Total No. of Questions : 6]

SEAT No. :

P3

[Total No. of Pages : 2

APR.-17/B.E./Insem.-3
B.E. (Civil)
ADVANCED STRUCTURAL DESIGN
(Semester - II) (2012 Pattern) (Elective - III)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) *Answer Q.1 or Q.2, Q.3 or Q.4 and Q.5 or Q.6.*
2) *Figures to the right indicate full marks.*
3) *All relevant IS Codes and Steel Table are allowed in the examination.*
4) *If necessary, assume suitable data and indicate clearly.*
5) *Use of electronic pocket calculator is allowed.*

Q1) Determine the allowable deflection for a beam of effective span 4 m. The beam section is fabricated using two channels with bent lips connected along their webs. The channels are 200 mm × 80 mm with 25 mm bent lips. The thickness of the plate is 2.5 mm. Consider the yield stress in steel as 235 N/mm^2. **[10]**

OR

Q2) a) Explain effective width used in the design of compression elements. **[5]**

b) Explain stiffened and un-stiffened elements with neat sketches. **[5]**

Q3) Explain the theorems of plasticity used in the analysis of steel frames. **[10]**

OR

Q4) Determine the collapse moment for the frame shown in Fig. 1 and plot the bending moment diagram. **[10]**

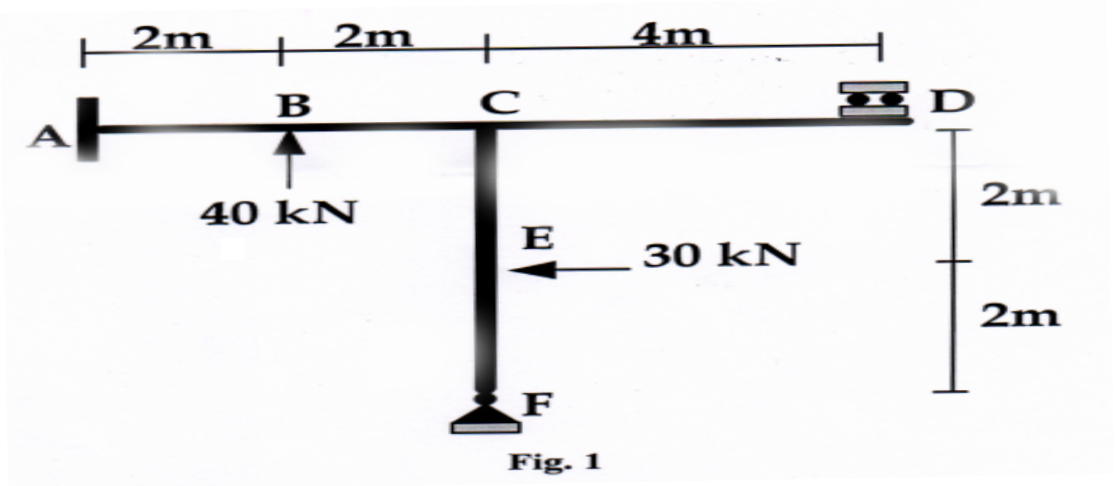

Fig. 1

P.T.O.

Q5) Calculate the overturning moments for a self-supporting chimney which has a total height of 50 m above the foundation. The chimney has uniform diameter of 2 m and is lined with 100 mm thick brick lining. The location of the chimney is on a site having a basic wind speed of 32 m/s. The topography of the site is flat. **[10]**

OR

Q6) Explain with a neat sketch how the preliminary dimensions for a steel chimney are worked out. **[10]**