BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1   B. Arch. Examinations 2016-2017

Sub : **ARCH 231** (Architecture of the Western World)

Full Marks: 140   Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

SECTION – A

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

1. Write short notes on: $(3 \times 8\frac{1}{3} = 25)$

    (a)   Byzantine Domes

    (b)   Romanesque Vaults

    (c)   Humanism in Renaissance Period

2. "S. Sophia is the supreme monument and a masterpiece of Byzantine architecture." Establish the architectural characteristics of Byzantine architecture using it as a reference.   **(15)**

3. "Gothic architecture relies on the evident truthfulness of its structural features." — Explain the structural innovations of Gothic Period. (Use sketches where necessary)   **(15)**

4. Compare the internal spatial quality of Byzantine, Romanesque and Gothic Churches with relevant sketches.   **(15)**

5. Give a comparative study of Gothic architectural styles in England and France with sketches and examples.   **(15)**

6. "The Renaissance movement, which began in Italy early in the fifteenth century, created a break in the continuous evolution of European architecture." Discuss the salient features of the Renaissance period, with proper sketches and examples.   **(15)**

SECTION – B

There are **SIX** questions in this section. Answer **Q. No. 7** and any **THREE** from the rest.

7. Write short notes on: $(8\frac{1}{3} \times 3 = 25)$

    (a)   Greek Temples

    (b)   Roman Basilica

    (c)   Greek Order.

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8. Explain the various influences upon Greek Architecture. **(15)**

9. With reference to 'Parthenon' discuss the various optical corrections made by the Greeks to overcome optical illusions. **(15)**

10. Narrate the Architectural characteristics of the Roman period with relevant sketches. **(15)**

11. Describe the architectural features of the 'Pantheon' with necessary sketches. **(15)**

12. Describe 'Roman Forum', with reference to an example. **(15)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1   B. Arch. Examinations 2016-2017

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

Full Marks: 140   Time: 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks

SECTION – A

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

1. (a) Determine (i) the horizontal and vertical components of the cable pull, (ii) the horizontal and vertical components of the reaction in the stay-wire and (iii) the net force on the pole for the system as shown in Fig. 1. **(12)**

    (b) Determine the force in cable AC and member BC as shown in Fig. 2. **(11⅓)**

2. (a) Two smooth cylinders of 2 feet diameter rest in a box as shown in Fig. 3. Determine all the contact forces. Each cylinder weighs 50 lb. **(12)**

    (b) An Ore can B which weighs 40 tons is balanced by a weight A, as shown in Fig. 4. What should be the weight A if there is no friction at any point? Find also the plane reaction and tension in the chord. **(11⅓)**

3. (a) Determine the tension in the cable BD and vertical reaction at E of the system as shown in Fig. 5. **(12)**

    (b) Determine the support reactions at A, E, D and tension in the cable BC, as shown in Fig. 6. Weight of cylinder = 500 kN. Neglect the weight of the bar AB. **(11⅓)**

4. (a) A 400-lb block rest on a horizontal surface. The coefficient of friction is 0.20. The force P is gradually increased. What maximum value can it have so that the block neither slide nor tip? (see Fig. 7) **(12)**

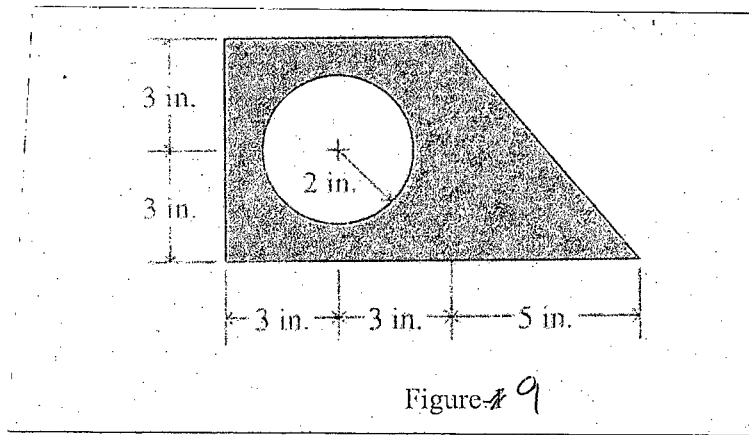   (b) Determine the centroid of the shaded area by direct integration method, as shown in Fig. 8. **(11⅓)**

There are **FOUR** questions in this section. Answer any **THREE**.
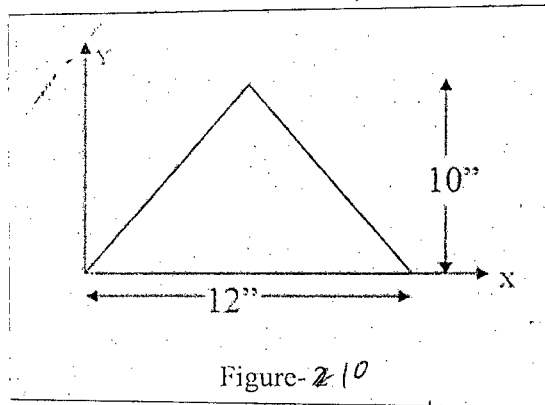
Assume reasonable values of missing data.

5. (a) Find by integration method the centroid of a sector of a circle subtending angle 2β. **(10)**
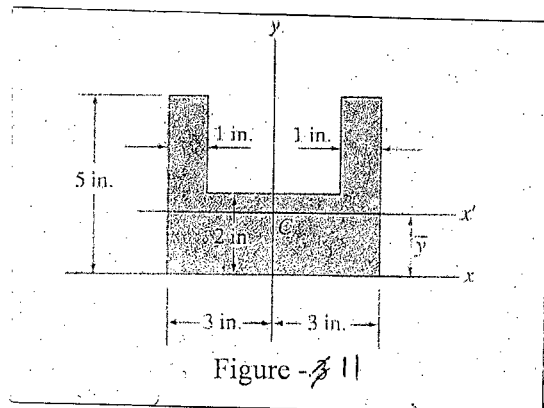
    (b) Determine the centroid of the area shown in Figure 9. **(13⅓)**

Figure- 9

6. (a) Find moment of inertia of the triangle (Figure-10) about its base by direct integration. **(8)**

Figure- 10

    (b) Find moments of inertia of the area shown in Figure-11 about its centroidal axes. **(15⅓)**
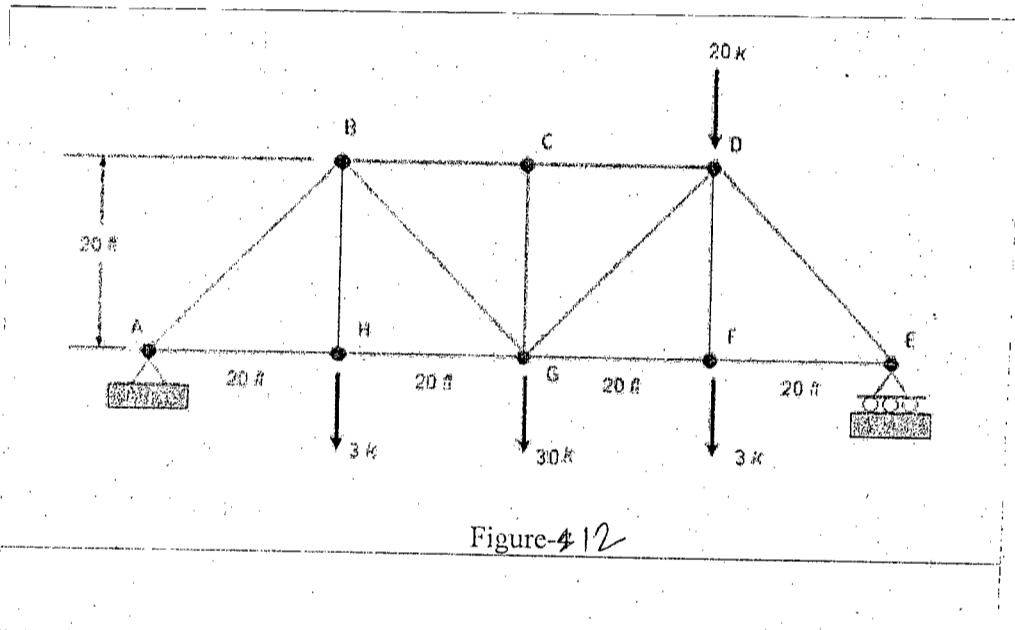
Figure - 11

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7. (a) Prove that, if the only load on a cable is its own weight and if it is tightly stretched so that the sag d is less than 10% of the span, the curve of the cable closely appropriates a parabola. **(10)**

(b) A cable is suspended between two points on the same level with a span of 600 ft. and a sag of 50 ft. If the load is 2 lb per ft., uniformly distributed horizontally, find (i) the tension in the cable at the low point, (ii) the maximum tension, (iii) the slope of the cable at the supports. **(13⅓)**

8. Find the axial forces in the members AB, CD, GH, BG and DF of the following simple truss (Figure-12). **(23⅓)**
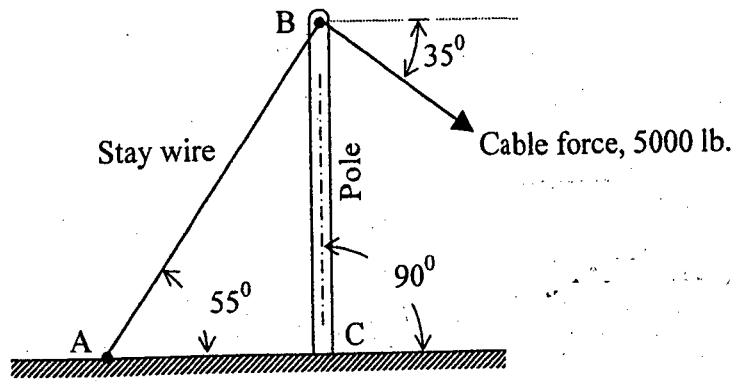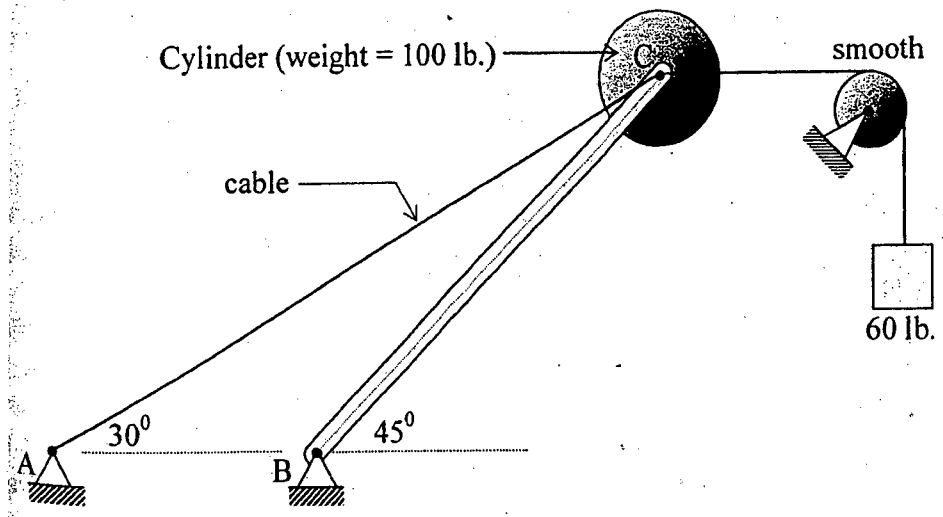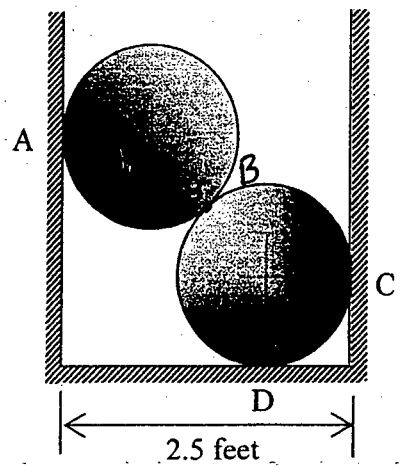
Figure-4 12

B

35°

Stay wire

Pole

Cable force, 5000 lb.

55°

90°

A

C

Fig. 1

Cylinder (weight = 100 lb.)

C

smooth
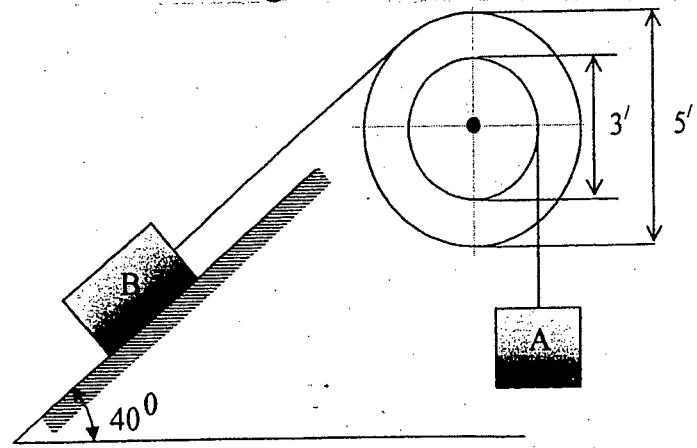
cable

30°

45°

A

B

60 lb.

Fig. 2

A

B

C

D

2.5 feet

Fig. 3

B

3′

5′

A

40°

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

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L-2/T-1   B. Arch Examinations 2016-2017

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

Full Marks: 140   Time: 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

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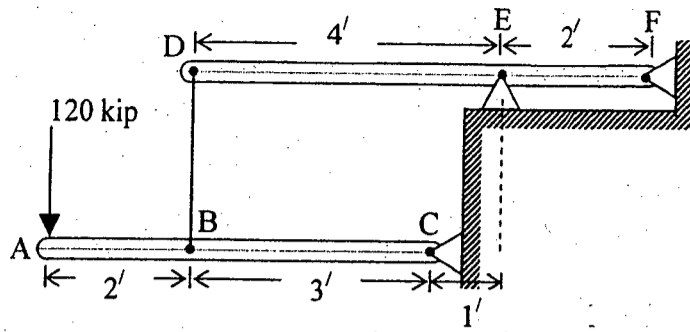
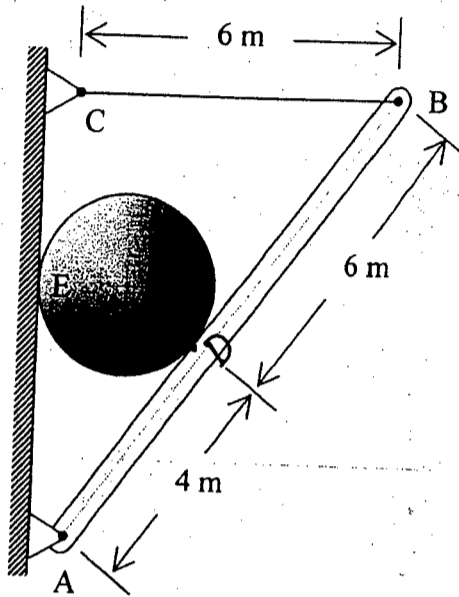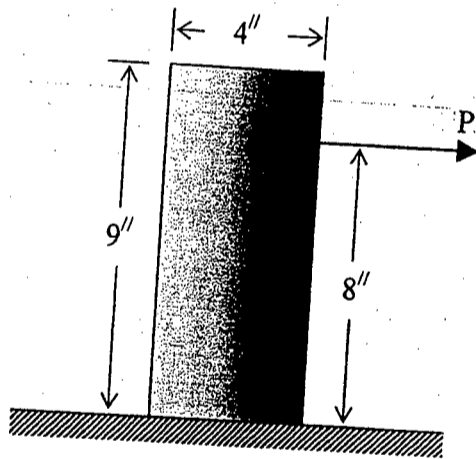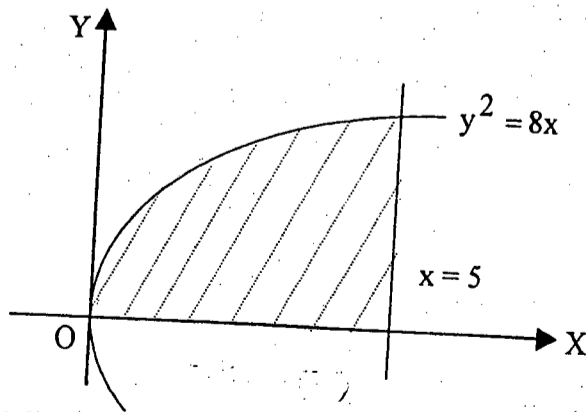## SECTION – A

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

Question No. 1 is COMPULSORY.

1.   Answer any TWO from the following: (10×2=20)

    (a)   What are the main benefits of daylighting a space?

    (b)   Is daylighting free? Give arguments in support of your answer.

    (c)   What are the external factors that affect the visual field? Discuss their relationship.

2.   (a) Discuss the luminous characteristics of the CIE sky and the clear Blue Sky.   (15)

    (b) Elaborate on the concept of Daylight Factor, listing its components and their characteristics.   (10)

3.   Explain in details the use of the BRE Protractors and Nomograms in predicting SC, ERC and IRC.   (25)

4.   (a) Explain the main characteristics of a Supplementary Lighting System, and how it is designed.   (15)

    (b) What are the major advantages of having a supplementary lighting system, over an artificial lighting system?   (10)

SECTION – B

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

5.   Elaborate on the principle daylight design strategies that promote energy efficient building.   (23⅓)

6.   Appraise with annotated sketches the daylighting features of an internationally renowned architectural 'Office building' project.   (23⅓)

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7. Illustrate the climatic variables for daylight simulation in the context of Dhaka, Bangladesh. **(23⅓)**

8. Write short notes on the following: **(23⅓)**
    (a) Daylight Rule of Thumb (DRT)
    (b) Shading Device design considerations
    (c) Daylighting in Warm-Humid climate.