

C 28730

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Name

Reg. No.

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION  
JUNE 2012

CE 04 602—STRUCTURAL MECHANICS—III

Time : Three Hours

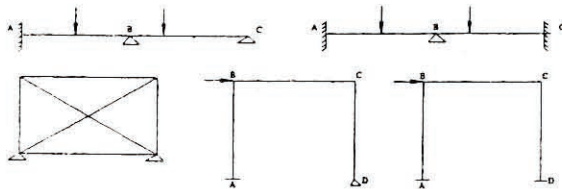
Maximum : 100 Marks



Answer all questions.

Part A

[I] (1) Describe degree of static indeterminacy in a structure shown below :



(2) Explain force method of analysis

(3) Describe load transformation matrix

(4) Explain stiffness matrix

(5) Find degree of kinematic indeterminacy of structures shown in the question (1)

(6) Describe Displacement transformation matrix

(7) Explain degree of freedom?

(8) Explain logarithmic decrement.

( 8 x 5 = 40 marks)

Part B

[II] (a) Analyse the given beam using flexibility method. Draw the SFD and BMD [ 20 marks]

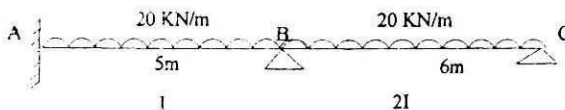


Fig. 1

Or

Turn over

(b) Analyse the given portal frame using flexibility method. Draw only the BMD.

Height of each column is 5m and span of beam is 10m

[ 20 marks]

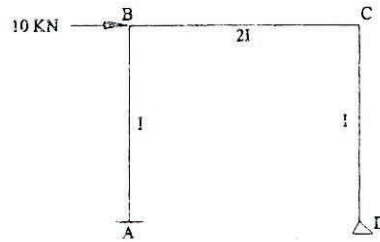


Fig : 2

[ III ] (a) Analyse the given beam shown in Fig 1 using stiffness method. Draw the SFD and BMD

[ 20 marks]

OR

(b) Analyse the given portal frame shown in Fig : 2 using Stiffness method.  
Draw only the BMD.

[ 20 marks]

[ IV ] (a) Calculate the natural frequency of the system shown below.  $E = 1.95 \times 10^5 \text{ N/mm}^2$  shape of beam is 200mm square.

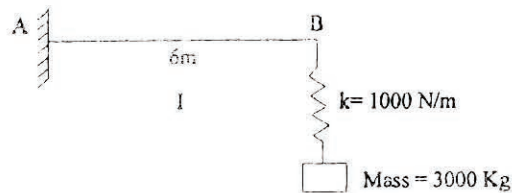


Fig : 3

[ 20 marks]

OR

(b) Explain Under damped system. Also find the displacement of an under damped system after 4 cycles if the initial displacement is 2.5 mm.

Damping is 7 % of critical damping

(20 marks)