Bachelor of Architecture - Second Year - Second Semester-2022
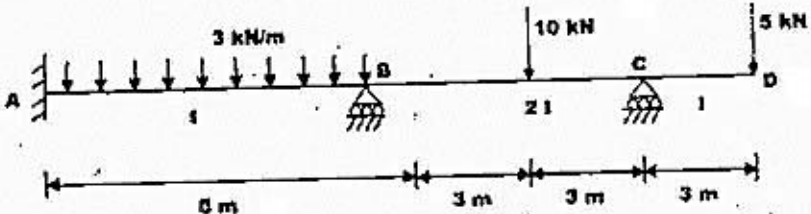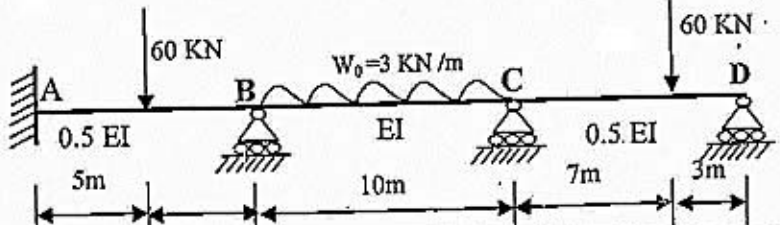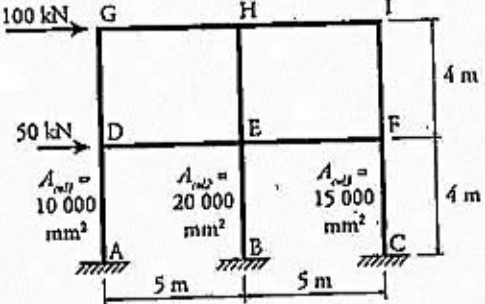## Theory of Structures II

Time: Three Hours Full Marks 100

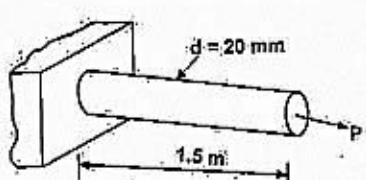| No. of questions	(Question No. 1 compulsory. Answer any 4 questions from the rest.)	Marks (5X20=50)
1 (a)	Draw the bending moment diagram for the continuous beam ABCD loaded as shown in Figure below. The relative moment of inertia of each span of the beam is also shown in the figure.	20
2(a) (b)	A three span continuous beam ABCD is subjected under a series of loads as shown in the figure below. Draw bending moment diagram in details after analyzing the beam using moment distribution method.	20
3	Find the shear and moment diagram of the frame using portal method is shown in the Figure below.	20
4(a)	What is dynamic loading? Differentiate between static and dynamic loading.	8
(b)	What are the factors to be considered in designing a frame structure considering the effect of wind and earthquake?	12

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Theory of Structures II

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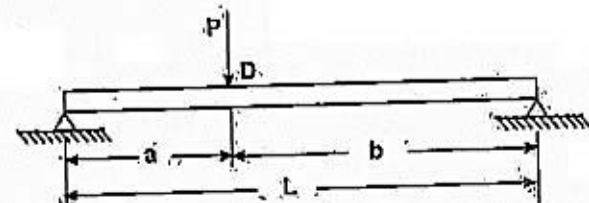| No. of questions	(Question No. 1 compulsory. Answer any 4 questions from the rest.)	Marks (5X20=50)
5	Define determinant structure. Differentiate between determinant and in determinant structures. What are the basic difference between classical method of analysis with approximate method?	10+10
6 (a) (b)	State and explain Castigliano's Therom for strain energy along with expression Suppose a rod AB must acquire an elastic strain energy of 13.6 N.m using E = 200 GPa. Determine the required yield strength of steel. If the factor of safety w.r.t. permanent deformation is equal to 5. 	10+10
7	 P = 208 KN ; L = 3.6 m = 3600 mm A = 0.9 m = 90mm ; b = 2.7m = 2700 mm E = 200 GPa ; I = 104 x 108 mm4 a. Determine the expression for strain energy of the prismatic beam AB for the loading as shown in figure below. Take into account only the effect of normal stresses due to bending. b. Evaluate the strain energy for the following values of the beam	10+10