

Enrolment No. \_\_\_\_\_

**SARVAJANIK UNIVERSITY**

S-2025 Date: 02-06-25 Time: 09:30 AM to 12:30 PM  
Regular / Backlog Exam

**B. Architecture - SEMESTER– II EXAMINATION**

Course Code: BRAR12203

Total Marks: 180

Course Name: BUILDING MATERIALS, SYSTEMS AND ENVIRONMENTAL SCIENCE

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**Q.1. (A) Do as Directed**

(20)

1. The centre of semi-circular arch is \_\_\_\_\_ the springing line.
2. A horizontal wooden member in a wooden window frames for fitting of the window sash is typically known as \_\_\_\_\_.
3. Micro-climate is climate of larger area such as a country. **(True or false)**
4. Weather protection is generally provided at \_\_\_\_\_ level
5. \_\_\_\_\_ is provided in doors and windows to facilitate swinging.
6. \_\_\_\_\_ Type of joints are provided in wooden floor boarding.
7. Raw bricks shrink & warp during drying and burning in case of excess presence of alumina. **(True or false)**
8. For residential buildings minimum width of stairs must be \_\_\_\_\_ centimetres.
9. A four track window will give \_\_\_\_\_ % opening.
10. Oxide of iron is chief constituent of good brick earth. **(True or false)**

**(B) Select the correct answer**

(20)

1. The standard brick size is \_\_\_\_\_?  
a.) 19cm x 9cm x 9 cm                      b.) 20 cm x 10cm x 5cm  
c.) 23 cm x 11.5cm x 7.5 cm              d.) 23 cm x 7.5 cm x 11.5 cm
2. The unit of measurement to measure rain is?  
a) Degree Fahrenheit                      b) Degree Celsius  
c) Millimeter or Centimeter or Inch      d) Percentage
3. In the given list below which are the factors affecting Climate?  
a) Latitude                                      b) Ocean Currents  
c) Prevailing Winds                          d) All of Above

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

**(20)**

1. Define Bending stress and give examples.
2. Explain the characteristics of Hot and Humid Climate with sketches.
3. What is timber construction and its various components?
4. Explain the Importance of weather shade in buildings.
5. Explain with sketches stringer beam, tread, risers and nosing in a stair.
6. What are the qualities of good brick?

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

**(40)**

1. Cantilevered R.C.C. stairs in plan and elevation.
2. Explain Polygonal and Flint walling in detail.
3. Gable roof and its components
4. Plan and elevation of one brick thick English bond
5. Sliding folding doors in plan and section ( Width: 3 m & height : 2.1 m)
6. Elevation and section Louvered windows

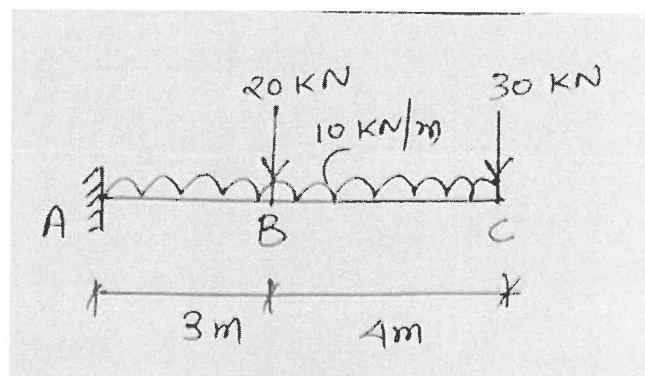
**Q4. Answer in detail with neat sketches. (Any Two)**

**(30)**

1. Sketch and define various components of a Pointed Arch.
2. What are the considerations for designing comfortable stairs? Define and label with neat diagrams various components of a stair?
3. Draw and explain different types of lintels in a building based on materials with neat sketches.

**Q5. (A) Calculate maximum deflection for a beam shown in Fig - 1.**

**14**



**Fig - 1**

3. Calculate & draw bending moment diagram for an indeterminate beam shown in **fig-4**, using Moment distribution method.

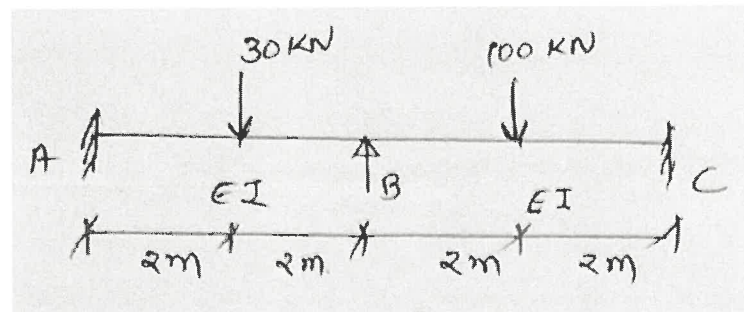


Fig - 4

4. Calculate & draw shear stress distribution diagram for a beam shown in **Fig-5**. *Cantilever beam of span 3.0m with UDL of 10 kN/m.* 12

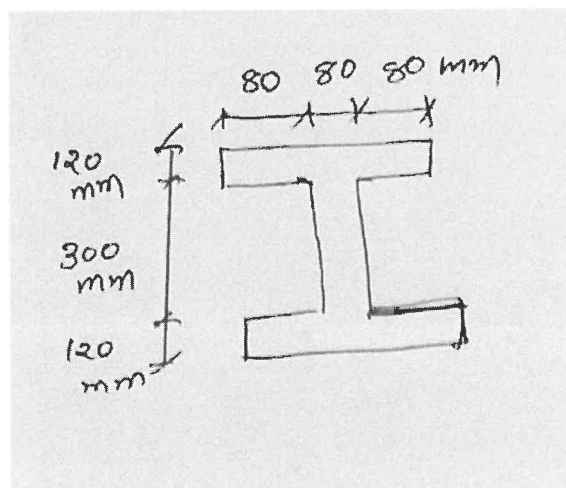


Fig- 5