Hall Ticket Number :										

R-17

Code: 7G642

II B.Tech. II Semester Regular & Supplementary Examinations December 2022

Building Planning & Drawing

(Civil Engineering)

Max. Marks: 70 Time: 3 Hours

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PART-A

Answer *all Three* units by choosing one question from each unit (3 x 14 = 42 Marks)

UNIT–I

1. Classify the buildings based on occupancy and type of construction.

OR

2. a) Explain in detail the factors to be considered for selection of a site for a residential building?

   b) Define Floor Area Ratio. How it is related to maximum ground coverage?

UNIT–II

3. a) Differential between the following **(i)** Hotel and Motel **(ii)** Reading room and stack room **(iii)** Auditorium and foyer **(iv)** Dispensary and clinic

   b) What are the factors to be considered in the design of bank building

OR

4. a) Describe the important departments and facilities to be provided in the layout of a general hospital

   b) Explain the various planning factors in the design of a school building

UNIT–III

5. a) Differentiate between PERT and CPM network methods

   b) Define a dummy activity used in a network. State the two purposes for which it is used. Mention four conventions that are used in drawing the network.

OR

6. a) Explain the concept of Float.

   b) A project consists of the following activities:
   Activity: 10-20,10-30,20-40,30-40,20-50,40-50
   Duration(Weeks): 13,12,2,8.15,2
   Draw the network diagram. Calculate total and free floats for the activities. Mark the critical path

PART-B

Answer *any one question from the following* units (1 x 28 = 28 Marks)

UNIT–IV

7. a) Draw the plans of English Bond odd and even courses of one and half brick walls in thickness at the junction of a corner (300mm thickness). 18M

   b) Draw neat conventional symbols for the following items (in 40mm*40mm blocks). (i) Timber (ii) Concrete (iii) Rock (iv) Brick 10M

OR

UNIT–V

8. a) Draw the plan section and elevation of a residential building presenting following requirements with suitable scale.
   i. Living room
   ii. Dining room
   iii. Bed room with batch cum W.C-3
   iv. Kitchen-1
   v. Reading room
   vi. Store room.
   The plinth area shall not exceed 200 sq.m. 28M

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Hall Ticket Number :										

R-17

Code: 7GC41

II B.Tech. II Semester Supplementary Examinations December 2022

Environmental Science

(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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UNIT–I

1.	a)	Define the term 'Environment'. What is Climate change?	7M
	b)	Knowledge about the environment is not an end, but rather a beginning. Explain.	7M
		OR	
2.	a)	Name any five eminent environmentalists. Summarize their contribution.	7M
	b)	Explain the scope of Environmental Engineering.	7M

UNIT–II

3.	a)	Environment damages caused by mining last long after the mine is closed. Discuss with an example.	7M
	b)	Differentiate between renewable and non-renewable energy resources.	7M
		OR	
4.	a)	What are the actions that could serve as solutions to the problem of deforestation?	7M
	b)	What are the major causes for conflicts over water? Discuss one inter-state river water dispute.	7M

UNIT–III

5.	a)	With a neat sketch, explain how the element Carbon is recycled in nature?	7M
	b)	Define Hotspot in Biodiversity. Enumerate the Hotspots identified in India.	7M
		OR	
6.	a)	What are food chains and food web? Explain significance with examples.	7M
	b)	Identify and explain the present day threats to the biodiversity in India.	7M

UNIT–IV

7.	a)	List the major air pollutants and explain their effects on human beings.	7M
	b)	How is soil productivity affected by soil pollution? Suggest control measures.	7M
		OR	
8.	a)	Write a short note on Chernobyl nuclear disaster.	7M
	b)	Define BOD. Differentiate between point and non-point sources of pollution.	7M

UNIT–V

9.	a)	Describe the salient features of Forest Conservation Act.	7M
	b)	What are the objectives and elements of Value education?	7M
		OR	
10.	a)	List the major greenhouse gases. Explain effects of global warming.	7M
	b)	Explain the environmental problems posed by population explosion.	7M

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Hall Ticket Number :										

R-17

Code: 7GC42

II B.Tech. II Semester Supplementary Examinations December 2022

Probability & Statistics

(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.	If P(A) =1/ 4 , P(B)= 1/ 3 and P(A∪B)=1/ 2 then find P(A/ B), P(B/A), P (A ∩B′) and P (A /B′).	14M	1	L2
	OR			
2.	State and prove Baye's theorem	14M	1	L2
	UNIT–II			
3.	Ten coins are throw simultaneously. Find the probability of getting at least (i) seven heads (ii) six heads	14M	2	L1
	OR			
4.	If the probability of a bad reaction from a certain injection is 0.001, determine the chance that out of 2000 individuals more than two individuals will get a bad reaction.	14M	2	L4
	UNIT–III			
5.	If we can assert with 95% that the maximum error is 0.05 and P is 0.2. Find the size of the sample.	14M	3	L2
	OR			
6.	Find 95% confidence limits for the mean of a normality distributed population from which the following sample was taken 15,17,10,18,16,9,7,11,13,14.	14M	3	L2
	UNIT–IV			
7.	A random sample of 10 boys had the following I.Qs: 70, 120, 110, 101, 88, 83, 95, 98, 107, and 100. Do these data support the assumption of population mean I.Q of 100?	14M	4	L4
	OR			
8.	A random sample of 100 recorded deaths in a country showed an average life span of 71.8 years. Assuming a population standard deviation of 8.9 years, does this seem to indicate that the mean life span today is greater than 70 years? Use a 0.05 level of significance.	14M	4	L4
	UNIT–V			
9.	The measurements of the output of two units have given the following results. Assuming that both samples have been obtained from the normal populations at 10% significant level, Test whether the two populations have the same variance			

Unit-A	14.1	10.1	14.7	13.7	14.0
Unit-B	14.0	14.5	13.7	12.7	14.1

14M 4 L4

OR

10. 4 coins were tossed 160 times and the following results were obtained,

No, of Heads	0	1	2	3	4
Frequency	17	52	54	31	6

Under the assumption that coins are unbiased, find the expected frequencies of 0,1,2,3,4 heads and test the goodness of fit for α=0.05 14M 4 L4

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Hall Ticket Number :										

R-17

Code: 7G644

II B.Tech. II Semester Supplementary Examinations December 2022

Structural Analysis-I

(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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UNIT–I

1. Derive the Equation for a fixed beam when one end of beam having sinking support with neat sketch. 14M

OR

2. Derive the Equation for a Fixed beam carrying an Eccentric point load on the beam with neat sketch. 14M

UNIT–II

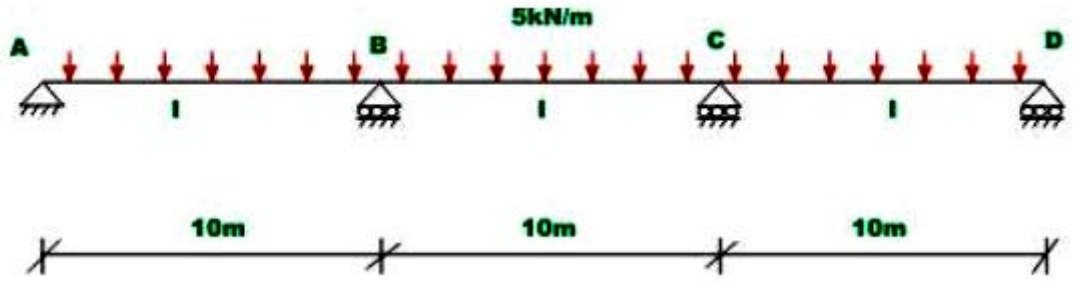
3. A Continuous beam ABC covers two consecutive span AB and BC of lengths 5m and 4m, carrying UDL of 8KN/m and 6KN/m respectively. If the ends A & C are simply supported, find the supports moments at A, B & C . 14M

OR

4. Derive Clapeyron's theorem or Three moment's equation for continuous beams. 14M

UNIT–III

5. A continuous beam ABCD is carrying uniformly distributed load 5KN/m as shown in Figure. Compute reactions and draw shear force and bending moment diagram due to following support settlements. Support B 0.005m vertically downwards. Support C, 0.0100m vertically downwards. Assume E = 200GPa; I= $1.35*10^{-3}$ m^4 by using moment distribution method.



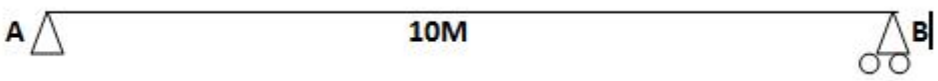
14M

OR

6. Explain step by step procedure of Moment Distribution method with suitable example. 14M

UNIT–IV

7. Construct the influence line for the reaction at support B for the beam of span 10 m. The beam structure is shown in Figure



14M

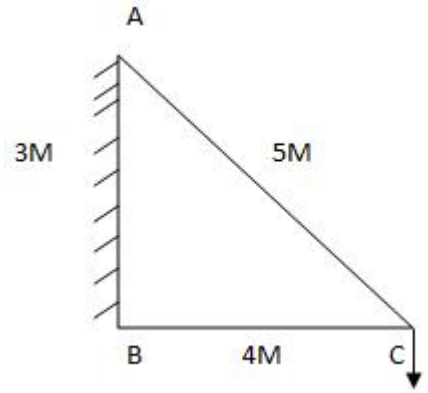
OR

8. a) Two wheel loads of 60KN and 200kn spaced 4m apart move on the span of a girder AB from the left to right. Let any of the two wheel loads could lead the othe. Find the vertical reaction at B. 7M

   b) Derive the Maximum and minimum shear force when single concentrated load acting on the beam. 7M

UNIT–V

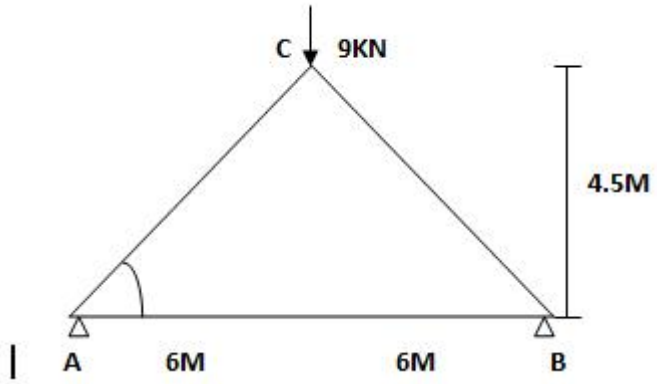
9. Find the vertical and horizontal deflections of the joint C of the truss as shown in figure. The area of the inclined tie is 2000 mm^2, while the area of the horizontal member is 1600 mm^2. Take E = 200KN/mm^2.



14M

OR

10. Find the vertical and horizontal deflections of the joint C of the pin jointed truss as shown in figure. The area of the horizontal member is 150 mm^2 and the areas of the members AC and BC are 200 mm^2 each. Take E= 200KN/ mm^2



14M

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Hall Ticket Number :										

R-17

Code: 7G641

II B.Tech. II Semester Supplementary Examinations December 2022

Advanced 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/mm^2.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 = 315 MPa, 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 /mm^2 on projected area. Find the maximum and minimum stress intensities at the base if the specific weight of masonry is 22 KN/m^3.	14M	4	4
		OR			
8.		A masonry retaining wall is 100 m high and retains earth weighing 1800 kg/m^3. The top and bottom widths of the retaining wall are 1 m and 4 m respectively. The angle of repose is 300. Weight of masonry is 2400 kg/m^3. 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

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