Enrolment No._____

SARVAJANIK UNIVERSITY

S-2024 Date: 15-07-24 Time: 01:30 PM to 04:30 PM
Remedial Exam

B. Architecture - SEMESTER– II EXAMINATION

Course Code: BRAR12203 **Total Marks: 180**

Course Name: BASICS OF BUILDING MATERIALS, COMPONENTS AND STRUCTURE

Instructions:

1. **Attempt all questions.**
2. **Use of programmable calculator is allowed.**
3. **Figures to the right indicate full marks**
4. **Draw sketches wherever required.**

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

1. The center of segmental arch is _____ the springing line.
2. Plane stress is given by formula _____.
3. Generally, Timber lintels are stronger than Steel lintels. (True/False)
4. For residential buildings minimum width of stairs must be ____ centimeters
5. Bending stress is zero at neutral axis (True/False)
6. _____ Formula can be used for any type of column to calculate load carrying capacity.
7. _____is the vertical elevation of an object above a surface (such as sea level or land)
8. A three track window will give ____%opening
9. A revolving door has springs which help closing and opening of shutters. (True/False)
10. A good brick earth should contain 50 to 60% silica. (True/False)

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

1. The outer curve of an arch is called _____
   a) Extrados b) Intrados c) Skewback d) Spandrel
2. A door moving on a pivot is knows as_____.
   a) Collapsible door b) Sliding folding door
   c) Revolving door d) Rolling shutter door

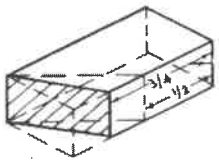
3. Weather shed are provided at _____ level in the building.
   a) Sill Level b) Lintel level c) Plinth level d) Slab level

4. The unit of measurement to measure rain is?
   a) Degree Fahrenheit b) Degree Celsius
   c) Millimeter or Centimeter or Inch d) Percentage
5. The portion of brick cut across the width in the half is called
   a.) Half Split b.) Half Closer c.) Half Bat d.) Half Bed
6. Brittle material fails
   a) Slowly b) suddenly c) hardly d) never.
7. The tropical climate which consists of heat waves hot winds and low humidity comes under which climatic conditions?
   a) Hot-wet b) Hot-dry c) Cool-dry d) Rainy

8. Stress/ strain ratio is known as
   a) Modulus of elasticity b) Poisson's ratio
   c) aspect ratio d) Modulus of rigidity

9. Gap in a railway track is kept to avoid
   a) Tension stress b) Compression stress
   c) Temperature stress d) Hoop stress

10. Identify the given image.



   a.) MItred Closer b.) King Closer
   c.) Bevelled Closer d.) Bevelled bat small

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

1. What are the qualities of good brick?
2. Explain with sketches stringer beam, tread, risers and nosing in a stair.
3. Explain the function of purlins and rafters in a roof.
4. Explain the characteristics of Hot and Humid Climate with sketches.
5. Explain the significance of shading elements in buildings.
6. Define Bending stress.

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

1. Elevation and section of a Timber paneled door
2. Gable roof and its components
3. Cavity walls and its components.
4. Plan and elevation of one brick thick English bond
5. Bifurcated stairs in plan and elevation.
6. Horse shoe arch and its elements.

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

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

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

(I) Calculate & draw bending stress diagram for a simply supported beam subjected to full uniformly distributed load of 50 KN/m on a span of 6 m. cross section of a beam is shown in **Fig-1** . **(25)**

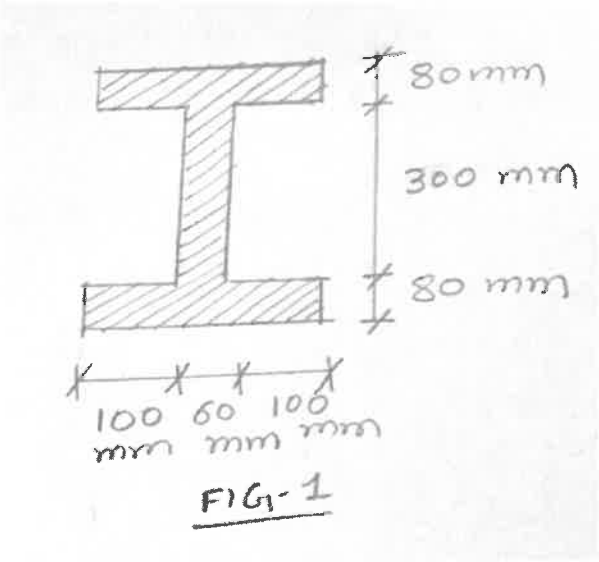


FIG-1

(II) Calculate & draw shear stress diagram for a simply supported beam as shown in **fig-3**. cross section of a beam is shown in **Fig-2**.

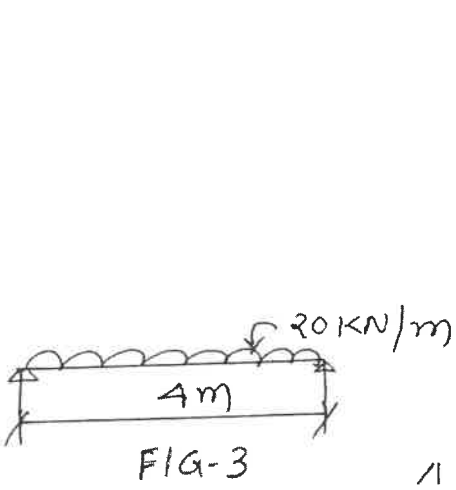


FIG-3

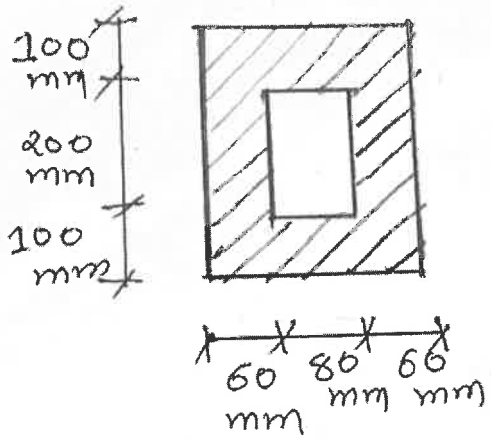


FIG-2

(III)

(a) Calculate maximum deflection for a beam shown in **fig -4.** **(16)**

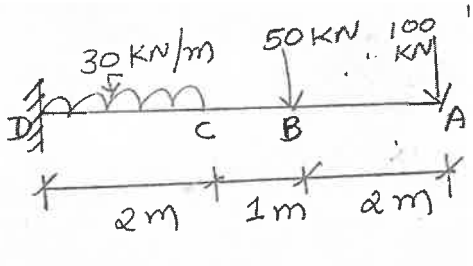


Fig -4

(b) Calculate load carrying capacity of a long column having one end fixed & another free **(9)** with a symmetrical hollow rectangular cross section with 100 mm X 150 mm outer dimension having 40 mm thickness . Take Ec = 2 X 10^4 N/ mm^2 . Actual length of column is 10 m.