L-2/T-1/ARCH **Date : 03/09/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 B. Arch. Examinations 2017-2018

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

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 Question No. **1** and any **Two** from the rest.

1. Write short notes on any three of the following. **(3×10=30)**
   (a) Reasons and effects of Humanism in Architecture
   (b) Evolution of Vaulting
   (c) Byzantine Dome
   (d) Structural innovations in Gothic Architecture

2. Establish the architectural characteristics of English and French Gothic period with relevant necessary examples and sketches. **(20)**

3. "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 Renaissance period and the architectural characteristics of the High Renaissance period with examples and sketches. **(20)**

4. Establish the characteristics of the Eastern European Architecture using 'Hagia Sophia at Constantinople' as a reference. **(20)**

SECTION – B

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

5. Write short notes on any three of the following **(3×10=30)**
   (a) Types of Greek Temples
   (b) Roman Basilica
   (c) Roman Orders
   (d) Pantheon

6. Discuss the various optical corrections made by the Greeks to overcome optical illusions created in the temples with reference to Pasthenon. **(20)**

Contd P/2

ARCH 231

7. Aegean period is known for constructing several large and great palaces; describe the palace of Knossos to establish the Aegean Architectural characteristics. **(20)**

8. "The Acropolis of Athens is an ancient citadel located on a high rocky outcrop above the city of Athens" – describe the different elements in the Acropolis with sketches. **(20)**

L-2/T-1/BARCH **Date : 12/09/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 B. Sc. Engineering Examinations 2017-2018

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

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) Interpret the characteristics and design process of supplementary artificial lighting. **(9 ⅓)**

   (b) Elaborate on the following types of architectural artificial lighting system (use sketches where necessary): **(14)**

   (i) Case lighting, (iv) Wall Illumination,
   (ii) Coffer lighting, (v) Valance lighting,
   (iii) Luminous Ceiling lighting, (vii) Soffit lighting, (vii) Luminous Wall Panels.

2. Write short notes on the following: **(23 ⅓)**

   (a) Ambient vs. Task lighting (b) Fluorescent vs. Incandescent Lamps.

3. (a) Critically explain the conceptual understanding of the photometric terms and their relationship: Flux, Intensity, Illumination and Luminance. **(10)**

   (b) Explain the physical laws of light distribution i.e. reflection, transmission and absorption in the visual environment. **(13 ⅓)**

4. (a) Illustrate Visual Field and its component parts. **(8)**

   (b) How human visual system responses to various external vision factors. **(15 ⅓)**

SECTION – B

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

5. Critically review occupant's behavior and performance under different lighting environment highlighting therapeutic and circadian effects of light. **(23 ⅓)**

6. Justify the importance and application of daylight simulation for sustainable building design. **(23 ⅓)**

7. Compare between the luminous characteristics of CIE overcast and clear blue skies. Elaborate on the daylighting strategies for the different sky conditions of Bangladesh.

8. Appraise with annotated sketches the daylighting features of an internationally renowned architectural project. **(23 ⅓)**

L-2/T-1/B.Arch **Date : 18/09/2018**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 B. Sc. Engineering Examinations 2017-2018

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

Full Marks : 140 Time : 3 Hours

The figures in the margin indicate full marks.

Assume any reasonable value of missing data.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

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

1. (a) An engine having a weight of 30 kN needs to be supported by two wires as shown in Fig. 1. The allowable stresses of wire AB and AC are 170 MPa and 90 MPa respectively. Determine the minimum diameter that can be allowed for the wires AB and AC. **(12)**

   (b) Determine the deformation of the steel rod shown in Fig. 2 under the given loads. Given, $E = 200 \times 10^3$ MPa. **(11 ⅓)**

2. (a) Write short notes on- **(12)**

   (i) Modulus of resilience

   (ii) Modulus of toughness

   (iii) Stress-strain curve for mild steel

   (iv) Stress-strain curve for low-carbon, medium-carbon, high-carbon steel

   (b) Find the coordinates of the centroid of the area bounded by the curves $y^2 = 9x$ and $y = 2x$ (See Fig. 3). **(11 ⅓)**

3. (a) Determine the centroid of the shaded area shown in Fig. 4. **(12)**

   (b) Two smooth cylinders of 200 mm radius rest in a box (See Fig. 5). Determine the contact force at A, B, C and D. Each cylinder weighs 100 N. **(11 ⅓)**

4. (a) What force P is required to resist the downward motion of the block weighing 1500 N, as shown in Fig. 6? Given, weight of Block A is 3000 N. **(12)**

   (b) The beam AB is loaded as shown in Fig. 7. Equilibrium is maintained by the weight W = 4000 lb suspended from a pulley. What should be the diameter of the pulley? Find also the pin reaction at A and force in bar BC. **(11 ⅓)**

SECTION – B

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

5. (a) Determine (i) the horizontal and vertical components of the cable pull, (ii) the horizontal and vertical components of the reaction in the study-wire and (iii) the net force on the pole for the system as shown in Fig. 8 **(12 ⅓)**

   (b) The forces shown in Fig. 9 are in equilibrium. Determine the magnitude of force, *F* and its direction, θ. **(11)**

Contd P/2

CE 265

6. (a) Two identical rollers, each weighing 100 N are supported by an inclined plane and a vertical wall. An additional load of 50 N acts in the direction shown in Fig. 10. Assuming smooth surface, find the reactions at the points of contact A, B, C and D. **(11 ⅓)**

   (b) Determine the weight W and the reaction at B if the link AB (Fig. 11) is in equilibrium. Assume that the pulley is frictionless. **(12)**

7. (a) An ore car B which weighs 20 tons is balanced by a weight A, as shown in Fig. 12. What should be the weight A if there is no friction at any point? Find also the plane reaction and tension in the chord. **(11 ⅓)**

   (b) Determine the moment of inertia about the centroidal axes of the beam cross section shown in Fig. 13. **(12)**

8. (a) Using integration method, determine the centroid of a triangle having base, b and height, h about its base. **(11 ⅓)**

   (b) What force P is required to hold the block weighing 200 N stationary (See Fig. 14)? **(12)**

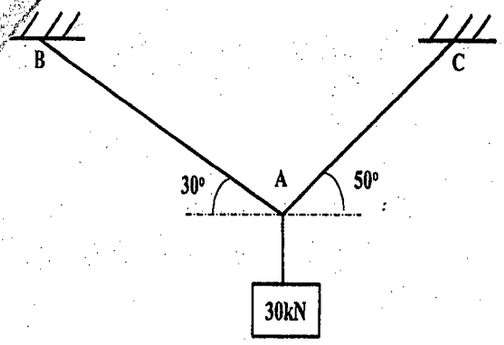

Fig. 1

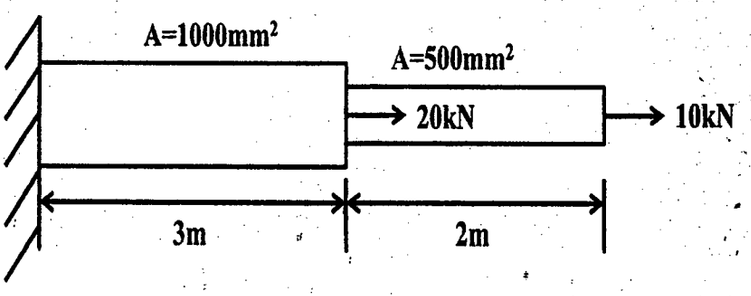

Fig. 2

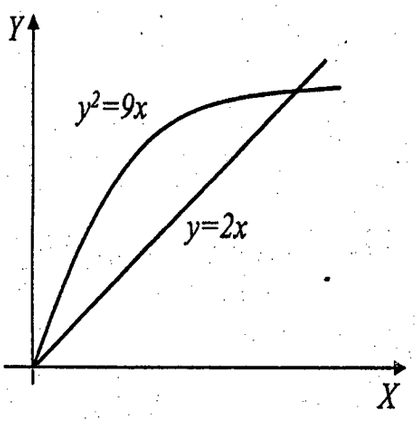

Fig. 3

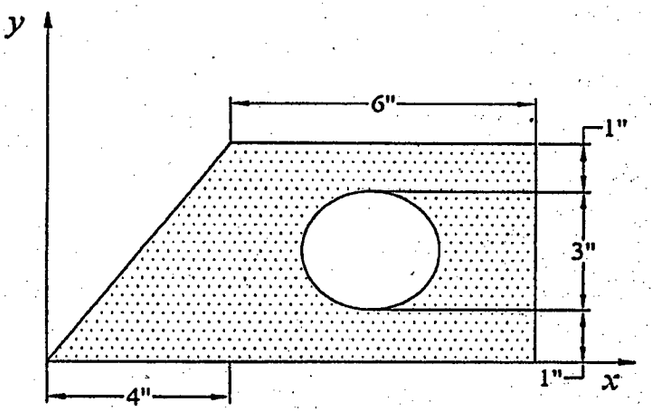

Fig. 4

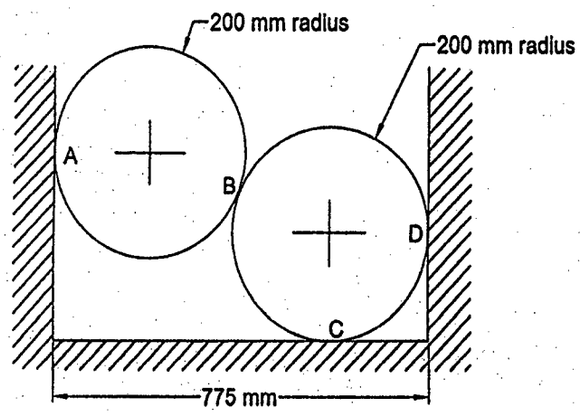

Fig. 5

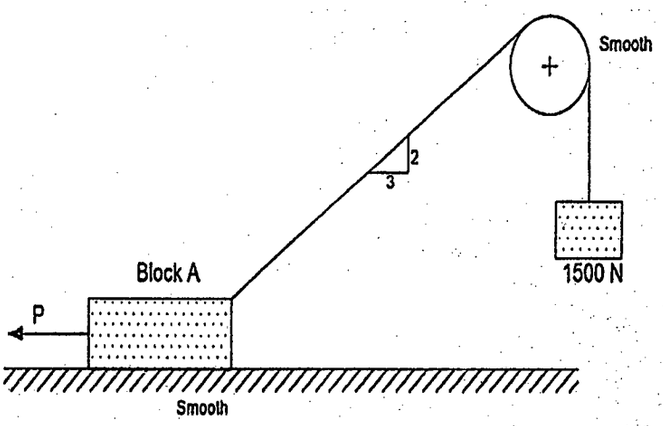

Fig. 6

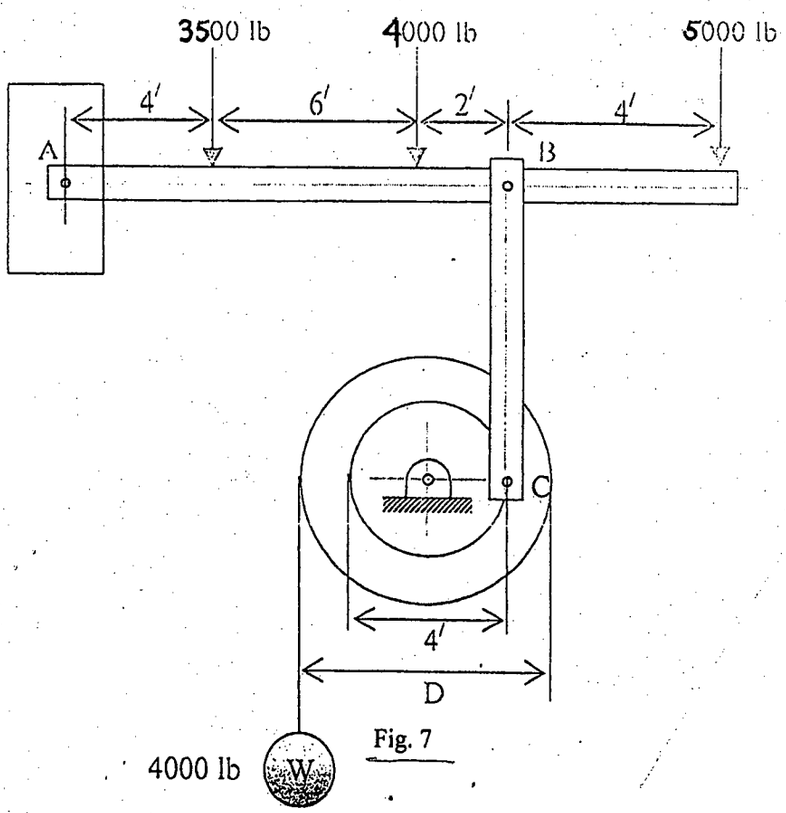

Fig. 7

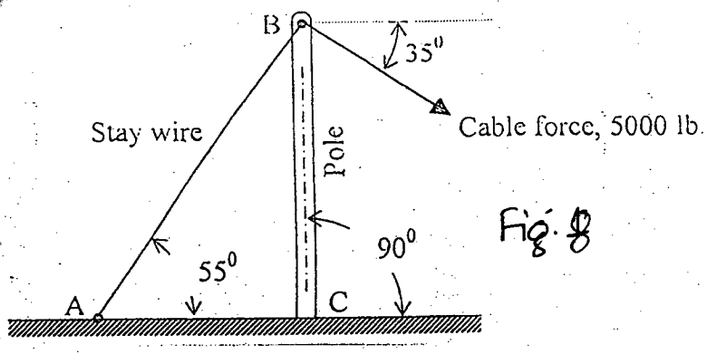

Fig. 8

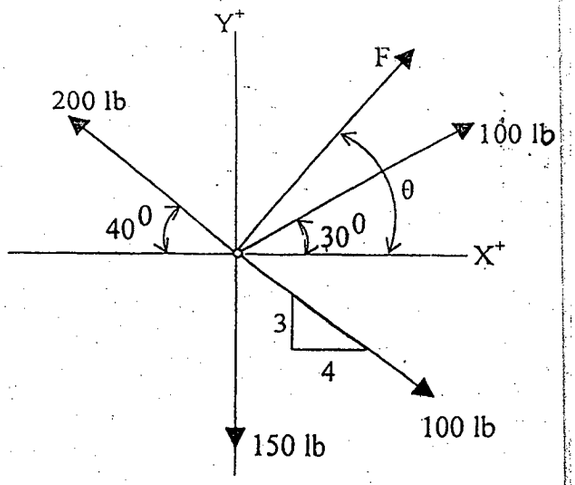

Fig. 9.

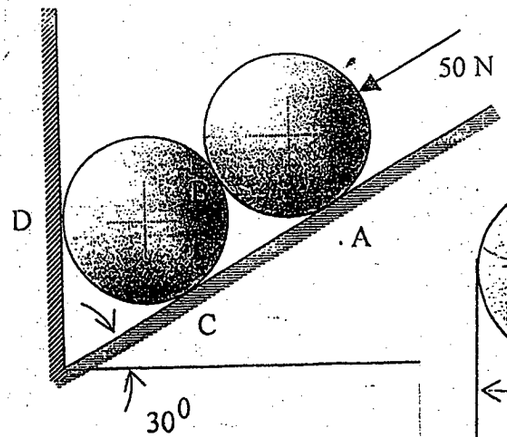

Fig. 10.

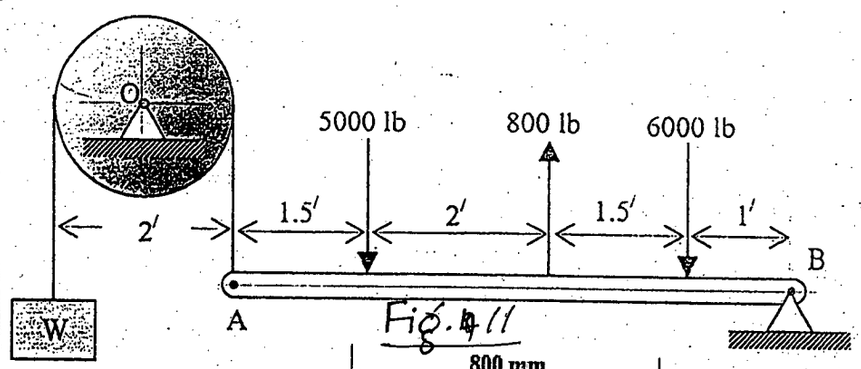

Fig. 11

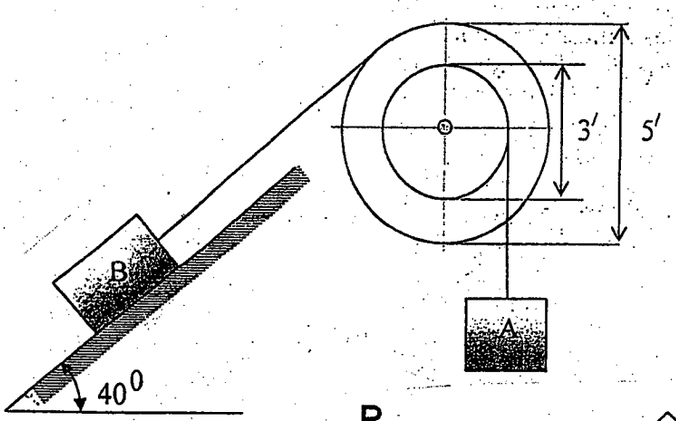

Fig. 12

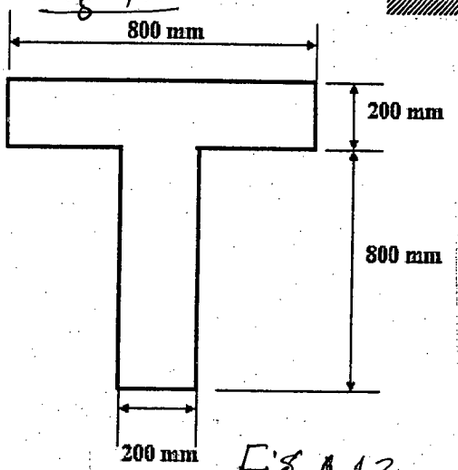

Fig. 13

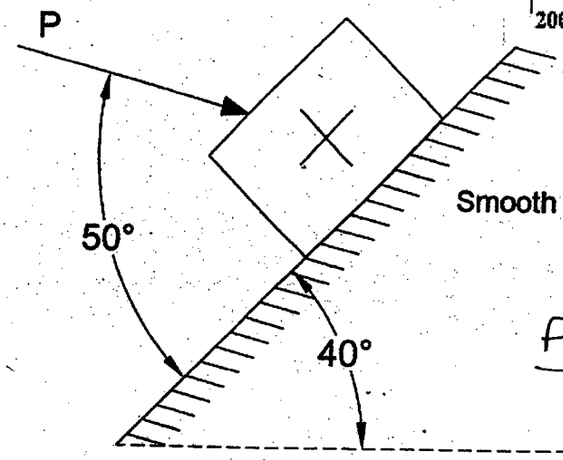

Fig. 14