Enrolment No._____

SARVAJANIK UNIVERSITY

W-2024 Date: 27_03_2025
13_30 pm to 16_30 pm
Interim Backlog Exam

B. Architecture - SEMESTER– I EXAMINATION

Course Code: BRAR12103 **Total Marks: 180**

Course Name: BASICS OF BUILDING MATERIALS, COMPONENTS AND STRUCTURE

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks**
4. **Draw sketches wherever required.**

Q.1. (A) Do as directed **(20)**

1. Slope of a bending moment diagram shows_____
2. _____foundation is provided when stable soil with adequate bearing capacity occurs near to the ground level.
3. Sandstones are_____type of rock.
4. Laterite stones are the most durable stones for construction. (True or False)
5. In the case of a Simply supported beam, tension is induced at _____Fiber of a cross-section of a beam.
6. In a building, the plinth is a part of the sub structure. (True or False)
7. Full form of PPC.
8. Equal & opposite forcescreating Rotation are known as_____force.
9. As a construction material bamboo is as strong as concrete. (True or False)
10. Aggregates whose particles pass through 4.75 mm IS sieve are termed as_____

(B) Select the correct answer **(20)**

1. Gneiss can be classified as which type of rock amongst the following?

a) Sedimentary rock b) Metamorphic rock c) Igneous rock d) Volcanic rock

2. Plywood has the advantage of

a) Greater tensile strength in longer direction
b) Greater tensile strength in shorter direction
c) Same tensile strength in all directions
d) None of the above

3. Which of the following is the purest form of iron?

a) Cast iron b) Wrought iron

c) Mild steel d) High carbon steel

4. Which construction system has beams and columns as load transferring elements?

a) Frame structure b) Load bearing structure c) Hybrid structure

5. Which amongst these stones are commonly used for heavy construction works?

a) Italian Marble b) White Makrana Marble c) Laterite d) Granite

6. Due to excess of moisture the timber _____.

a) Cracks b) Bends c) Reduces to pieces d) None of these

7. The cement composition becomes faulty by the presence of excess

a) Sulphur b) Magnesia c) Lime d) All of these

8. Which of the following structural load is man-made load.

a) Wind load b) Earthquake load c) Rain load d) Load of equipment.

9. Concurrent force system means…

a) All loads are passing through one point b) Only two forces pass from a single point

c) All loads pass from all the points d) all of these

10. Wrought Iron contains carbon up to?

a) 0.25% b) 1.0% c) 1.5% d) 2%

Q2.Answer in Brief (Any Four) **(20)**

1. Write a short note on Aggregates.
2. What are different types of plastics? Explain its advantages in building construction.
3. What are defects in timber due to seasoning? Illustrate with neat sketches.
4. Explain the classification of glass and its applications.
5. Explain different types of cement and its properties.
6. Enlist various methods of preservation of stones.

Q3: Sketch and Label the following in detail (Any Four) **(40)**

1. Air Seasoning process of timber
2. Any three market forms of steel
3. Cantilevered Foundation
4. Cross section of Tree with all its layers
5. Quarter Sawing of a timber log
6. Wall section of Frame structure and label the components

Q4. Answer in detail with neat sketches. (Any Two) **(30)**

1. Compare Frame structure and Load bearing structure with respect to construction and load bearing behavior.
2. Differentiatebetween Cast iron, wrought iron and Steel with common parameters required for its applications.
3. What is seasoning of timber? Explain the types of seasoning with its advantages. Draw neat sketches to support your answer.

Q.5 Attempt ANY TWO questions out of the following questions **(50)**

1. Calculate reactions for a beam as shown in **fig -1**. Calculate & draw shear force & bending moment diagram for the beam. Also calculate value of maximum bending moment & it's location on a beam.

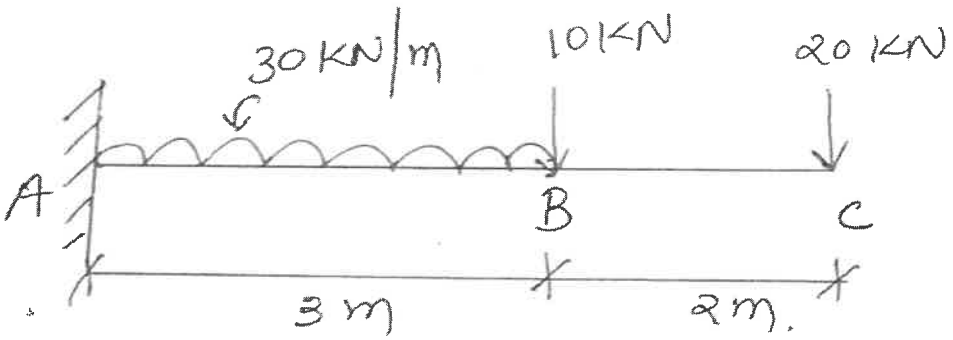

FIG-1

2. For the section shown in **fig-2** , calculate & locate the centroid. Also calculate the moment of inertia about centroidal x axis.

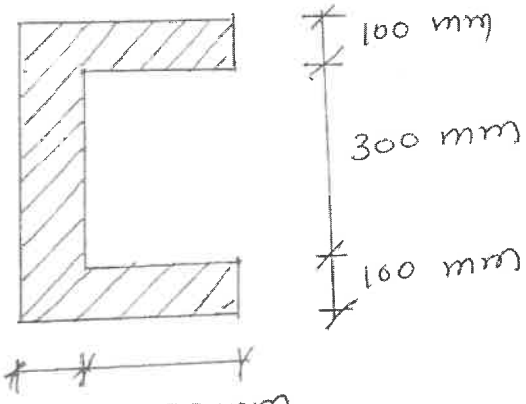

FIG-2

3. Forthe truss as shown in **Fig-3** , calculate reactions and find out forces in member using graphical method of analysis of a truss. Tabulate your result showing value & nature of forces i.e. tension or compression along with the arrow direction in space diagram.

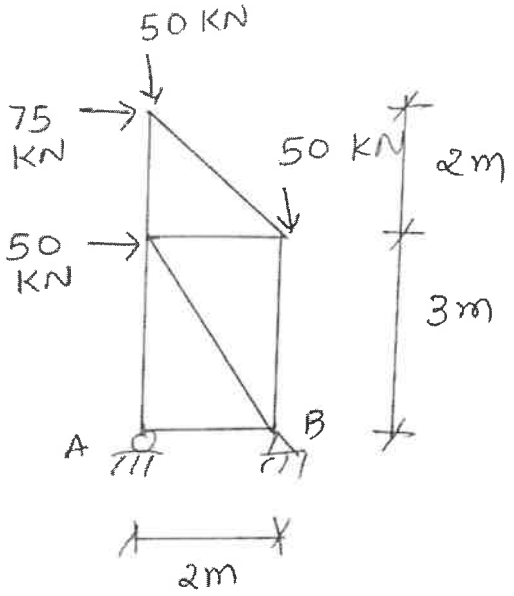

FIG-3