

L-2/T-1/ARCH

Date : 08/02/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 B. Arch. Examinations 2010-2011

Sub : **PLAN 219** (Basic Planning)

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) Give a brief description of Hoyt's sector theory model with necessary sketches. (14 1/3)
(b) What is a CBD? Write down the characteristics of a CBD area. (9)
2. (a) Write down the characteristics of planning with examples. (12 1/3)
(b) Why do we need to monitor and review planning projects? (5)
(c) What is regional planning? Draw a diagram to show the domains of development planning. (2+4=6)
3. (a) 'Spatial planning helps to remove the spatial inequality' – do you agree with the statement? Give your reasons with necessary examples. (6 1/3)
(b) Draw comparative scenario between: (6×2=12)
(i) allocative and innovative planning
(ii) inter and intra regional planning
(c) Write about the "resource limitation" problem during a planning process. (5)
4. (a) "The higher the distance from the CBD area, the lower the rent" – explain this statement. (12)
(b) Suppose you are assigned to a project to improve the landscape design of BUET campus. State one goal and three objectives for the project. (8)
(c) What is spatial planning? (3 1/3)

SECTION – B

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

5. (a) Describe the origin and evolution of mankind and development of human settlements from cave life to city life. (8 1/3)
(b) What are the differences between rural and urban settlements? (7)
(c) What is a city? Describe six different types of cities with examples in Bangladesh. (8)

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PLAN 219

6. (a) What do you know about the classical period? Describe in detail the city planning by the Greeks. (8 1/3)
- (b) Discuss the concept of city planning according to Hippodamus. (7)
- (c) Describe the Roman cities of the classical period. What are the characteristics of the monuments built by the Romans? (8)
7. (a) Elaborate on the Town Plan of the medieval period and their dwellings. (8 1/3)
- (b) Which period is known as the Renaissance? What are the city characters of this period? (8)
- (c) What is the impact of gunpowder on the cities of this period? (7)
8. Write short notes on any four: (23 1/3)
- (a) Mohenjo Daro and Harappa
 - (b) Baroque City
 - (c) Agora
 - (d) Babylon and Ishtar Gate
 - (e) Ancient Period of Civilization
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Signature
15/01/2012

L-2/T-1/ARCH

Date : 15/01/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 B. Arch. Examinations 2011-2012

Sub : ARCH 261 (Construction Methods and Details)

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 Q. No. 1 and any **TWO** from the rest.

1. Define brick bond. Draw (the elevation) and describe the following brick bonds: **(20)**
 - (a) Stretcher bond
 - (b) Flemish bond
 - (c) English garden wall bond
 - (d) Zig-Zag bond
 - (e) Silver lock bond

2. Write the reasons why? **(25)**
 - (a) Bricks are thoroughly soaked in water before use in masonry works.
 - (b) Brick work in 10" wall is generally laid in English bond.
 - (c) In masonry work bricks are laid on their proper beds with their frogs pointing upwards.
 - (d) Iron fixtures which are to be fixed in the brick walls should be embedded in cement concrete.
 - (e) Plastering should be done after about 28 days of the completion of brick masonry.

3. (i) What is spread foundation? **(5+4×5=25)**
 - (ii) Write short notes on:
 - (a) Wall footing
 - (b) Combined footing
 - (c) Grillage foundation
 - (d) Cantilever footing
 - (e) Raft foundation

4. Describe the various types of sloping roofs. Draw the elevation of a Queen-Post-Truss. Discuss the factors to be considered for the selection of a particular type of roof covering. **(25)**

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SECTION - B

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

5. (a) Discuss the essential requirements of a stair. (20)
(b) Describe the following types of stairs:
(Draw sketches where necessary)
- (i) Straight flight stair
 - (ii) Half turn stair
 - (iii) Bifurcating stair
 - (iv) Spiral stair
6. (a) Describe with sketches the various types of doors. (25)
(b) Draw the details A, B C and D of a door shown in the Fig. 01

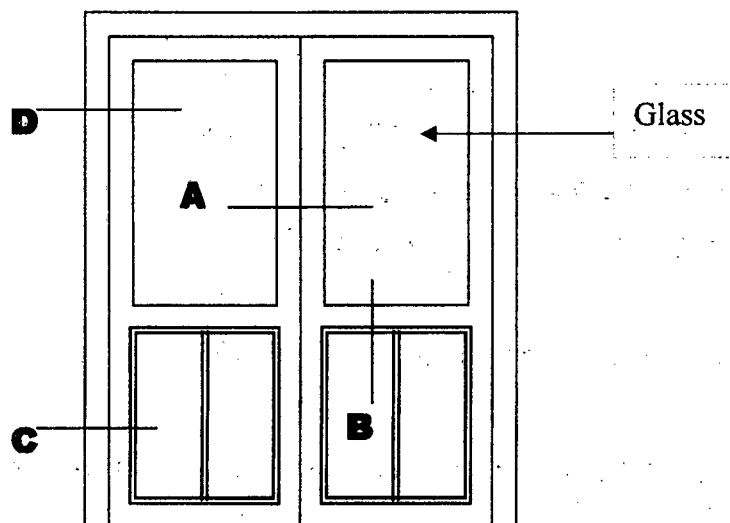


FIG. 01

7. Write short notes. (25)
(Draw sketches where necessary)
- (i) pile cap.
 - (ii) Eaves cutler
 - (ii) Flight
 - (iv) Landing
 - (v) Balustrade
8. (a) Discuss the factors to be considered for the selection of floor finish materials for ground floor. (25)
(b) Describe the construction of a Terrazzo floor. Draw the detail section of a Terrazzo floor at ground level.
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SECTION -- A

There are **SEVEN** questions in this Section. Answer any **FIVE**.

1. A simply supported beam is loaded as shown in Fig.1. What are the reactions R_1 and R_2 ? **(14)**

2. (a) Define the following terms: **(3)**
 - (i) Coplanar force system
 - (ii) Non-coplanar force system
 - (iii) Non-concurrent force system

(b) A continuous string ABCDE shown in Fig.2, passes over smooth pegs at B and D, 10 inch on centers. To the ends of the strings are attached the weights $W_A = 7\text{lb}$ and $W_E = 5\text{lb}$. A 10 lb weight is attached at C and the three bodies are in equilibrium. Determine the distance 'a' and ' α '. **(11)**

3. (a) In the system of frictionless pulleys shown in Fig.3, what force P will hold a weight of $W = 1200\text{ lb}$ in equilibrium? **(7)**
- (b) For the structure shown in Fig-4, find the reactions at A, B, C and D **(7)**

4. In Fig-5 CD is a rigid weightless body. The pegs are smooth and the cable is weightless and flexible. Determine the weights A and B if the bodies are in equilibrium and CD remains horizontal. **(14)**

5. The derrick shown in Fig-6 supports a load of $W = 2000\text{ lb}$. Find the tension in the boom cable and compression in the boom. **(14)**

6. Determine the forces in members a, b, c, d of the truss as shown in Fig-7. **(14)**

7. Determine the forces in members a, b, c of the truss as shown in Fig-8. **(14)**

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SECTION - B

There are SEVEN questions in this Section. Answer any FIVE.

8. (a) What is parabolic chord? (2)
(b) A cable may be safely loaded to a maximum tension of 2200 lb (pound). For a sag of 21 ft., what may be the maximum safe span when the points of support are on the same level? Cable weighs 5 lb per ft. Assume the curve to be parabolic. (12)
9. Refer to Fig. 9, block A having a mass of 55 lbs rests on block B having a mass of 80 lbs. Block A is tied with a horizontal cable to the wall at c. If the coefficient of friction between A and B is $\frac{1}{4}$ and between B and surface is $\frac{1}{3}$, what horizontal force P is necessary to move block B? What is the magnitude of tension in the cable? (14)
10. A 4 ft diameter drum is pulled by a force F as shown in Fig-10. The drum weighs 550 lb and frictional coefficient $f = \frac{1}{3}$ for all surfaces. Find F when motion impends. Is this impending motion to be spinning or rolling? (14)
11. For the area shown in Fig.11 calculate I_x and I_y , where the symbols have their usual meaning. (14)
12. A flexible chord is suspended between two supports at the same level with a span length of 610 ft and sag of 42 ft. A load of 4 lb per ft is uniformly distributed over the span length. Determine the following: (14)
(i) The tension in the cable at the lowest point.
(ii) Tension at a distance 200 ft. from the support.
(iii) Slope in degree at left support.
(iv) Maximum value of tension in the cable.
(v) Total length of this symmetrical parabolic chord.
13. For shaded area of Fig. 12, compute moment of inertia I_x about x axis. Also determine the moment of inertia about a centroidal axis parallel to the x axis. (14)
14. Determine centroid of the area shown in Fig. 13. (14)
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(3)

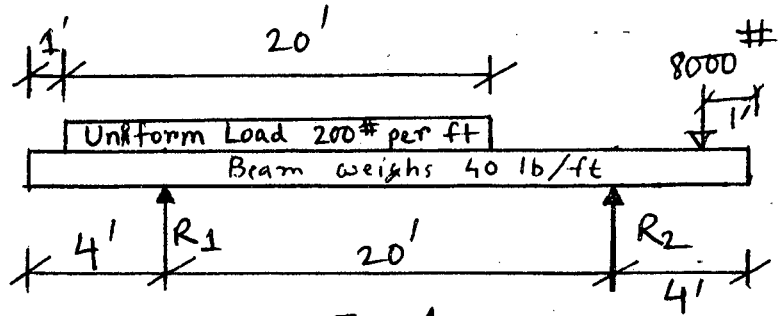


Fig 1

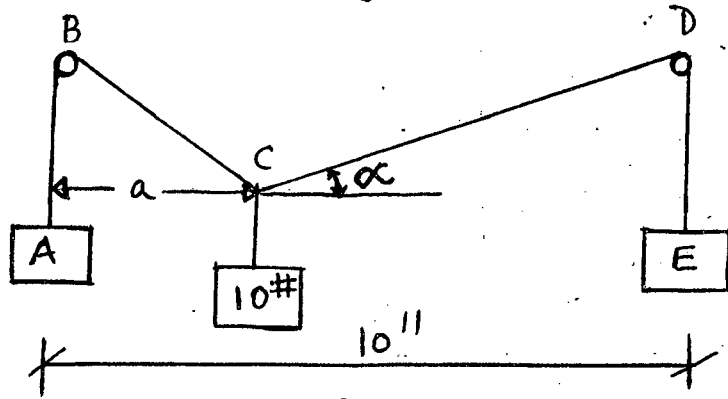


Fig 2

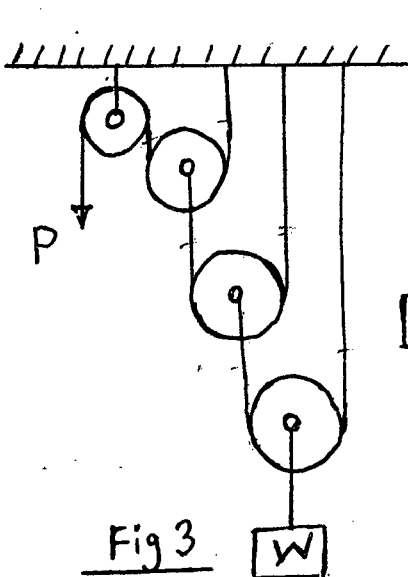


Fig 3

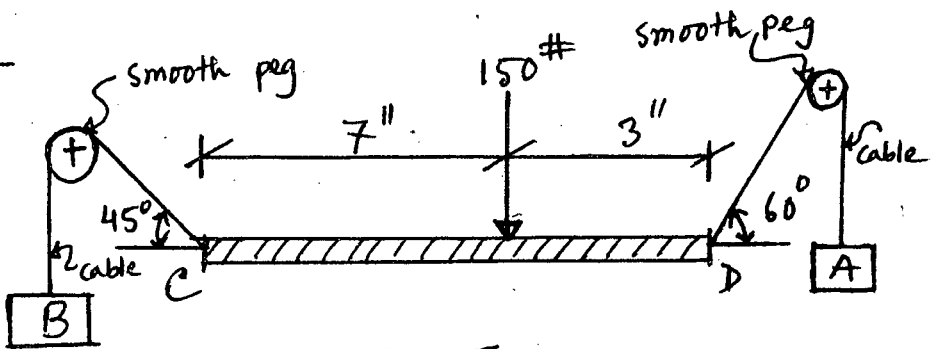


Fig 5

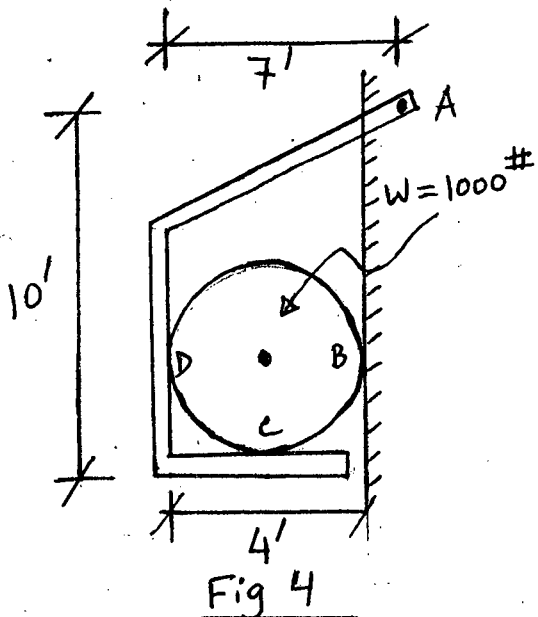


Fig 4

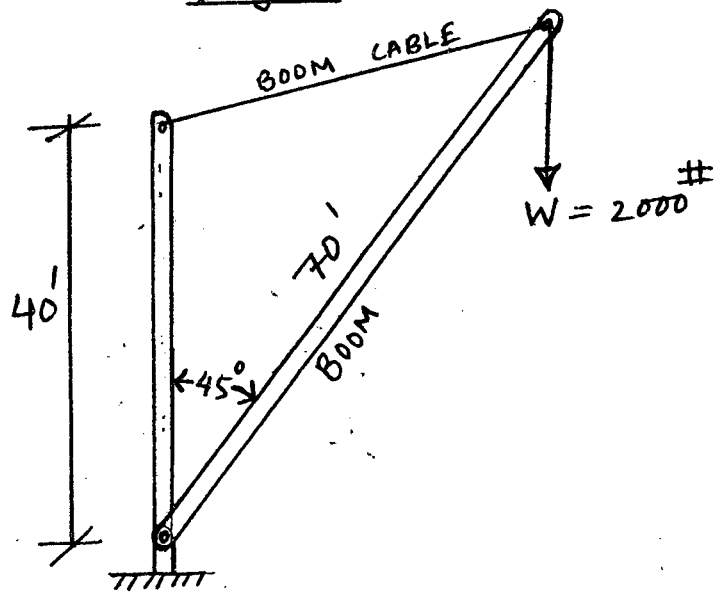


Fig 6

(A)

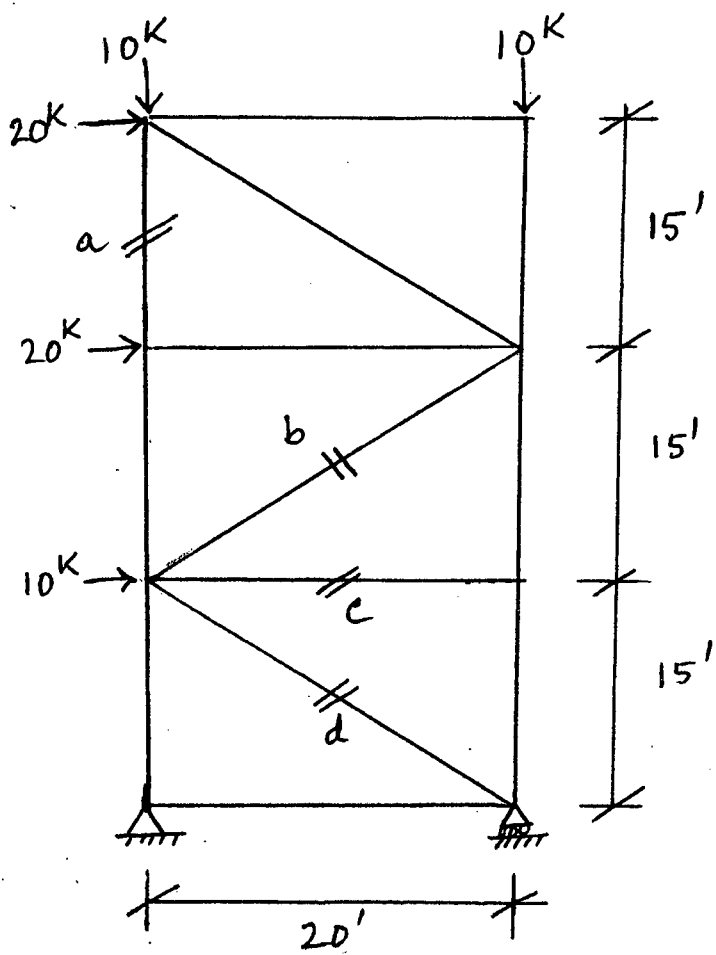


Fig 7

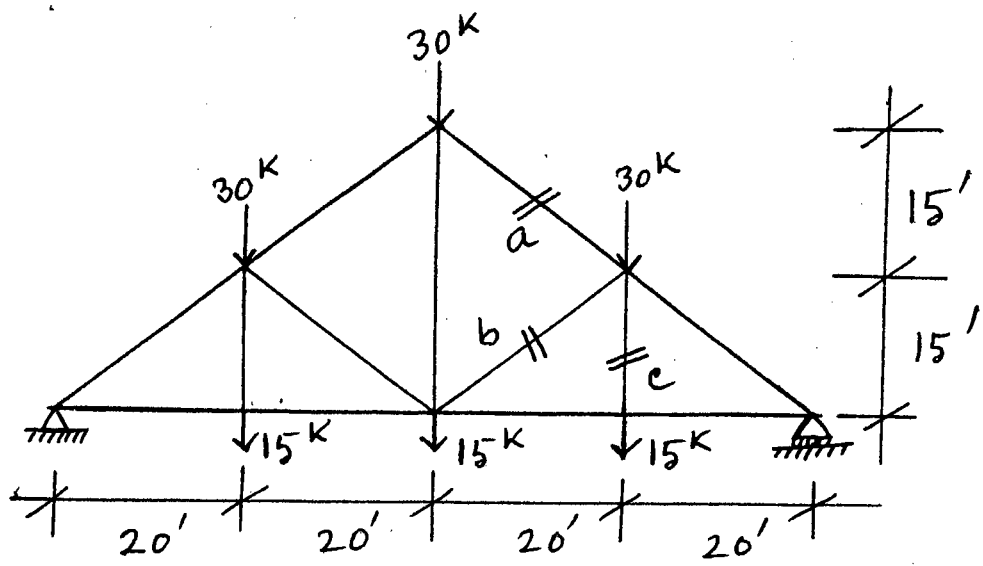


Fig 8

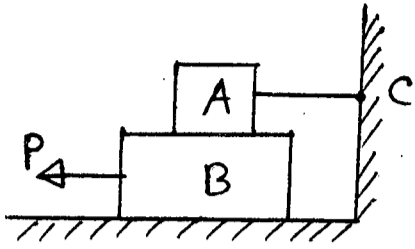


Fig. 9

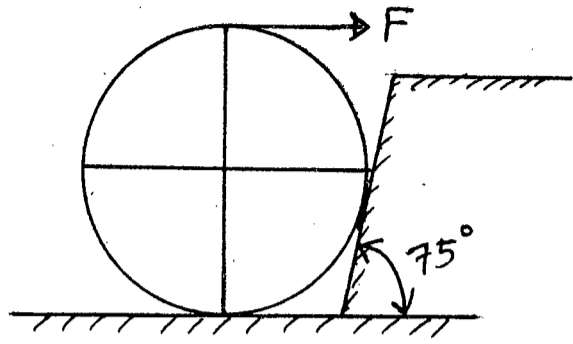


Fig. 10

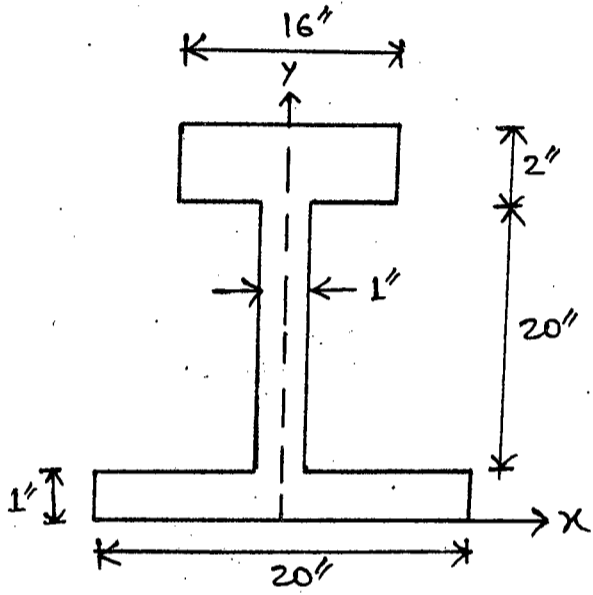


Fig. 11

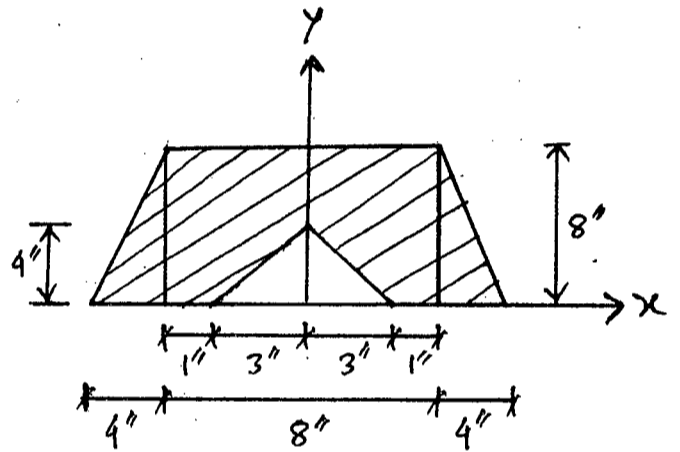


Fig. 12

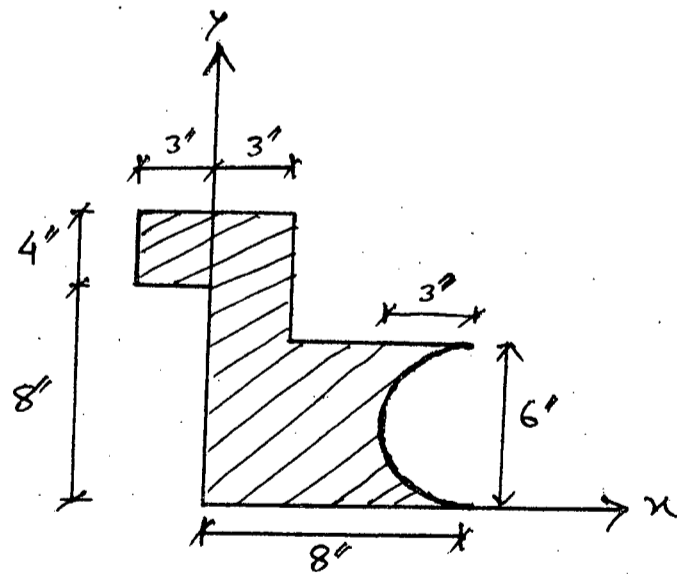


Fig. 13

L-2/T-1/ARCH

Date : 26/01/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-2/T-1 B. Arch. Examinations 2010-2011

Sub : **ARCH 231** (Environment and Design II : Visual and Sonic 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 **Q. No. 1** and any **TWO** from the rest.

1. Answer the following questions: **(3×6=18)**
 - (a) Under the design sky illumination of Dhaka, what should be the indoor illumination value in lux to achieve a daylight factor of 5%?
 - (b) A space has a scalar illumination of 300 lux. What is its illumination vector when the vector-scalar ratio is 2?
 - (c) If the reflection factor of a window is 0.3 and its absorption is 0.2, what percentage of light does it transmit?
 - (d) What is the watt equivalence of a light source emitting a luminous flux of 1 Lumen?
 - (e) Two colours are used to paint the walls of a space. One colour has a reflection factor of 0.8, while the other has its reflection factor as 0.2. What is the contrast between them?
 - (f) What is the reflection factor of a colour of value 6?

2. (a) Discuss the Visual Field and its component parts. **(6)**
(b) Explain in details the External Vision Factors and the relationships between them. **(20)**

3. Explain the process of predicting Daylight availability with the BRE protractors and nomogram. **(26)**

4. Elaborate on the principle daylight design strategies that promote daylight penetration into spaces. **(26)**

SECTION – B

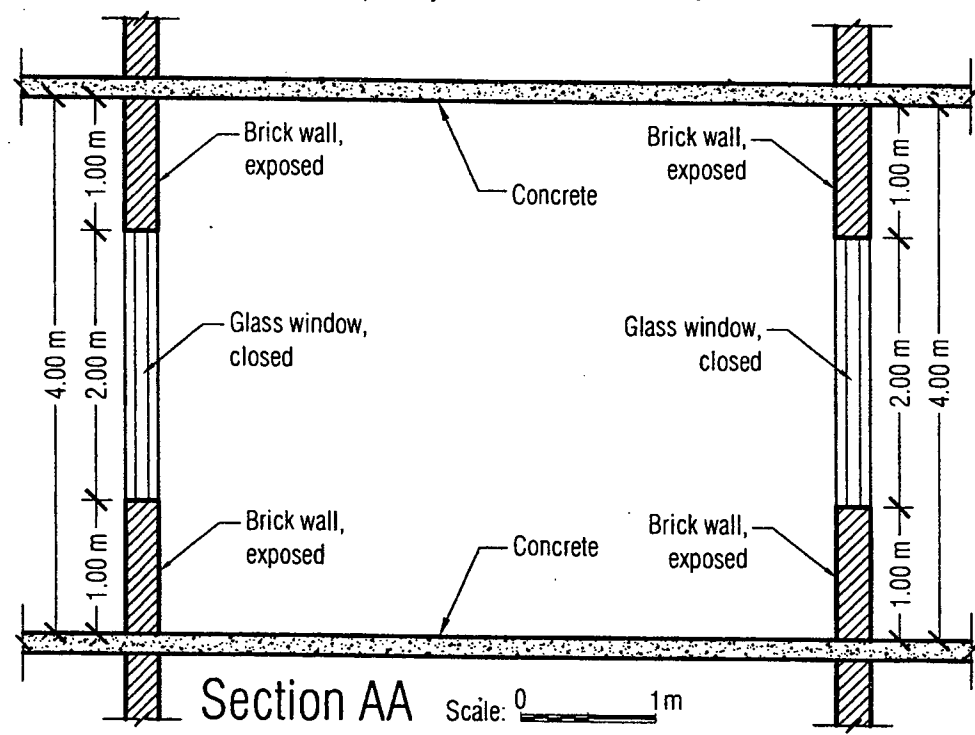
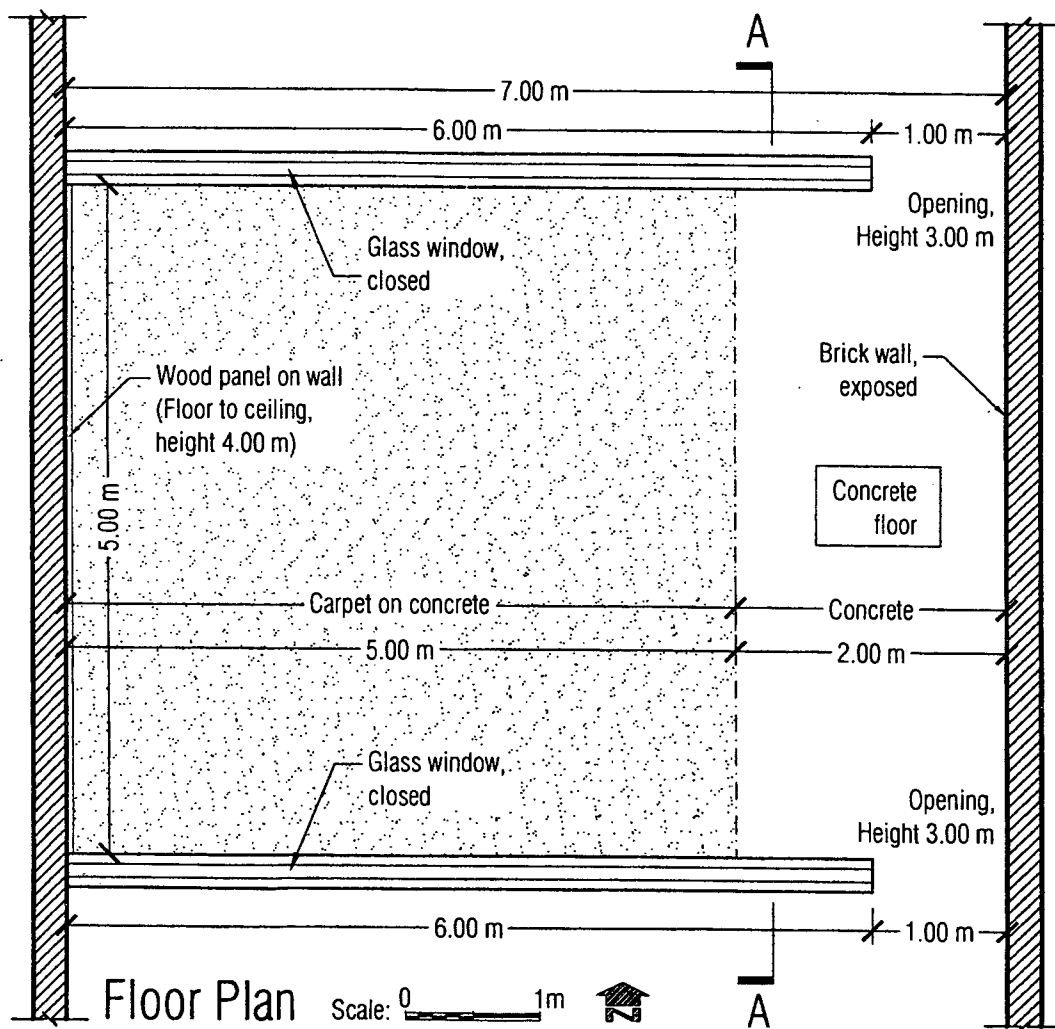
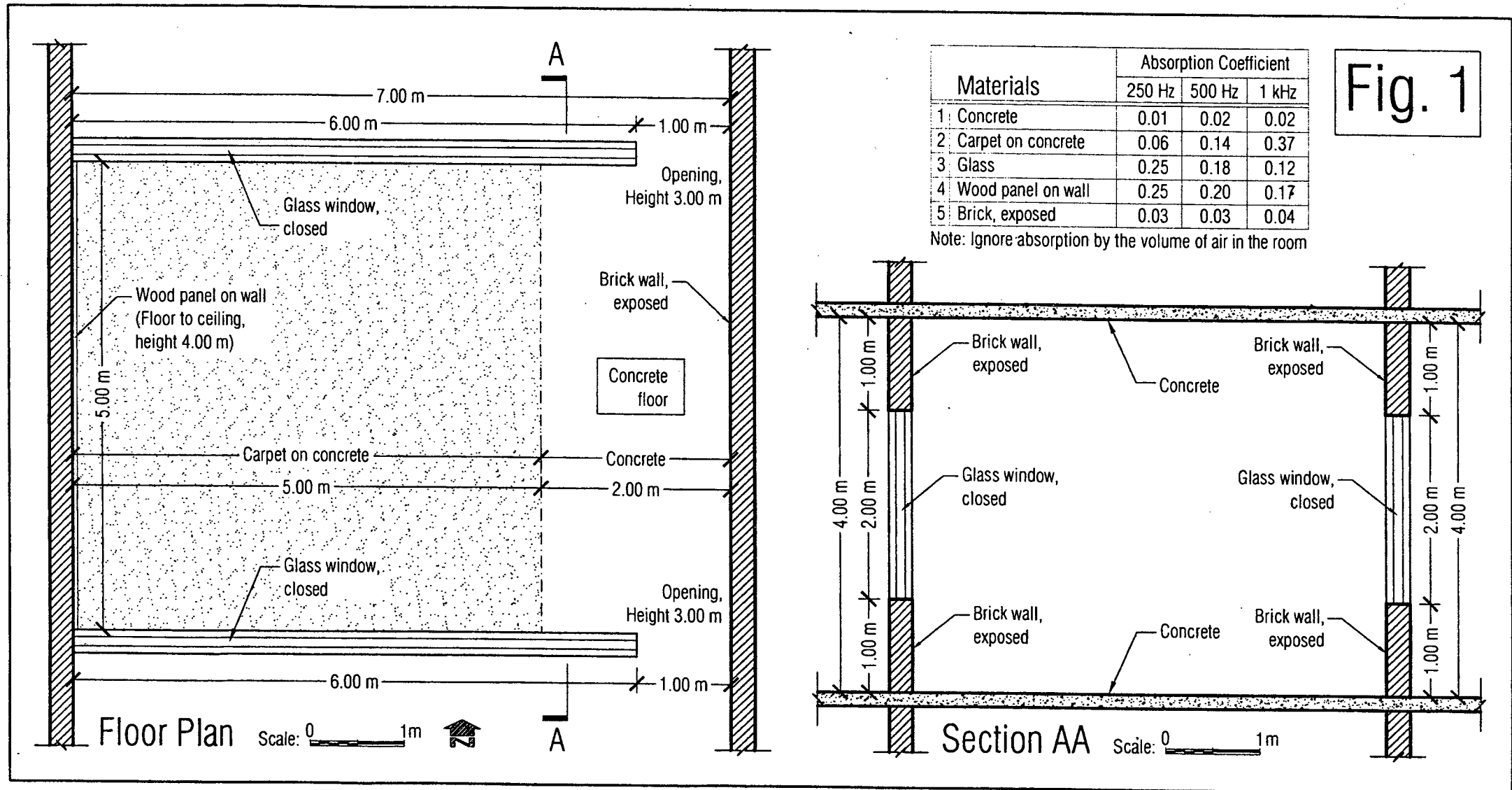
There are **FIVE** questions in this section. Answer **Q. No. 5** and any **THREE** from the rest.

5. (a) Write short notes on the following (any **THREE**): **(4×3=12)**
 - (i) Acoustics (ii) Octave Band (iii) Sound Pressure Level (iv) Reverberation Time
- (b) Calculate the Reverberation Time (RT) at 1 kHz for the room shown in Fig. 1. **(10)**

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ARCH 231

6. (a) How does sound behave in terms of absorption, reflection and transmission in an enclosed space? **(4×3=12)**
(b) Explain the statement: "An STC rating of 50 dB for a wall is better in sound insulation than a wall of STC 40 dB". **(4)**
7. (a) What are the effects of diffraction, refraction and diffusion of sound in a space? **(4×3=12)**
(b) 'Low frequency sounds require relatively larger size diffusers' – explain with figures. **(4)**
8. (a) Elaborate singular phenomena of sound echo, flutter echo, sound focus and dead spot. **(4×3=12)**
(b) With a schematic drawing and an example, explain how a 'Whispering Gallery' works. **(4)**
9. (a) Describe with figures how air-borne and structure-borne noise propagates in a building. **(6)**
(b) What are the general requirements for acoustic design? Provide examples of recommended RT in spaces for speech and music. **(6)**
(c) In schematic sections, show examples of 'poor' and 'good' acoustical options for the ceiling and balcony of an auditorium. **(4)**
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L-2/T-1/ARCH

Date : 30/01/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-3/T-1 B. ARCH Examinations 2010-2011

Sub : **HUM 113** (Economics)

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) Write the determinants, which affect the changes in supply of an individual. (8 $\frac{1}{3}$)
(b) Given the demand and supply equations: (7)
$$Q = \frac{16777216}{p} \text{ and } Q = P^{\frac{1}{11}}$$
Find out the equilibrium price and quantity and then show them graphically.
(c) Describe the reasons behind the “shift of demand” and show graphically. (8)

2. (a) Discuss in detail price elasticity of demand, cross elasticity of demand and income elasticity of demand. (12)
(b) Explain twin themes of Economics – ‘scarcity’ and ‘efficiency’. (4 $\frac{1}{3}$)
(c) Applying the knowledge of price elasticity of demand show that ‘the more inelastic the demand, the more tax burden on a consumer’. (7)

3. (a) What is indifference curve? Mention the exceptional cases of indifference curve. (5 $\frac{1}{3}$)
(b) Explain the “law” of diminishing marginal utility” and “law of equi-marginal utility. (12)
(c) Let the price of coffee rise from Tk. 4.50 per hundred grams to Tk. 5 per hundred grams. As a result, the consumer’s demand for tea increases from 60 hundred grams to 70 hundred grams. Find the cross elasticity of demand of tea for coffee. (6)

4. Write short notes on (any three): (23 $\frac{1}{3}$)
 - (a) Movement along the demand curve and the supply curve.
 - (b) Paradox of bum-per harvest.
 - (c) Properties of indifference curve.
 - (d) Relationship between ‘total utility’ and ‘marginal utility’.

HUM 113

SECTION – B

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

5. (a) What do you understand by production function? (5)
- (b) Describe the various forms of productivity. (10 $\frac{1}{3}$)
- (c) State and prove the application of Euler's theorem in the theory of distribution. (8)
6. (a) Describe the short-run equilibrium of a firm under perfect competition (8)
- (b) Define the concept of long-run. Show how would you derive long-run average cost (LAC) curve from its short-run cost curves. Why is LAC curve often called the planning curve? (10 $\frac{1}{3}$)
- (c) A television producer's per week cost to produce x-quantity set is $x^2/25 + 3x + 100$ and his demand function is $x = 75 - 3p$, where p is the price of per set television. Calculate the profit maximising level of output and price. (5)
7. (a) Narrate the concepts of national income, GNP, GDP and NNP. (8)
- (b) Discuss the various methods of measuring national income with reference to the context of Bangladesh. (10 $\frac{1}{3}$)
- (c) Given that (5)
- GNP = Tk. 98,000 crore
Depreciation = Tk. 8,000 crore
Indirect tax = Tk. 1,000 crore
Subsidy is 20% of indirect tax.
- Calculate national income.
8. (a) Explain the concept of inflation. (3 $\frac{1}{3}$)
- (b) What are the causes of inflation? Briefly discuss. (5)
- (c) Briefly discuss the various policies for controlling inflation with reference to the context of Bangladesh. (15)
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SECTION – A

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

1. (a) Define a 'short shell' and 'Long' Cylindrical shell, and explain their structural characteristics. What are the salient features of "Zeiss Dywidag" system. (8 1/3)
- (b) Elaborate following types of shell with examples and illustrations as needed. (15)
 - (i) Shell with spherical segment.
 - (ii) Shell with conical section
 - (iii) Shell with curve on longitudinal directions.
 - (iv) Segmental shells.
 - (v) Arched segmental shells.
2. (a) Explain the structural principles of space frame (8 1/3)
- (b) Discuss elaborately the structural system of the following space frames (15)
 - (i) Plane system trusses
 - (ii) Maunemann system
 - (iii) Mero system.
 - (iv) Unistrut system
 - (v) Tubular system.
3. (a) What is a Geodesic dome. (6)
- (b) Compare the basic characteristics of Prof. Baversfeld's dome and Buckminster Fuller's Geodesic dome. (7 1/3)
- (c) Discuss the design considerations that should be taken for a space frame dome. (10)
4. (a) Discuss with neat sketches the structural principles of folded plate and elaborate how a folded plate works. (8 1/3)
- (b) Explain the following folded plates with explanatory sketches. (15)
 - (i) Parallel folds and fan shapes folds.
 - (ii) Folded plate with and without stiffness.
 - (iii) Rigid frame folded plates.

ARCH 265

SECTION - B

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

5. (a) Briefly discuss the structural principles of a cable structure. (3 1/3)
- (b) Explain with sketches the structural system of the following types of cable structures: (20)
- (i) simply curved suspended roofs.
 - (ii) cable structure with combination of cable and struts.
 - (iii) Cable systems curved in two mutually apposed directions
 - (iv) Suspended cable roof of Raleigh Arena.
 - (v) Cable structural system of Congress Hall, Berlin.
6. (a) Elaborate the structural principles of a conoidal shell and compare it with a cylindrical shell. (3 1/3)
- (b) Discuss the elementary compositions of a hyperbolic paraboloid in terms of the following: (20)
- (i) Saddle – shaped form
 - (ii) Suspended and upright parabolas
 - (iii) Straight edged hyperbolic paraboloid
 - (iv) combination of straight edged by perbolic paraboloid.
- (c) Discuss with sketches the structural and architectural features of “Calalana’s residence” and “Congress Hall in Shiznaka, Japan”.
7. (a) Explain the geometrical relations forming the structural elements of hyperbolic paraboloid of following buildings: (10)
- (i) Church of the Virging Mila grasa, Mexico.
 - (ii) Philps Pavilion, Brussels Exhibition, 1958.
- (b) What is a free form? Explain with neat sketches. (13 1/3)
- Discuss the structural principles, expressed in TWA terminal building, New York.
8. (a) Define a Sky-scraper. Explain the problems of “Loading conditions”, “Lateral wind force and “Earthquake” m Sky-scrappers. (8 1/3)
- (b) Elaborate with examples, the structural systems is the form generator of following structural concepts: (15)
- (i) Trussed core-structure, (ii) Tube buildings. (iii) Bundle of Tube buildings.
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