

PARUL UNIVERSITY
FACULTY OF ARCHITECTURE & PLANNING
B.Arch. / B. ID. Summer 2018-19 Examination

Semester: 5

Subject Code: 01101306

Subject Name: Structural Design & Analysis - III

Date: 26 / 04 / 2019

Time: 10:00 am to 12:00 pm

Total Marks: 50

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever required.
4. Draw suitable sketches wherever required.

Q.1 A two-span continuous beam ABC is simply supported on supports at A, B, and C such that span AB = 5 m and span BC = 4 m. The span AB carries a central point load of 120 kN and span BC carries an U.D.L. of 25 kN/ m. Find out B.M. and S.F. and draw bending moment and shear force diagram for the beam. (10)

Q.2 Attempt any five out of the following six: (20)

- 1) Define truss and types of truss, uses of truss in detail.
- 2) Explain the portal frames and three advantages of it in detail.
- 3) Difference between: (any one)
 - a. Determinate & indeterminate structure.
 - b. Column & Struts
- 4) Explain assumption of Euler's theorem of long column.
- 5) Explain advantages and disadvantages of fixed beam.
- 6) A circular column having internal diameter of 60mm and thickness of 10mm. calculate slenderness ratio. Let length of column is 3m.

Q.3 Explain the following: (any five) (10)

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|------------------------|-----------------------|---------------------------|
| 1. Carry over factor | 3. Radius of gyration | 5. Deflection of the beam |
| 2. Distribution factor | 4. Slope of the beam | 6. Stiffness of beam |

Q.4 Answer the following: (any two)

1. A point load 8KN act exactly at center of on distance for 3m fixed beam, calculate BMD, SFD, POC by using moment area method. (10)
2. In a Fixed Beam: Calculate BMD, SFD, POC by using movement area method.



3. Explain type of arches and impact on architectural field.