Reg. No. : | | | | | | | | | | |

Question Paper Code: 36104

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Sixth Semester

Civil Engineering

01UCE604 - STRUCTURAL ANALYSIS – II

(Regulation 2013)

Duration: 1:45 hour Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. Draw influence lines for support reactions in a simply supported beam.
2. Define absolute maximum bending moment.
3. State Muller Breslau's principle.
4. Using Muller Breslau's principle, draw the influence line diagram for prop reaction of a propped cantilever beam.
5. Differentiate three hinged arch and two hinged arch.
6. State Eddy's theorem.
7. Mention the different types of cable structures.
8. Enumerate the main functions of stiffening girders in suspension bridges.
9. What is shape factor?
10. State the static method of plastic analysis.

11. What is meant by influence line?

12. Define absolute maximum bending moment.

13. State Muller Breslau's principle.

14. Give some practical examples of rolling loads.

15. List the types of arches.

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. A simply supported beam has a span of 15m. UDL of 40kN/m and 5m long crosses the girder from left to right. Draw the influence line diagram for shear force and bending moment at a section 6m from the left end. Use these diagrams to calculate the maximum shear force and bending moment at this section. (10)

17. Find the influence line diagram for reaction B in a continuous beam ABC of span AB = 6m and BC = 5m. Support A is hinged and support B and C is roller. Take EI as constant throughout. (10)

18. A three hinged circular arch of span 16 *m* and rise 4 *m* is subjected to two point loads of 100 *kN* and 80 *kN* at the left and right quarter span points respectively. Find the reactions at the supports. Find also the bending moment, radial shear and normal thrust at 6*m* from the left support. (10)

19. A three hinged stiffening girder of a suspension bridge of span 100m is subjected to two point loads of 200kN and 300kN at the distance of 25m and 50m from left end. Find the shear force and bending moment for the girder at a distance of 30m from left end. The supporting cable has a central dip is 10cm. and also find maximum tension in the cable with its slope. (10)

20. A two span continuous beam *ABC* has span lengths *AB* = 6 *m* and *BC* = 6 *m* and carries a uniformly distributed load of 30 *kN/m* completely covering the spans *AB* and *BC*. *A* and *C* are simple supports. If the load factor is 1.80 and the shape factor is 1.15 for the *'I'* section, find the section modulus needed. Assume yield stress for the material as 250 N/mm^2. (10)

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