Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ARCHITECTURE & PLANNING

B.Arch./ B.ID Winter 2019-20 Examination

Semester: 3 **Date: 12/12/2019**
Subject Code: 01101206 **Time: 10:00 am to 12:00 pm**
Subject Name: Structural Design & Analysis – I **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 Solve the reaction of the beam: **(10)**
1. A Simple support beam having 20 KN point load at center all over span of 4.6 m.
2. A simple support beam having 40 KN point load at center of 4.8 m long beam.

Q.2 **Attempt any five out the following six:** **(20)**
1. What does "20" stands for in M20? (tick a correct one and explain proper reason)
   a) Tensile Strength
   b) Compressive Strength
   c) Quantity of Cement
   d) Water Cement Ratio
2. a. _____ is stands for TMT bar.
   b. _____ UDL m^2 & _____ concentrated load is generated by Living room and bed rooms.
   c. _____ % of Total imposed load is reduced for constructing single floor structure (G+1)
   d. _____ per m^3 dead load is generated by brick masonary.
3. Explain the Free body diagram
4. Explain the Live load
5. Define the following:
   a) Force
   b) compression
   c) Moment
   d) tension
6. Write the number of co-planar forces passing through one point are. *(tick a correct one and explain proper reason)*
   a) Parallel forces
   b) Concurrent forces
   c) Spatial forces
   d) Perpendicular forces

Q.3 **Answer the following: (any five)** **(10)**
1. Explain different types of foundations in detail with neat sketch.
2. Explain types of loading on beams.
3. Explain Super structure and Sub structure with different components and figures.
4. State and prove the law of parallelogram theorem.
5. Difference between Load bearing structure and frame bearing structure.
6. Define force. Explain different system of forces.

Q.4 **Describe Briefly: (Attempt any 2)** **(10)**
a) Explain type of supports and type of beams in detail with relevant sketches.
b) What are the importance of influences on the type of structural system and structural patterns with respect to site and context?
c) Explain the role of Structural Design in the architectural field.