



REGISTRATION NUMBER

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SRINIX COLLEGE OF ENGINEERING

INTERNAL EXAMINATION-2019

Sub-SA-I

Semester-4TH

Branch-CIVIL

Full Mark-50

Time-2.00 Hrs

ANSWER ALL QUESTIONS (PART-A)

[2X10=20]

1. Name any four methods used for computation of deflections in structures.
2. State Maxwell's theorem of reciprocal deflection.
3. State the formula to find the normal thrust of a three hinged arch at any section. Draw a figure to show the value.
4. Differentiate the statically determinate structures and statically indeterminate structures?
5. Draw the influence line diagram for shear force at a point X in a Simply supported beam AB of span 'l' m.
6. What are the uses of influence line diagram?
7. Distinguish between two hinged and three hinged arches.
8. Explain Betties Law?
9. Difference between cantilever and propped cantilever beam?
10. Show a suspension cable with different level?

ANSWER ANY THREE QUESTIONS (PART-B)

[6X3=18]

1. Explain strain energy method?
2. A fixed beam of span 5m carries uniformly distributed load of 6KN/M throughout The span. Analyze the beam by applying three moment theorem.
3. A 3-hinged arch has a span of 30m and a rise of 10m. The arch carries UDL of 0.6 kN/m on the left half of the span. It also carries 2 concentrated loads of 1.6 KN and 1 KN at 5 m and 10 m from the 'right' end. Determine the reactions at the support.
4. Derive the expression for the horizontal thrust in a three hinged parabolic arch carrying UDL over entire span.

ANSWER ANY ONE QUESTION (PART-C)

[12X1]

1. A plane truss, ABCD is square shaped having length of each side as 4m. The truss has five members, including the diagonal member, AC. In the horizontal member, AD, the end A is hinged the end D is roller Supported. The top horizontal member, BC is applied with a vertical point load of 3 KN at point C. Calculate the vertical deflection at point C. Each member has uniform c/s of 250 sq mm. $E = 2 \times 10^5$ N/sq mm.
2. A three hinged parabolic arch of span 20 m has its crown 9 m high from the left support and 4 m higher than the right support. The crown of the arch is at a horizontal distance of 12 m from the left support and 8 m from the right support. The arch is subjected to a uniformly distributed load of 3 kN/m over a length of 14 m from the right support. Find the horizontal thrust and bending moment at a horizontal distance of 4 m from the right support.

