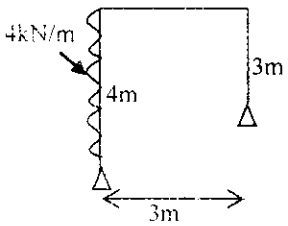
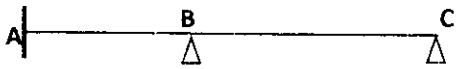
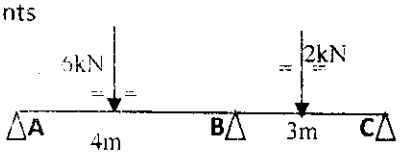
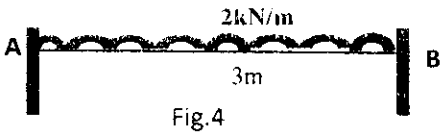
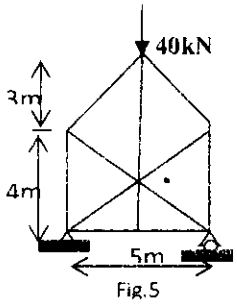
Form A: Paper –Setting Blank Ref No. –Ex/CE/T/216/2017 (S)

B.C.E. 2ND YEAR 1ST SEMESTER 2017

(1st / ~~2nd~~-Semester ~~/ Repeat /~~ Supplementary ~~/ Annual / Bianual~~)

SUBJECT: *Structural Mechanics-II*

Time: ~~Two hours~~/Three hours/~~Four hours/ Six hours~~ Full Marks 100 (60 marks for part I)

No. of Question	PART-I	
	Answer **any THREE**	
1.a)	Find the ratio of bending and shear strain energy in the cantilever beam of 3m length carrying uniformly distributed load of 4.5kN/m with square c/s 200mm each side. Take Poisson's ratio as 0.15.	
b)	Find the reaction at the propped end of a cantilever due to uniformly distributed load. Use Strain energy principle.	14+6=20
2.a)	Analyze the portal frame as shown in fig. 1 and draw bending moment diagram. Apply strain energy method.	
	 Fig.1  Fig. 2	
b)	What is static and kinematic indeterminacy? Find the static and kinematic indeterminacies of the beam as shown in Fig. 2.	15+5=20
3.a)	Solve the simple continuous beam as shown in Fig. 3. Draw SFD and BMD showing the salient points	
	 Fig.3  Fig.4	
b)	What is the advantage and disadvantage of using Fixed Beam?	17+3=20
4.a)	A Three Hinged Parabolic arch with span 6m, rise 2.5m is subjected to udl of 2.4KN/m for whoie span. Find the horizontal and vertical reactions. Also find the bending moment at a distance 2m from one end.	
b)	Solve the Complex truss as in Fig.5 by Henneberg's bar exchange method.	6+14=20
	 Fig.5	

Form A : Paper-setting Blank

Ref. No. ...*EX/CE/T/216/2017(s)*

.....*B. Civil Engineering 2nd Year*... EXAMINATION, *2017*
(1st / 2nd Semester / ~~Repeat /~~Supplementary ~~/ Annual / Bi- Annual~~)

SUBJECT ...*Structural Mechanics-II*
(Name in full)

PAPER .....*XX*.....

Full Marks 100
(40 marks for part II)

Time: ~~Two hours~~/Three hours/~~Four hours/Six hours~~

Use a separate Answer-Script for each part

No. of Questions	PART II **Answer question no. 1 and any two from the rest.**	Marks
1.	Determine the force in each member of the truss shown in Fig. 1. All members have the same cross-sectional area.	14

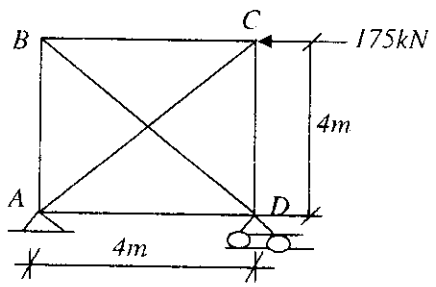


Fig.1

2.	Find the slope and deflection at points *B* and *D* of given beam (Fig. 2) by **Use Moment Area Method**.	13

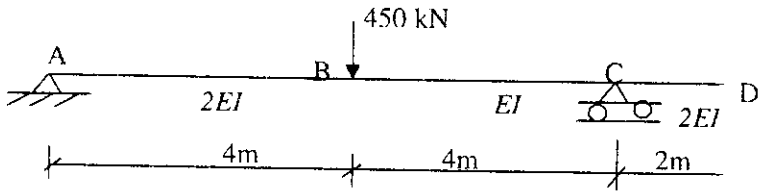


Fig.2

3.	Determine the slope and deflection at point *C* of given beam (Fig. 3). **Use Double Integration Method**.	13

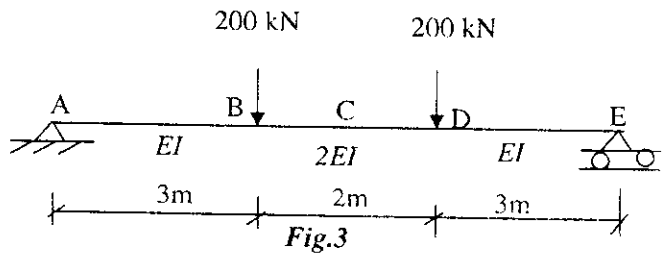


Fig.3

4. Evaluate the slope and deflection at point *B* of given beam (Fig. 4). **Use conjugate beam method.** 13

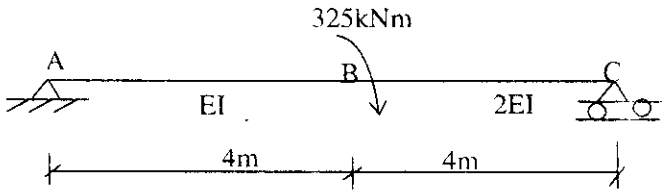


Fig.4