PAPER ID-310017

Subject Code: RAR503

Roll No: | | | | | | | | | | | | | |

B ARCH
(SEM V) THEORY EXAMINATION 2020-21
ARCHITECTURAL STRUCTURE V

Time: 3 Hours ***Total Marks: 50***

Note: Attempt all Sections. Assume any missing data suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 5 = 10

a.	What is the L/D Ratio in Case of One Way Slab?
b.	What are Beams? Name the Different Types of Beams
c.	What do you mean by Portal Frames
d.	Define the Effective span of Stairs
e.	Give the Soil Classification on the Basis of its Size.

SECTION B

2. Attempt any *three* of the following: 5 x 3 = 15

a.	Design a Slab of Size 2mX4.5m for a Living Room the floor finishing Load is 1.5 Kn/m. Use M 20 and Fe415 Steel.
b.	What do you mean By Portal Frames? Explain briefly
c.	With Diagram Explain the Dog Legged Stairs.
d.	A continuous beam ABC of constant moment of Inertia carries a load of 10 kN in mid span AB and a central clockwise moment of 20 kN-min span BC. Span AB = 8 m and span BC = 12 m. Find the support moments and plot the shear force and bending moment diagram.
e.	Define the Terms:- Live Loads, Dead Load, Factored Load, Factor of Safety, Clear Span.

SECTION C

3. Attempt any *one* part of the following: 5 x 1 = 5

(a)	A simply supported slab having size 5.6mX3.4m is supported on the Beam of Width 240 mm Design the Slab using M-25 and Fe415 Steel
(b)	Write a Short note on The Properties of the Soil

4. Attempt any *one* part of the following: 5 x 1 = 5

(a)	What do you mean by Continuous Beams? Describe the Loads generated on The Continuous Beams.
(b)	Design a Dog Legged Staircase for a office Building of a room measuring 2.5x 3.5 Clear dimension Floor to Floor height is 3.6 m the Building is liable to over Crowding. Stairs are Supported on brick wall of 240 mm thick at the end of the Landing use m25 and Fe 415 steel

5. Attempt any *one* part of the following: 5 x 1 = 5

(a)	Write any Four Advantages and Disadvantages of Portal Frames.
(b)	With the Help of Diagram Explain Straight Flight Stairs, Open Newel and Spiral Stairs.

6. Attempt any *one* part of the following: 5 x 1 = 5

(a)	Design a Staircase over a wall Supported to Carry a live load of 3 kN/m^2. The Floor Finishing Load is 1.5 KN/m^2. The Floor to Floor Height is 3m. Use m20 Concrete and Fe415 Steel
(b)	Briefly Explain the Active Earth Pressure and Passive Earth Pressure of the Soil.

7. Attempt any *one* part of the following: 5 x 1 = 5

(a)	Design a Rcc Slab for a Room 6.5 m X 5.2 m. The Slab is to be cast over the beam with all sides Simply Supported. It has to add the Characteristic load of 15 kn/m^2Use m 25 Concrete and Fe 415 Steel.
(b)	The Roof ofa 8.6m wide hall Supported on a Portal Frame Spaced at 4.2m intervals. The height of the Portal Frames is 3 m. The Continuous Slab is 140 mm thick. Live Load on roof =1.5kn/m^2. S.B.C of soil =150kn/m^2. The Columns are Connected with a Plinth Beam and Base of the Column may be Assumed as Fixed. Design the Slab, Column, Beams Members and Suitable Footing For the Column of the Portal Frame. Adopt M20 concrete and Fe 415 Steel. Also Prepare the Detailed Structure Drawing.