Seat No: _____   Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF ARCHITECTURE & PLANNING
B.Arch. / B. ID. Winter 2022-23 Examination

Semester: 5   **Date: 14-10-2022**
Subject Code: 01101306   **Time: 10:00 am to 12:00 pm**
Subject Name: Structural Design & Analysis - III   **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 = **(10)** 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.

Q.2 Attempt any five out of the following six: **(20)**
  1) Explain the one way and 2 way spanning system with neat sketches.
  2) Explain assumption of Euler's theorem of long column.
  3) Write the difference between determinate and indeterminate structure.
  4) Explain the portal frames and three advantages of it in detail.
  5) Define the Truss and enlist the types of truss, along with its uses.
  6) Write done the advantages and disadvantages of fixed beam.

Q.3 Answer the following with suitable figures where ever required: (any five)   **(10)**
   1. Carry over factor
   2. Distribution factor
   3. Radius of gyration
   4. Slope of the beam
   5. Deflection of the beam
   6. Stiffness of beam

Q.4 Answer the following: (any two)
   1. A point load 10KN act exactly at center of on distance for 3.5 M fixed beam, Calculate BMD, **(10)** SFD, POC by using moment distribution method.
   2. In a Fixed Beam: Calculate BMD, SFD, POC by using movement area method.
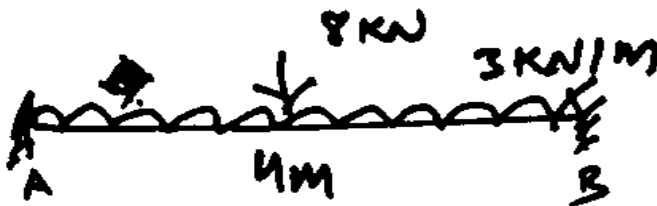
   3. Enlist various types of arches along with its structural impact towards form.