SARVAJANIK UNIVERSITY

S-2025   Date: 21-05-25   Time: 09:30 AM to 12:30 PM
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. The sand passing through a screen with the clear opening of 3.1 mm is known as _____

2. Soil in Surat is _____ soil.

3. The size and depth of a foundation is determined by the structure and size of a building it supports and the nature and bearing capacity of the ground supporting it. (True/False)

4. Lime is obtained from _____

5. Natural cement comes in _____ colour.

6. Hard wood generally comes in _____ colour tone

7. Thermoplastic can be melted repeatedly (True/False)

8. There is very limited use of bamboo as foundation material because when in contact with moisture laden surfaces they decay fast. (True/False)

9. Sedimentary rocks are the product of weathering of preexisting rocks, transport of the weathering products, deposition of the material, followed by compaction and cementation of the sediment to form a rock. (True/False)

10. Glass of solid substance that is usually hard and shiny and that heat and electricity can travel through. Identify the correct answer. (True/False)

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

1. Natural sources from which the sand is obtained
   a) Pit b) River c) Sea d) all of these

2. Lime is also used for
   a) Purification of water   b) Production of glass c) mortar in masonry d) all of the above
3. The inner most portion of the tree is called _____
   a) Sapwood   b) Pit   c) Heart wood   d) none of these
4. Load bearing structure transfers vertical load of beam by
   a) Load bearing walls   b) RCC column   c) Beam   d) soil
5. Which engineered wood product is made by bonding together thin layers of wood veneers with adhesive under heat and pressure?
   a) Particleboard b) Medium Density Fiber board (MDF) c) Hardboard d) Plywood
6. _____ rocks form from the cooling and hardening of molten magma in many environments.
   a) Igneous b) Sedimentary c) Metamorphic d) none of this
7. Bamboo has higher _____ strength than steel because its fibers run axially
   a) Tensile b) Compressive c) bending d) all of this
8. Identify odd one out
   a) Cast iron b) Wrought iron c) Aluminum d) Steel
9. Beam at plinth level of a structure is known as
   a) Plinth beam b) ground beam c) Top beam d) foundation beam
10. In RCC building tension is taken by
    a) Steel b) concrete c) sand d) water

Q2. Answer in Brief (Any Four)   **(20)**
   1. Classification of Metals. What are the uses of metals in our life?
   2. Advantage & disadvantage of bamboo as a building material.
   3. Define Sill and Lintel in a building
   4. Name 3 main types of lime available in the market.
   5. Types of sand based on their sources and properties of good sand

Q3: Sketch and Label the following in detail (Any Four)   **(20)**
   1. Rock cycle
   2. Sketch a detailed Wall section of Frame structure and label the components.
   3. Illustrate different components of Substructure.
   4. Radial Sawing of a timber log & Quarter sawing of a timber log
   5. Sketch any two type of special variety of glass available in market form

Q4. Answer in detail with neat sketches. (Any Two)   **(20)**
   1. Type of Stone & its uses.
   2. Explain in detail, benefits of constructing with lime instead of concrete.
   3. What is artificial timber? Explain any two types of artificial timber with its applications.

Q. 5 Do as directed (10)

1. Dead load is also known as Gravity load. (True/ False)
2. Members of truss transfers load by _____action.
3. Cantilever beam means one end hinged & another free. (True/ False)
4. Earthquake is also known as _____ Load
5. When more than 1 force are applied on a same point , it is known as _____force system

Q. 6 (40)

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.

Q.7 (30)

1. For the section shown in **Fig-2**, calculate & locate the centroid. Also calculate the moment of inertia about centroid X & Y axis. Choose your reference axis.

OR

2. For the truss as shown in **Fig-3**, calculate reactions and find out forces in member using graphical method of analysis. Tabulate your result showing value & nature of forces i.e. tension or compression along with the arrow direction in space diagram.
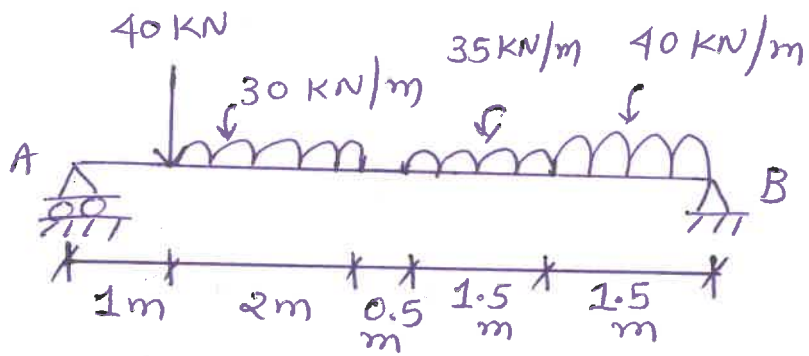
40 KN
30 KN/m
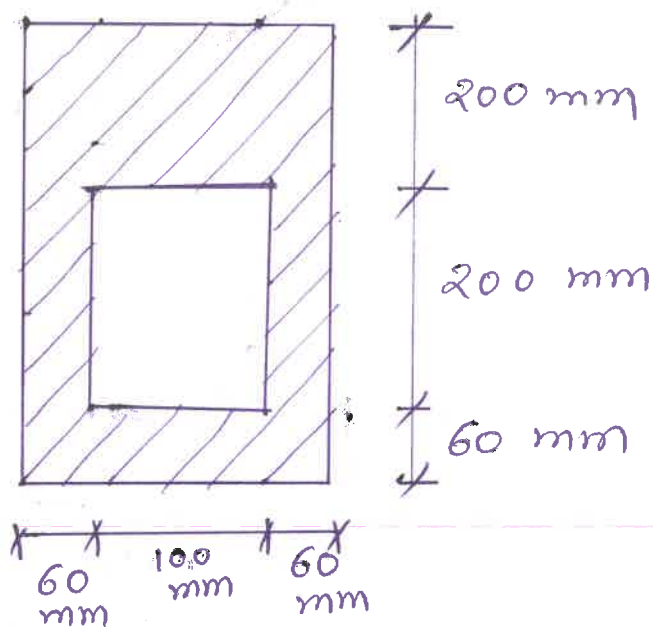35 KN/m 40 KN/m
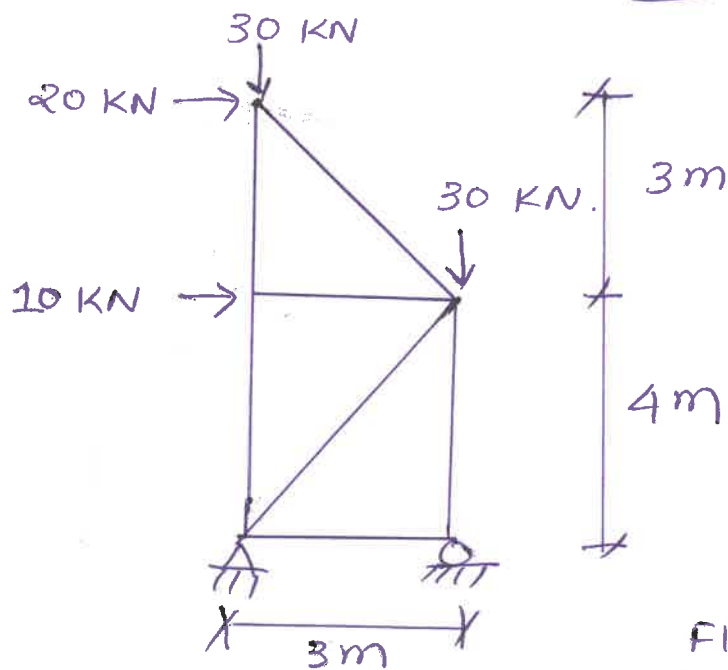A
B
1m 2m 0.5 m 1.5 m 1.5 m

FIG-1 · (Q-6)

200 mm
200 mm
60 mm
60 mm 100 mm 60 mm

FIG-2 (Q-7)

30 KN
20 KN →
30 KN.
10 KN →
3m
4m
3m

FIG-3 (Q-7 OR)