
SECTION – A

There are **FOUR** questions in this section. **Answer to Question No. 1 is compulsory.**

Answer any **TWO** questions from the rest.

1. Briefly discuss any **three** of the following: (3×10=30)
 - (a) The dome of Hagia Sophia
 - (b) Stained glass decoration in Gothic Architecture
 - (c) Flying Buttress
 - (d) Leaning Tower of Pisa
2. Establish the characteristics of the Eastern European Architecture, with relevant sketches, using "Hagia Sophia, at Constantinople" as a reference. (20)
3.
 - (a) Explain the Romanesque Vaulting System with necessary sketches. (10)
 - (b) Compare English Gothic Architecture with French Gothic Architecture. (10)
4.
 - (a) "The Renaissance movement, which began in the early fifteenth century in Italy, created a break in the continuous evolution of European architecture" — Discuss the salient features of the Renaissance period. (8)
 - (b) Differentiate between the Purist style and the Mannerist (or Proto-Baroque) style within the context of the High Renaissance period. Identify their characteristics and support your explanation with relevant architectural examples. (12)

SECTION – B

There are **FOUR** questions in this section. **Answer to Question No. 5 is compulsory.**

Answer any **TWO** questions from the rest.

5. Briefly discuss any **three** of the following: (3×10=30)
 - (a) Palace of Knossos
 - (b) Roman Forum
 - (c) Greek Temples
 - (d) The Colosseum

ARCH 231

6. (a) Compare the different 'ORDERS' of the Greek and Roman period with sketches. (10)
(b) Discuss the various types of optical corrections made by the Greeks to overcome optical illusions created in their temples. (10)
7. Describe "Pantheon" with necessary sketches to establish the architectural characteristics of the Roman Period. (20)
8. The Acropolis of Athena is an ancient citadel located on a high ground above the city of Athena. Describe the different elements on the Acropolis with proper sketches. (20)

L-2/T-I/ARCH

Date: 01/09/2025

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-I B.ARCH Examinations 2023-2024

Sub: **ARCH 251 (Visual Environment)**

Full Marks: 140

Time: 3 Hours

The figures in the margin indicate full marks.

In case of quotations and extract, please give the full reference at the bottom of the paper.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. Differentiate between design strategies of buildings for daylighting in hot-dry climates and those in warm-humid climates. (23 $\frac{1}{2}$)
2. Give a brief overview of types of window shading and design strategies for daylighting in the context of Bangladesh. (23 $\frac{1}{2}$)
3. Justify the importance and application of daylight simulation for sustainable building design. (23 $\frac{1}{2}$)
4. Appraise with annotated sketches the daylighting features of Arup Campus, Solihull. (23 $\frac{1}{2}$)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE** questions.

5. Illustrate the visual field and its components. Explain direct, indirect, disability and discomfort glares. (23 $\frac{1}{2}$)
6. Assess the measurement techniques of different visual efficiency for the human eye, i.e., visual acuity, contrast sensitivity and visual performance. (23 $\frac{1}{2}$)
7. Interpret four key photometric terms and their relationships. (23 $\frac{1}{2}$)
 - Flux
 - Intensity
 - Illuminance
 - Luminance
8. Evaluate the role of light in architectural design with examples. (23 $\frac{1}{2}$)

SECTION – A

There are **FOUR** questions in this section. Answer **Q. No. 1** and any **TWO** from the rest.

1. Describe the following with necessary sketches (Any Three): (3×10=30)
 - (a) Earth's Thermal Balance
 - (b) Sol-air Temperature
 - (c) Effects of Local Factors on Site Climate
 - (d) Relevance between Density and Conductivity of Building Materials
2. (a) Analyze the climatic differences between Warm-Humid and Hot-Dry Desert climates in terms of cooling potential. (10)
(b) Explain how the appropriate selection of building materials can minimize heat transfer by conduction. Use necessary sketches. (10)
3. 'Passive Design can lower the energy demand of a building in a tropical country like Bangladesh'— evaluate the statement with relevant sketches and examples. (20)
4. Describe and illustrate design strategies to control solar radiation heat gain through the building envelope. (20)

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 5** and any **TWO** from the rest.

5. Describe the following with necessary sketches (Any Three): (3×10=30)
 - (a) Wind Scoop
 - (b) Environmental Design Process
 - (c) Solar and Wind Patterns of Maritime Desert Climate
 - (d) Role of Simulation Tools in Early Design Stage
6. Distinguish in detail between shelters in Hot-Dry and Warm-Humid climates in terms of Form and Planning and Construction materials. Use necessary sketches. (20)
7. (a) 'Passive cooling strategies are much more dependent on climate'— evaluate the statement with necessary sketches and examples. (20)
8. (a) Briefly discuss the major design challenges and objectives for shelter design in the context of Bangladesh. (10)
(b) Compare direct and indirect evaporative cooling systems, and recommend which method is more suitable for Warm-Humid climate. (10)

20/20/20. CE. 265 19/10/24

L-2/T-1/ARCH

Date: 26/08/2025

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 B. Arch. Examinations 2023-2024

Sub: **CE 265** (Structure I: Mechanics)

Full Marks: 140

Time: 3 Hours

The figures in the margin indicate full marks

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION - A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Briefly discuss the classification of force system with examples. (10)

(b) Three cylinders are pinned in a rectangular ditch as shown in **Figure 1**. Neglecting friction, determine all the contact forces and plane reactions. Given, Cylinder A (Weight 75N, Radius 100 mm), Cylinder B (Weight 200N, Radius 150 mm), Cylinder C (Weight 100N, Radius 125 mm). (13 1/3)

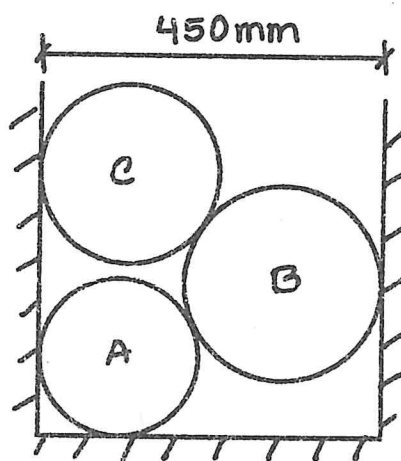


Figure 1

2. (a) Locate the position of weight W to keep the bar AB in a horizontal position in **Figure 2**. Determine tension in the two ropes T_A and T_B . (10)

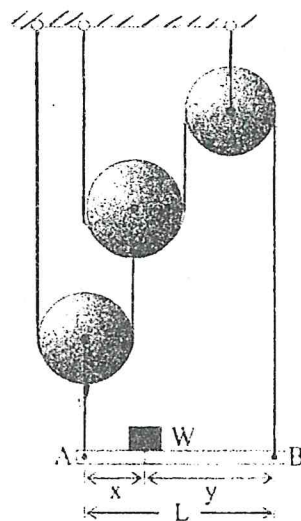


Figure 2

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Contd.... for Q. No. 2

- (b) Determine reactions at external supports A & B and internal support C for the beam shown in **Figure 3**. Given, the mass of the pulley 20N and mass of beam 2N/m. (13 1/3)

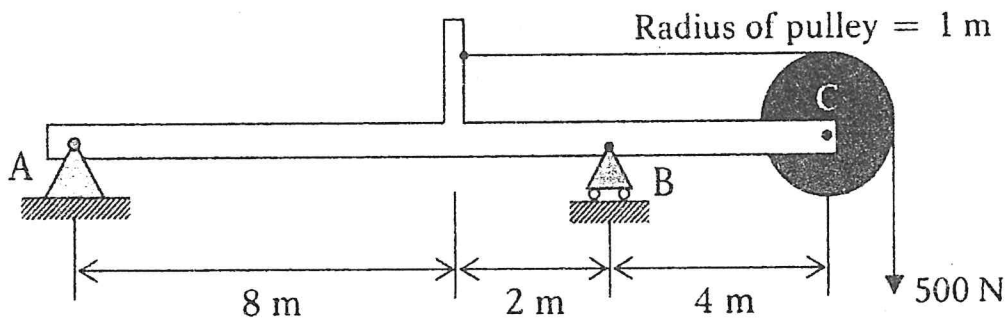


Figure 3

3. (a) Briefly describe Engineering Stress and True Stress. (3)
 (b) Determine the minimum weight W to prevent downward motion of the 1000 N body shown in **Figure 4**. Take $f_s = 0.2$ between the rope and the fixed drum and $f_s = 0.3$ for other surfaces of contact. (10)

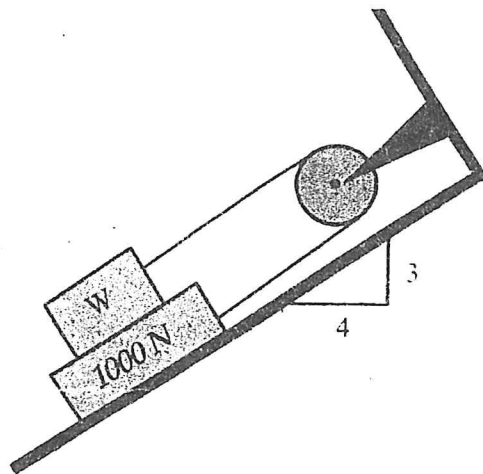


Figure 4

- (c) What is the value of Q in **Figure 5** when the roller starts spinning? Given, weight of the roller is 300 lb. (10 1/3)

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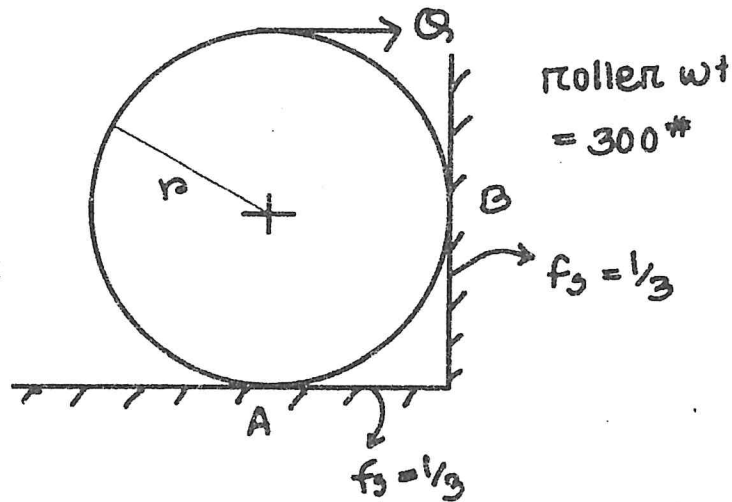


Figure 5

4. (a) Define Bearing Stress, Normal Stress and Shear Stress. Show the acting planes of these stresses with neat sketches. (6)
- (b) Write short notes on – (6)
- (i) Young's Modulus
 - (ii) Tangential Modulus
 - (iii) Secant Modulus
- (c) An aluminum alloy ($E = 73 \text{ GPa}$) tube A with an outside diameter of 75 mm is used to support a 25-mm-diameter steel ($E = 200 \text{ GPa}$) rod B, as shown in Figure 6. Determine the minimum thickness t required for the tube if the maximum deflection of the loaded end of the rod must be limited to 0.40 mm. (11 1/3)

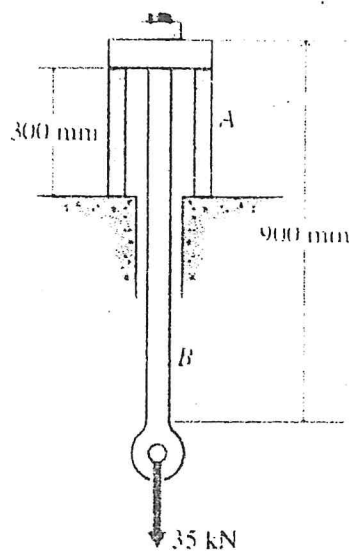


Figure 6

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SECTION - B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) A 60ft long cable weighs 360 lb. and is suspended from two points at the same elevation. For a sag of 15 ft, find— (10)
- (i) the tension at the supports
- (ii) the span of the chord.

- (b) Determine the centroid of the shaded area shown in **Figure 7**. (13 $\frac{1}{3}$)

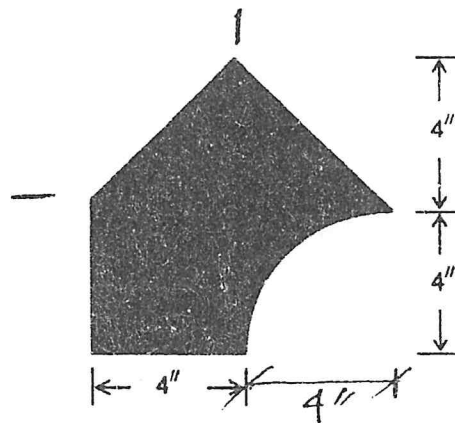


Figure 7

6. (a) Derive the expression for the moment of inertia of mass of a solid sphere about its diameter. (10)
- (b) Find the radius of gyration about z' axis of the mass shown in **Figure 8**. Weight of rod is 27 lb and unit weight of iron is 490 lb/ft³. (13 $\frac{1}{3}$)

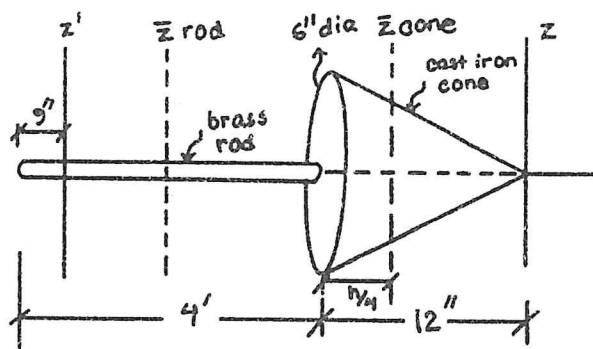


Figure 8

7. (a) Determine the volume generated by revolving the circular area (shown in **Figure 9**) through 270° about X-axis and Y-axis. (5 $\frac{1}{3}$)

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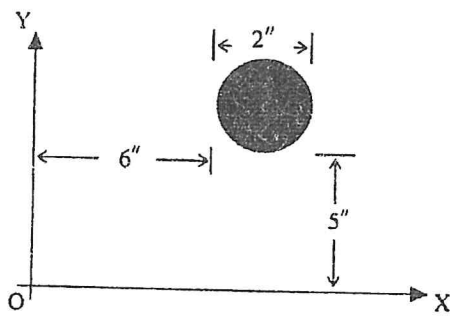


Figure 9

(b) Determine the moment of inertias of the area as shown in the **Figure 10** with respect to X & Y axes (linear unit is in inch).

(9)

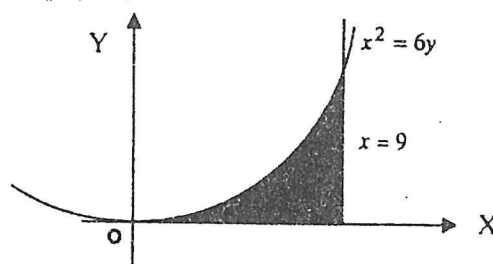


Figure 10

(c) Determine the location of the centroid of the shaded area in the **Figure 10** (linear unit is in inch).

(9)

8. (a) What are the assumptions of truss analysis?

(3 1/3)

(b) Determine the forces in the member **ac, cd, cf, ej, gh** of the truss shown in **Figure 11**.

(20)

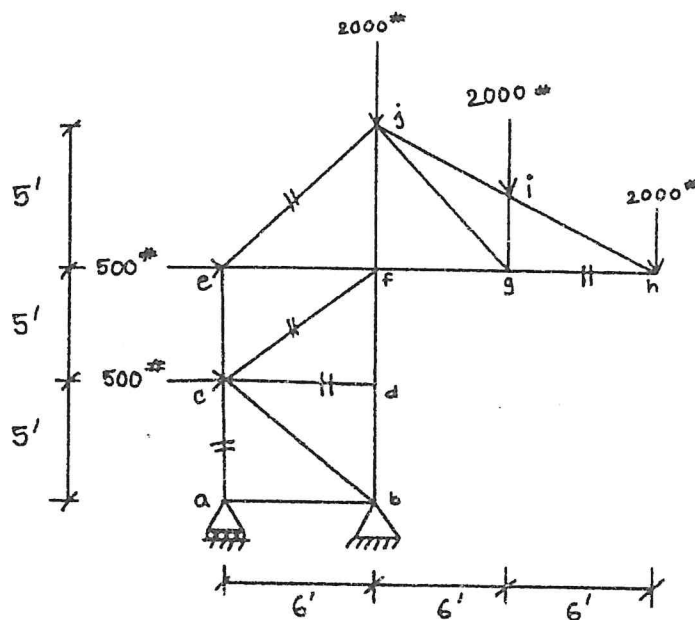


Figure 11