B.Tech Sem – V (2007 Course) (Civil Engg.) : SUMMER - 2019
SUBJECT: STRUCTURAL MECHANICS – II

Day: Wednesday
Date: 15/05/2019

S-2019-3061

Time: 10.00 AM TO 01.00 PM
Max Marks: 80

N.B. :

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of the remaining questions attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in SAME answer books.
3) Draw neat and labeled diagrams **WHEREVER** necessary.
4) Figures to the right indicate **FULL** marks.
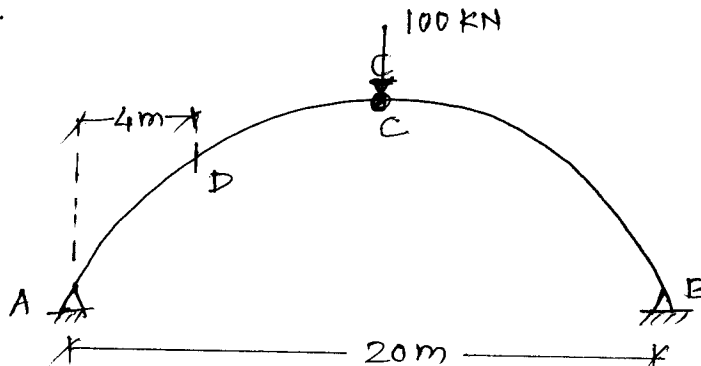5) Assume suitable data if necessary.

SECTION – I

Q.1 **a)** What is Muller-Breslau principle for an ILD? [04]

b) What is Normal thrust and Radial shear? [04]
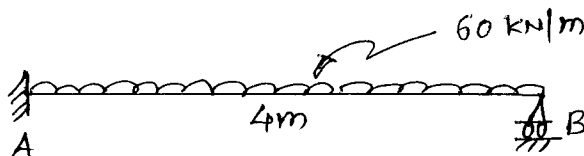
c) What is flexibility? [04]

Q.2 Draw an ILD for member AB and CD of the truss shown in figure. [14]
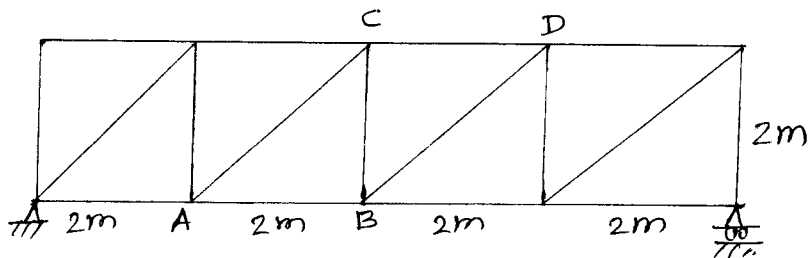
Q.3 Calculate normal thrust and radial shear at 'D' for the three hinged parabolic arch. [14]

**Q.4** Analyse the beam using flexibility matrix method. [14]

P.T.O.

Q.5 **a)** What is collapse mechanism? [04]

b) What is member stiffness matrix and global stiffness matrix? [04]

c) What are assumptions in cantilever method of analysis? [04]

Q.6 Calculate plastic moment capacity for rectangular section 200x300 mm. [14]
Take $\sigma_{yc} = 200$ N/mm^2 and $\sigma_{yt} = 250$ N/mm^2.

Q.7 Analyse the beam using stiffness matrix method. [14]
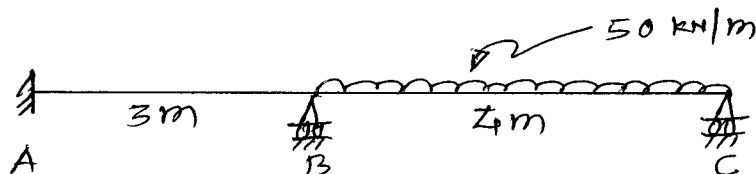
Q.8 Analyse the frame using portal method. [14]

* * * *