Total No. of Printed Pages:4

SUBJECT CODE NO: H-273
FACULTY OF ENGINEERING AND TECHNOLOGY
S.E. (Civil)
Theory of Structure-I
(REVISED)

[Time: Three Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.

N.B
    i.   Q.no1 and Q.no 6 are compulsory.
    ii.   Attempt any two questions from remaining question from each section.
    iii.   Assume suitable data wherever necessary.

Section A

Q.1   Attempt any five.   10

1. Write down the fixed end moment for a fixed beam with UDL over entire span.
2. What is Macaulay's method?
3. Give advantages and disadvantages of welded connections.
4. Define rivet value, pitch of rivet.
5. What are the assumptions made in the theory of riveted joints?
6. Give the strength of rivet in tearing and bearing.
7. State Castigliaon's theorem.

Q.2   a. Find the maximum load carrying by any of the rivet for riveted connection as shown in   10
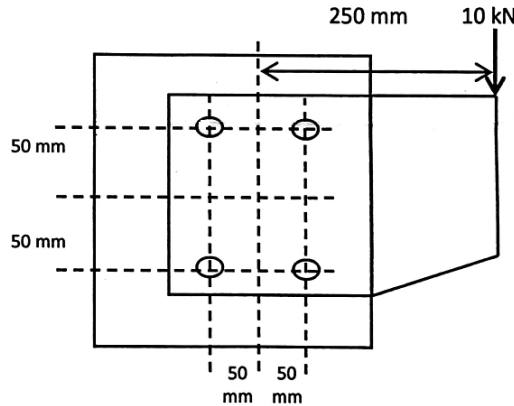   figure (1).

Fig.1

    b. Explain different types of welded joints with neat sketch.   05

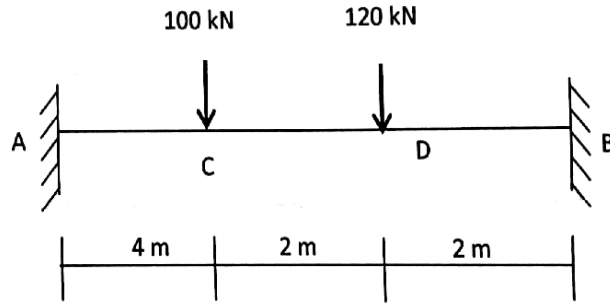Q.3   Determine the fixed end moments for the beam as shown in figure (2). Also draw SFD and BMD.   15

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Fig.2

Q.4   Find vertical deflection of C. take area of member AB as $1000 mm^2$ and of AC and BC as   15
       $1500 mm^2$. $E = 200\ kN/mm^2$.
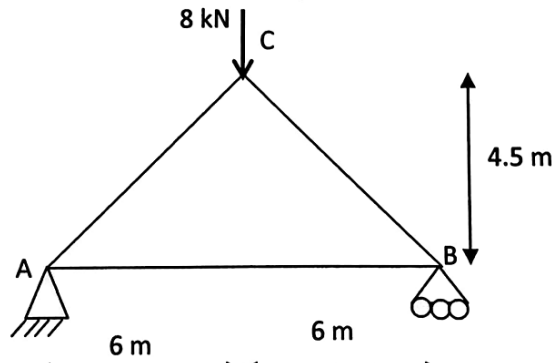

Fig.3

Q.5   Calculate deflection of beam under loads C and D by using Macaulay's method.   15
       Take $E = 200\ GPa$ and $I = 160 \times 10^6 mm^4$.

Fig.4

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Section B

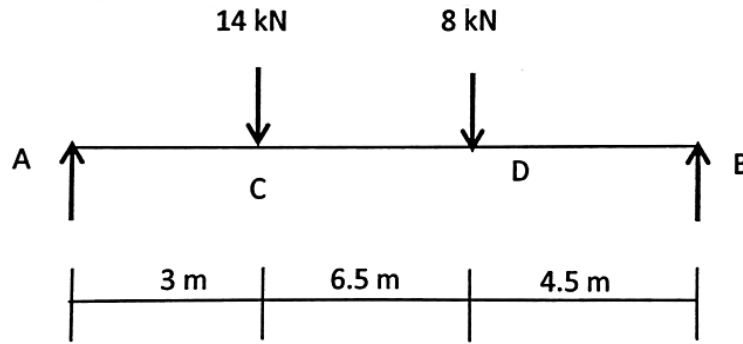Q.6   Attempt <u>any five</u>.   10

1. What do you understand by horizontal thrust? Give expression for it.
2. Define linear arch.
3. State Clapeyron's theorem of three moments.
4. What is normal thrust in parabolic arches?
5.   A three hinged parabolic arch of span 31m and central rise of 6m loaded with point load of 12kN at 12m from left end. Calculate horizontal and Normal thrust of the arch.
6. What are the advantages of continuous beam?
7. What are stiffening girders?

Q.7   Analyze the continuous beam and determine moments over beam and reactions at the supports.   15
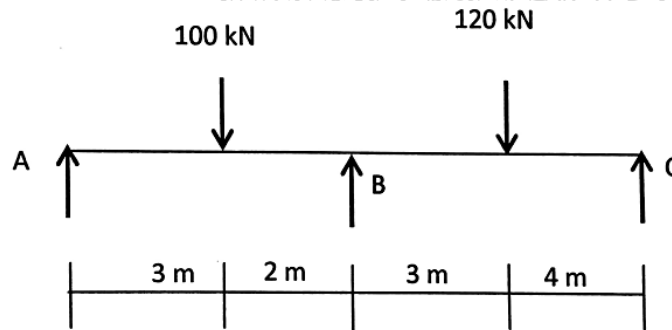Also draw SFD and BMD.

Fig.5

Q.8   For the span shown in figure 6, obtain bending moment at section P, 20m from A due to loads in   15
the position indicated. Also determine position and value of maximum bending moment.
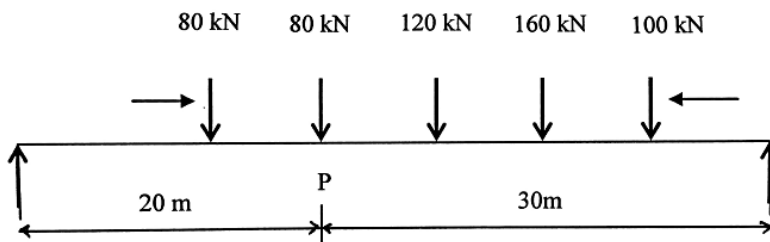
Fig.6

Q.9   A three hinged parabolic arch of span 21m has rise of 5m. The arch carries point load of 80kN at   15
6m from left support. Find the reactions at support A and B. draw bending moment for arch and
indicate position of maximum bending moment.
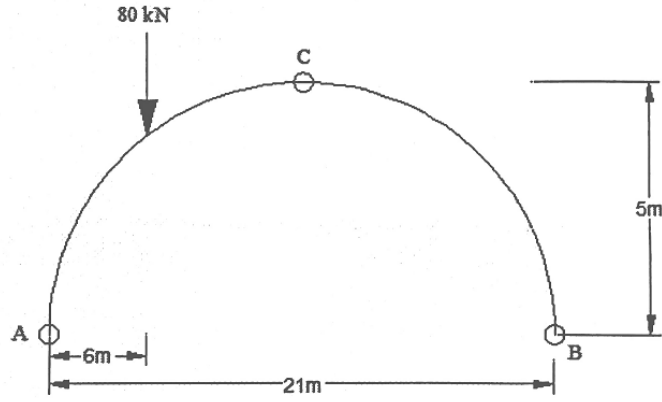
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Fig.7

Q.10   The three hinged stiffening girder of a suspension bridge of span 120m is subjected to 2 point loads 15 of 220kN and 260kN at distance of 25m and 80m from left end. Find S.F. and B.M. at distance of 40m from left of girder. The cable has a dip of 12m at center. Also find maximum tension in cable and draw B.M. for girder.
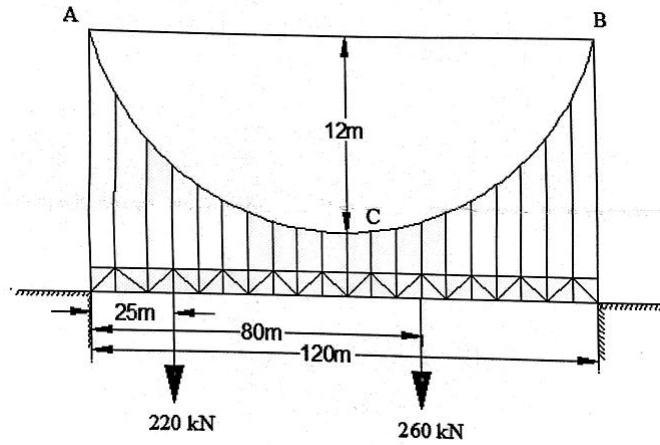

Fig.8

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