

10. To compare two kinds of bumper guards, 6 of each kind were mounted on a car and then the car was run into a concrete wall. The following are the costs of repairs.

Guard I	107	148	123	165	102	119
Guard II	134	115	112	151	133	129

Use 0.01 level of significance to test whether the difference between two sample means is significant. — 12M CO5 L-4

OR

11. Mechanical engineers, testing a new welding technique, classified welds both with respect to appearance and an X-ray inspection. Test for performance with respect to appearance and X ray inspection are independent (consider level of significance as 5%)

Quality

X-Ray	Bad	Normal	Good
Bad	20	7	3
Normal	13	51	16
Good	7	12	21

12M CO5 L-4

*** End ***

Hall Ticket Number :										

R-20

Code: 20A144T

II B.Tech. II Semester Regular & Supplementary Examinations July 2023

Structural Analysis

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two marks.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

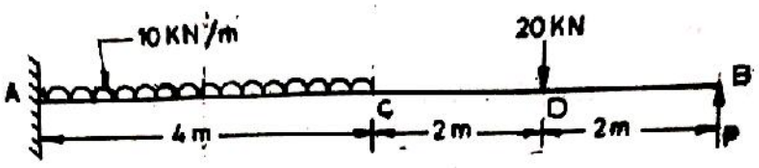
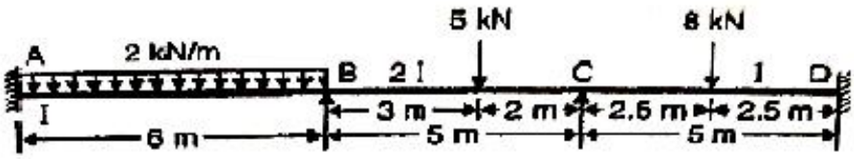
PART-A

(Compulsory question)

		CO	BL
1.	Answer ALL the following short answer questions (5 X 2 = 10M)		
a)	What are the advantages of fixed beam when compared to simply supported beam?	CO1	L1
b)	How can you draw the shear force and bending moment diagrams of a continuous beam?	CO2	L1
c)	Why a slope-deflection method is so called? Write the generalized form of slope-deflection equation.	CO3	L1
d)	Construct the influence lines for reaction at left support A, shear force at section X of a simple beam.	CO4	L2
e)	Differentiate between static indeterminacy and kinematic indeterminacy.	CO5	L1

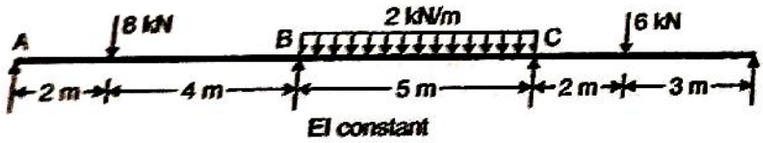
PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	BL
	UNIT–I			
2.	A propped cantilever AB supports loads as shown in figure below. Draw the shear force and bending moment diagrams. 	12M	CO1	L3
	OR			
3.	A fixed beam of span 7 m carrying two point loads. The first one is 10 kN, acting 2 m away from the left hand end, and the other is 20 kN, acting 4 m away from the right hand end. Draw the shear force and bending moment diagrams of the beam.	12M	CO1	L3
	UNIT–II			
4.	A continuous beam ABC is fixed at A and simply supported at B and C. Lengths of the spans are, AB=4 m and BC=4 m. The beam carries a u.d.l of 2kN/m over the span AB and a point load of 8kN is applied at the mid span of BC. Draw the shear force and bending moment diagrams.	12M	CO2	L3
	OR			
5.	Using Clapeyron's theorem of three moments, draw the shear force and bending moment diagrams of the continuous beam ABCD, simply supported at A, B & C and the end D is free. The span lengths are, AB=4 m, BC=4 m and CD=2 m. The span AB carries a point load of 5 kN at the mid span. The span BC carries a u.d.l. of 3 kN/m. The span CD carries another point load of 2 kN at the free end D.	12M	CO2	L3
	UNIT–III			
6.	A continuous beam ABCD consists of three spans and is loaded as shown in figure below. Ends A and D are fixed. By using slope-deflection method Determine the bending moments at the supports and plot the bending moment diagram? 	12M	CO3	L3

OR

7. A beam ABCD, 16 m long is continuous over three spans and is loaded as shown in figure below. By using moment distribution method. Calculate the moments and reactions at the supports and draw the bending moment diagrams?



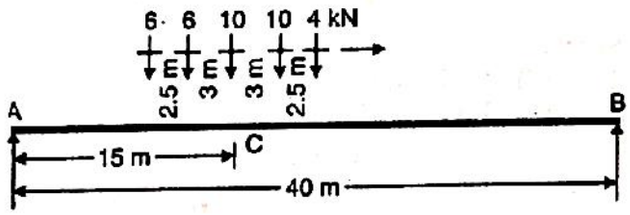
12M CO3 L3

UNIT–IV

8. Four wheel loads of 6, 4, 8 and 5 kN cross a girder of 20 m span, from left to right followed by u.d.l. of 4 kN/m and 4 m long with the 6 kN load leading. The spacing between the loads in the same order are 3 m, 2 m and 2 m. The head of the u.d.l is at 2 m from the 5 kN load. Using influence lines, Calculate the shear force and bending moment at a section 8 m from the left support when the 4 kN load is at centre of the span? 12M CO4 L3

OR

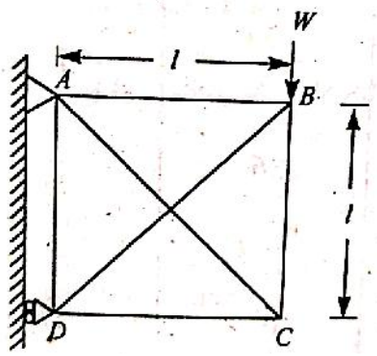
9. The system of concentrated loads shown in figure below rolls from left to right across a beam simply supported over a span of 40 m, the 4 kN load leading. For a section 15 m from the left hand support, determine:
   (a) The maximum bending moment.
   (b) The maximum shearing force?



12M CO4 L3

UNIT–V

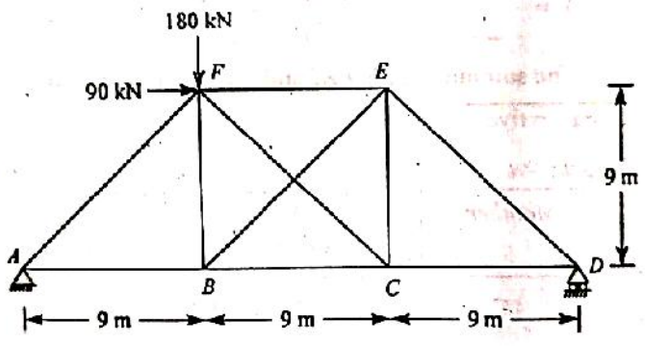
10. Find the forces in the members of the frame shown in figure below? All members have the same cross-sectional area, and are of the same material.



12M CO5 L3

OR

11. Find the forces in members BE and CF of the truss shown in figure below? The ratio of length to cross-sectional area for all the members is the same. The frame is pinned at A and rests on rollers at D.



12M CO5 L3

*** End ***

Hall Ticket Number :										

R-20

Code: 20A141T

II B.Tech. II Semester Regular & Supplementary Examinations July 2023

Civil Engineering Drawing

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

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PART-A

Answer *any one* question carry 28 marks

1. Draw plan and Elevation and section for the given line diagram by using suitable assumed dimensions.

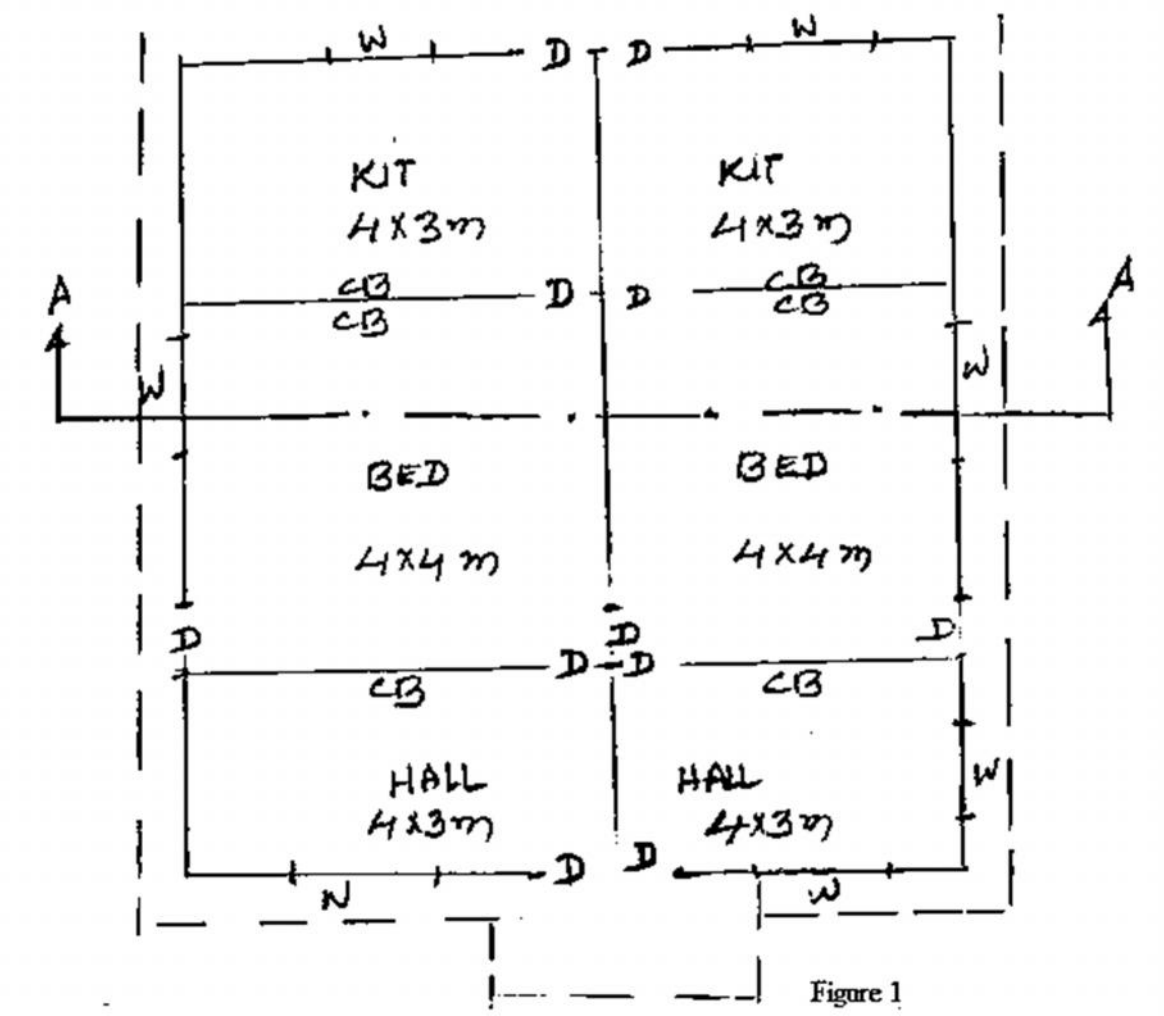

Figure 1

OR

2. Draw King Post truss with suitable scale and mention all parts

PART-B

Answer *Three* questions from the following (3 x 14 = 42 Marks)

			Marks	CO	BL
3.	a)	Explain the importance of building bye laws?	7M	CO1	L2
	b)	Classify the buildings as per NBC and briefly explain them.	7M	CO1	L2
4.		What is meant by aspect, prospect, circulation and grouping? Explain its importance?	14M	CO2	L2
5.	a)	Explain different principles used while planning a hospital in rural areas?	7M	CO3	L1
	b)	Design the layout of a hotel building constructed in a city?	7M	CO3	L1
6.		Explain planning of bank building in detail with a neat sketch	14M	CO3	L2
7.		Explain the concept of contemporary architecture in buildings in detail	14M	CO3	L2

*** End ***