

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)
B.Tech.Sem - V CIVIL CIVIL :SUMMER- 2022
SUBJECT : STRUCTURAL ANALYSIS-II

Day : Friday
 Date : 3/6/2022

S-13607-2022

Time : 10:00 AM-01:00 PM
 Max. Marks : 60

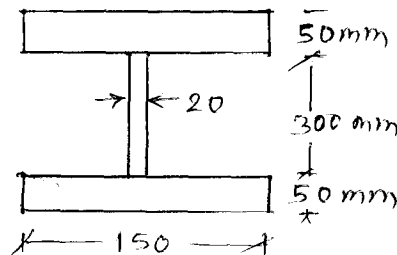
N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.
- 5) Assume suitable data if necessary.

- Q.1** a) What is plastic moment capacity? [05]
 b) Prove that shape factor for rectangular section is 1.5. [05]

OR

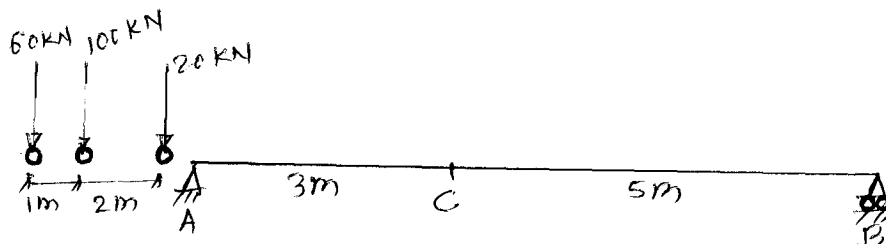
- Q.1** A cross section of the member is as shown in figure. Calculate 'Elastic and Plastic moment capacity of the section. Also calculate shape factor. [10]



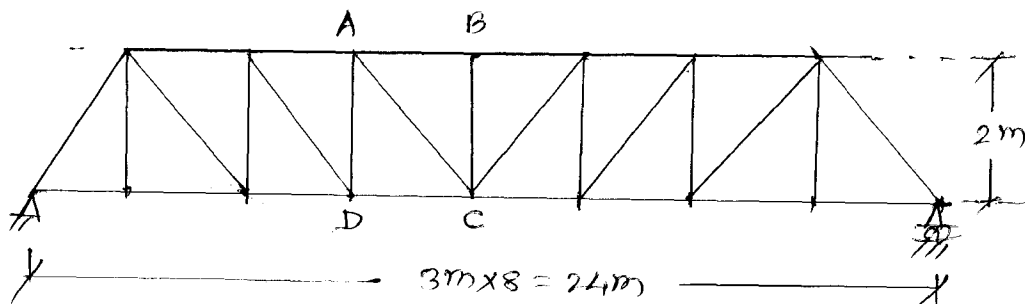
- Q.2** a) What is influence line diagram? Explain its application. [05]
 b) Explain Muller-Breslau principle for ILD. [05]

OR

- Q.2** A train of loading moves over beam as shown in figure. Calculate maximum value of reaction at A, maximum SF and BM at C. [10]



- Q.3** A truss is shown in figure. Draw an ILD for forces in members AB, AC, CD. [10]



P.T.O.

OR

Q.3 An UDL of intensity 60 kN/m and length 30 m moves over the above truss shown in Q.3. Calculate maximum force developed in the member AC. [10]

Q.4 A three hinged parabolic arch of 20 m span and 4 m central rise, carries a point load of 150 kN at 5 m horizontal distance from left hand support. Calculate maximum positive and negative bending moment developed in the arch. [10]

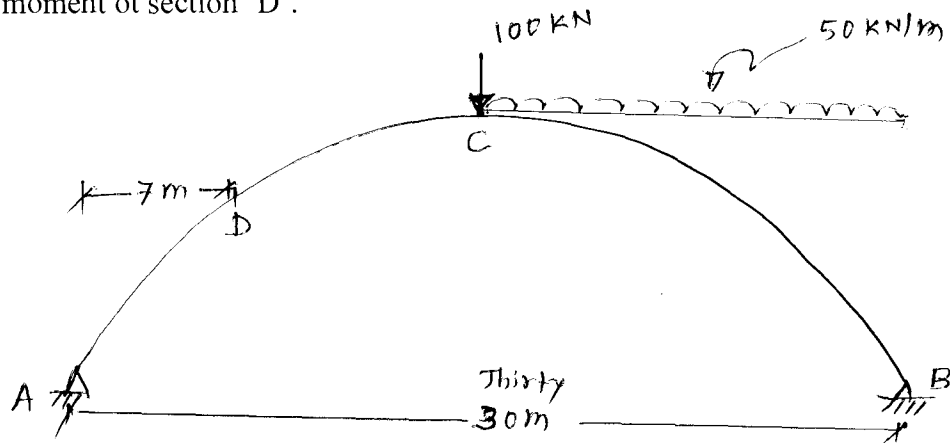
OR

Q.4 For the above arch in Q. 4, calculate normal thrust and radial shear at the section under the point load. [10]

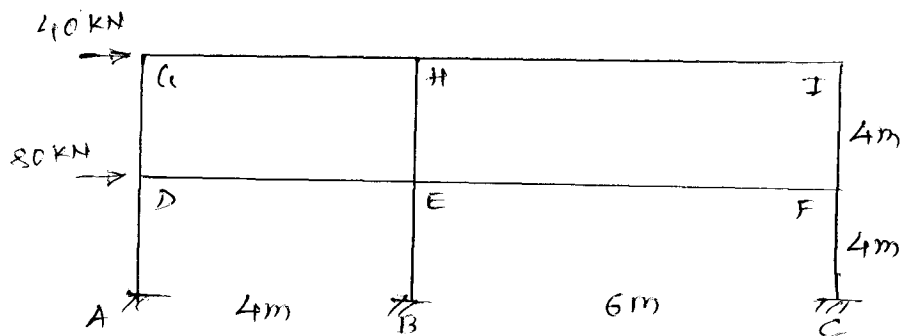
Q.5 a) Explain structural difference between beam and arch. [05]
b) Derive an equation for calculation of normal thrust and radial shear. [05]

OR

Q.5 A two hinged parabolic arch is loaded as shown in figure. Calculate bending moment of section 'D'. [10]



Q.6 Analyse the frame shown in figure using portal method. [10]



OR

Q.6 Analyse the above frame shown in Q.6 using cantilever method. [10]

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