Total number of printed pages: 04 **Programme(D)/4th Semester/DCE 401**

2024

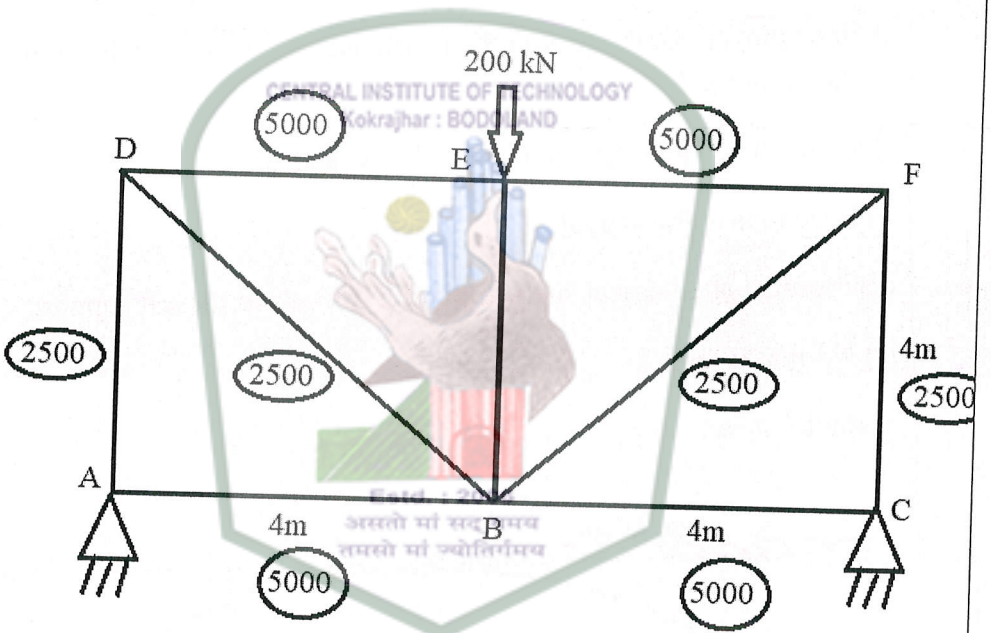
Structural Analysis-I

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.		Find deflection in the truss shown in the fig.1 by unit load method. (Take E = 200 kN/mm^2).  Fig.1	20
2.		A three hinged circular arch hinged at the springing and at the crown points has a span of 30 m and a central rise of 10m. shown in fig.2, Determine i) Reactions at the supports. ii) Radius of the arch. iii) Moment and vertical shear at point D at a section 10m from the left support. iv) Normal thrust v) Radial shear.	20

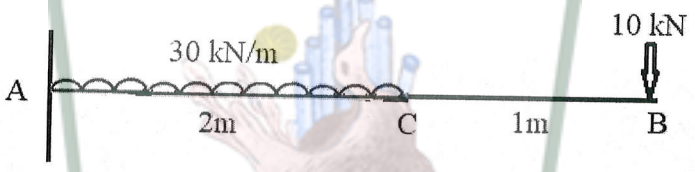
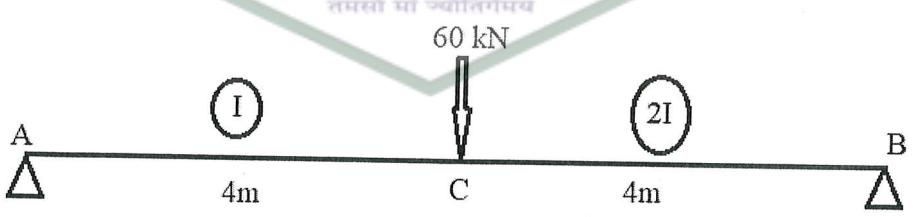
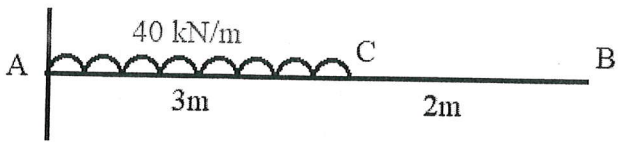
		ii) The tensions in the different segments. iii) The total length of the cable after deflection.	
5.		A bridge cable is suspended from towers 70m apart and carries a load of 30 kN/m on the entire span. If the maximum sag is 6m, calculate i) The reactions at the supports. ii) Maximum tension occurs at the supports. iii) Horizontal and vertical force on the tower, if the cable is supported by saddle. iv) Horizontal and vertical force on the tower, if the cable is supported by pulley.	20
6.	a)	Determine the slope and deflection at point B in the cantilever beam shown in fig.4 by conjugate beam method  Fig.4	12
	b)	Determine the deflection under 60 kN load in the beam shown in fig 5. By strain energy method  Fig 5	8
7.	a)	Find rotation and deflection at the free end in the cantilever beam shown in the fig 6 by moment area method.  	10

		Fig.6	
	b)	Determine deflection under the load shown in fig.7 by Castigliano's method.	10

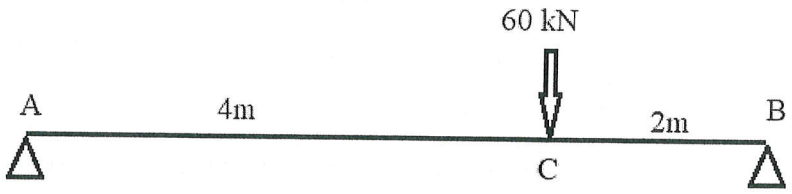


Fig.7

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(Deemed to be University)
KOKRAJHAR :: BTR :: ASSAM :: 783370

END SEMESTER EXAMINATION
DIPLOMA

Session: Jan-Jun, 2024 Semester: IV Time: 3 Hrs. Full Marks: 100

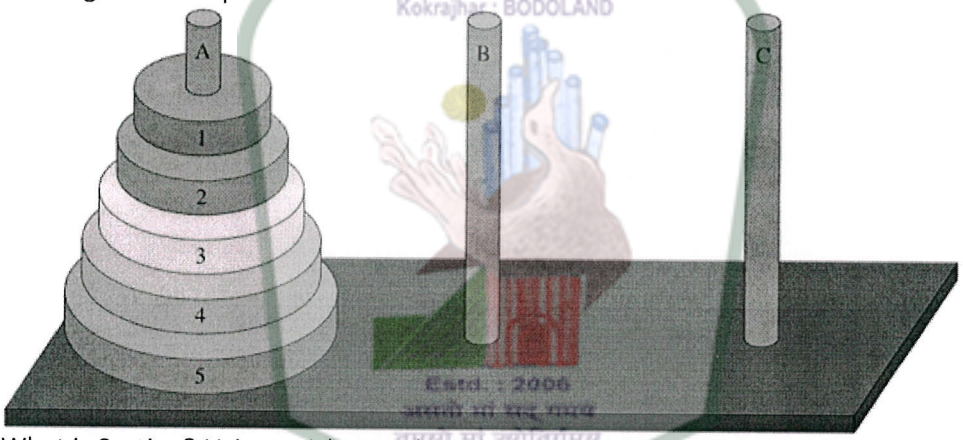
Course Code: **DCSE401** Course Title: **Data Structure using C**

Answer any 10 (ten) questions!

1 What is the difference between Data Type and Data Structures? Explain Queue Data Structure with an Example. 4 + 6 = 10

2 What are Structures and Pointers in C? Write the structure of a node which can have a Previous pointer, Data and Next pointer field. 4 + 6 = 10

3 What is a Stack? For the following diagram move all disks from Peg A to C utilizing the concept of a Stack. 4 + 6 = 10

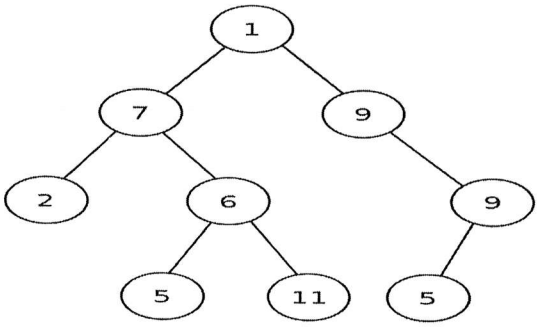


4 What is Sorting? Using quick sort algorithm sort the following elements 10
44, 22, 66, 88, 33, 11, 77, 99, 55

5 Explain different types of Memory Management functions available in C. 10

6 What is a Tree and a Graph? Explain different types of Tree with an Example. 10

7 For the following Binary Tree write Inorder, Pre-order and Postorder traversal 10



8 Construct a Binary Tree using the following Inorder and Postorder traversal information 10

In-order: 20, 30, 35, 40, 45, 50, 55, 60, 70

Post-order: 20, 35, 30, 45, 40, 55, 70, 60, 50

9 Construct a Binary Tree for the following Inorder and Postorder traversal information 10

In-order: T, S, Q, A, E, D, P, M, X, C, R, F

Post-order: T, Q, S, D, E, A, M, C, F, R, X, P

10 What is a Self Balancing Tree? Explain AVL Tree. 10

11 Construct AVL Tree using the following elements 10

21, 26, 30, 9, 4, 14, 28, 18, 15, 10, 2, 3, 7

12 Write short notes (any two)

a. Non Linear Data Structure
b. N-Ary Tree
c. Self Pointer
d. Bubble Sort

xxXxx