BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-2   B. Arch Examinations 2015-2016

Sub : **ARCH 463** (Survey Technique and Analytic Methods)

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

1. Write short notes on any Four of the followings: **(5×4=20)**
   - (a) Inclination or Dip
   - (b) Declination
   - (c) Open Traverse.
   - (d) Closing Error in a Closed Traverse.
   - (e) Optical Square.

2. (a) What is Surveying? Classify and explain briefly.   **(15)**

    (b) Why do we need Surveying?   **(10)**

3. (a) What is 'Chain Survey'? How can you Chain across obstacles?   **(15)**

    (b) How would you keep the records in a 'Chain Survey'?   **(10)**

4. (a) What is Whole Circle Bearing? How it is the same as well as different from Reduced Bearing? Explain with table and diagram.   **(15)**

    (b) Explain Bearings in Traverse Surveying.   **(10)**

SECTION-B

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

5. In a survey, it was found that the price of 2, 4 and 6 katha (X value) lands are 2, 3 and 4 crore (Y value) taka. Draw a regression line and write the equation of the line to predict the price of a 3 katha land.   **(23⅓)**

6. Write definition of research. Distinguish the difference between qualitative and quantitative research methods with examples.   **(23⅓)**

7. What are primary and secondary data? Explain different sources for primary and secondary data collection? Define different types of variables used in statistics.   **(23⅓)**

8. Distinguish between population, sample and sampling unit. Critically evaluate various methods for sample selection process under probability and non-probability sampling with examples.   **(23⅓)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-2   B. Arch. Examinations 2016-2017

Sub : **ARCH 447** (Art and Architecture VI: Modern Art and Architecture)

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. 4** and any **TWO** from the rest.

1. Elaborately explain the four main reasons for the failure of modern architects.   **(20)**

2. Explain the following statement with description of projects, "Few late modernist architects took off in a more purely sculptural direction".   **(20)**

3. Write the differences between first and second machine aesthetics that are found in the Pompidon Center, Paris.   **(20)**

4. Write short notes on the following: **(15×2=30)**
    (a) Richard Meier's Smith house
    (b) Geometric Expressionism

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 8** and any **TWO** from the rest.

5. (a) What were the main contributions of Modern movement in architecture?   **(10+10)**
    (b) "Modern architects reacted to some existing social aspects". Briefly explain the social problems of the western world, which modern architects tried to solve through modern architecture.

6. Some late modernist architects followed the architectural characteristics of "Extreme Articulation". Discuss these characteristics with description of projects.   **(20)**

7. Who were known as "The Five". Write Peter Eisenman's attitude towards architecture with description of his projects.   **(20)**

8. Write short notes on: **(15×2)**
    (a) John Hejduk's Diamond series project.
    (b) The difference of approaches towards nature between architecture of Richard Meier and Frank LLoyd Wright.

L-4/T-2/ARCH   Date : 08/08/2017
BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA
L-4/T-2   B. Arch. Examinations 2015-2016
Sub : **CE 467** (Structure VI: Elements of Building Structure)
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**.

Assume any reasonable value of missing data.

1. (a) Draw qualitative moment and shear force diagram of a Vierendeel truss having 10 panels supporting a slab.   ($8\frac{1}{3}$)

   (b) Vierendeel steel trusses, spaced 25′ apart are used to support a slab carrying a total unfactored load of 50 psf (Figure 01). Each truss consists of 10 panels 5 ft × 8 ft each. The outer diameter of the hollow circular truss members is 8″ and allowable bending stress of the material is 36 ksi. Determine shear forces of chords at panel 2, 3 and moment of inertia required in the web between panel 2 and 3.   **(15)**

2. (a) Write a short note on "The most common stages to be checked for stresses and behavior of prestressed concrete".   ($4\frac{1}{3}$)

   (b) A prestressed-concrete beam as shown in Figure 02 has a simply supported span of 30 ft and is loaded by a uniform load of 3.5 k/ft including its own weight. The prestressing tendon is located as shown and produces an effective prestress of 300 k. Compute **maximum** fiber stresses at top and bottom fibers in the concrete section.   **(12)**

   (c) Make a preliminary design for section of a prestressed-concrete beam to resist a total moment of 350 k-ft. The overall depth of the section is given as 30 in. The effective prestress for steel is 125,000 psi and allowable stress for concrete under working load is 1600 psi. Also draw the cross-section of the beam.   **(7)**

3. (a) Compare between prestressed and reinforced concrete.   ($7\frac{1}{3}$)

   (b) A posttensioned bonded simply supported concrete rectangular beam (12″ × 24″) has a prestress of 350 kip in the steel immediately after prestressing, which eventually reduces to 300 kip due to losses. The beam carries a live load of 16 kip in addition to its own weight of 300 plf (Figure 03). Compute the maximum values of extreme fiber stresses in the concrete, (i) under the initial condition with full prestress and no live load and (ii) under the final condition, after the losses have taken place and with full live load.   **(16)**

CE 467 (ARCH)

4. (a) Derive that the intensity of hoop stress at crown for self weight of dome is $\dfrac{wr}{2t}$ where the symbols carry the usual meaning. Also determine the maximum compressive stress of a dome having a radius of 15 feet. The weight per unit area of the dome is 50 psf and the thickness is 5 inch. **(19)**

(b) Write down the design principle of dome. **(4⅓)**

SECTION – B

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

5. (a) Draw the shear force and bending moment diagrams for all the girders and columns of the frame as shown in Figure-04. Use Cantilever method. **(18)**

(b) Write down the assumptions of portal method of approximate analysis of building frames. **(5⅓)**

6. (a) Using approximate method of analysis for gravity loads, draw the bending moment diagrams for all the columns and girders and also the axial force diagrams of the columns for the frame shown in Figure-05. Use un-factored load. **(18)**

(b) Why Φ factor in column is less than that of beam? **(5⅓)**

7. (a) Design a square tied column to support dead load of 400 kip and live load of 232 kip. Given compressive strength of concrete is 5000 psi and tensile strength of steel is 60,000 psi. Column dimension can be selected by designers' choice. Assume a steel ratio of 5% and design the necessary ties also. **(10)**

(b) Determine nominal and design axial compression capacity of a column 12″ × 18″ reinforced with 6 No 10 bars. Alsio check the ties No. 5 @ 12in c/c. Given: $f_c' = 4$ ksi and $f_y = 60$ ksi. **(8)**

(c) Write a short note on main reinforcement of column. **(5⅓)**

8. (a) A three storied shear wall is subjected to lateral forces as shown in Figure-06. The wall is 12 feet long and 10″ thick. Design the shear wall for both moment and shear. All the relevant formulae provided in Annexure 1. Use $f_c' = 4$ ksi and $f_y = 60$ ksi. **(18)**

(b) Show the failure modes of shear wall in neat sketches. **(5⅓)**
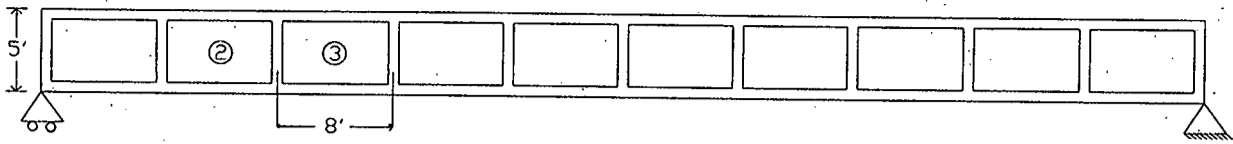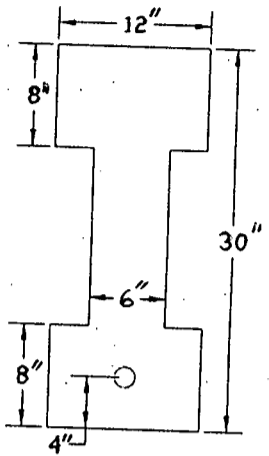

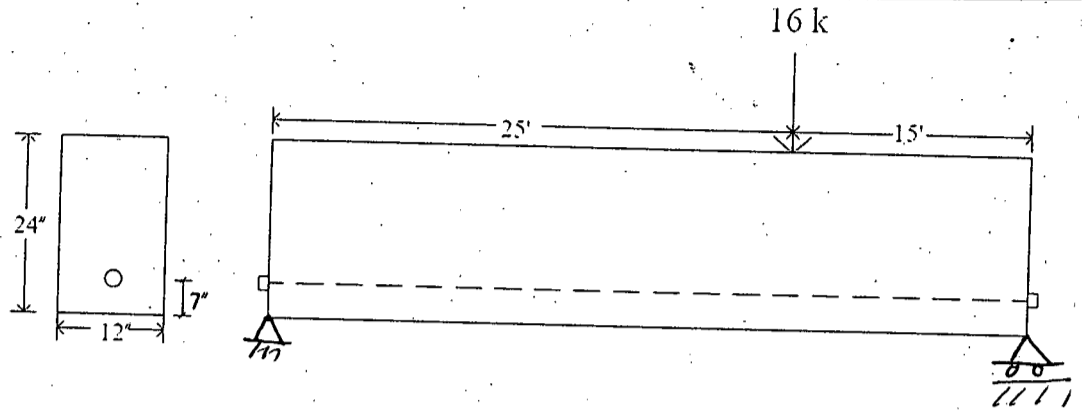
Figure: 01

Figure: 02
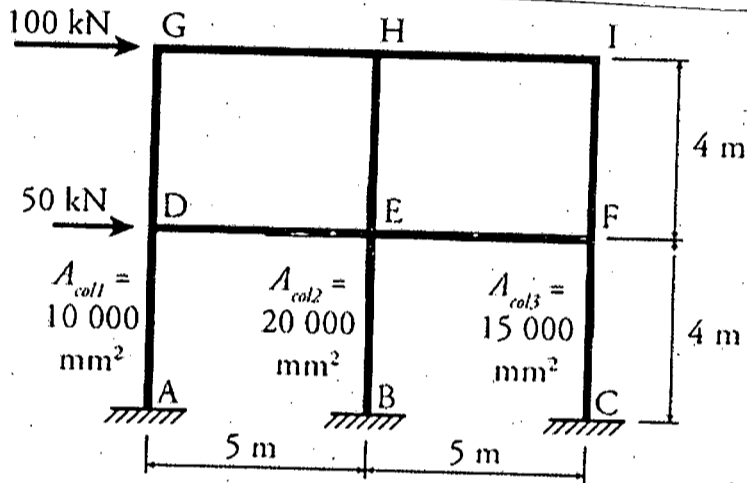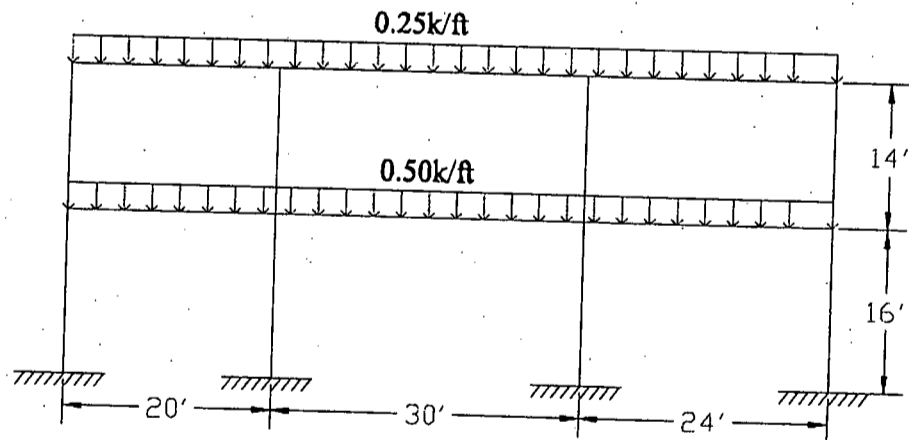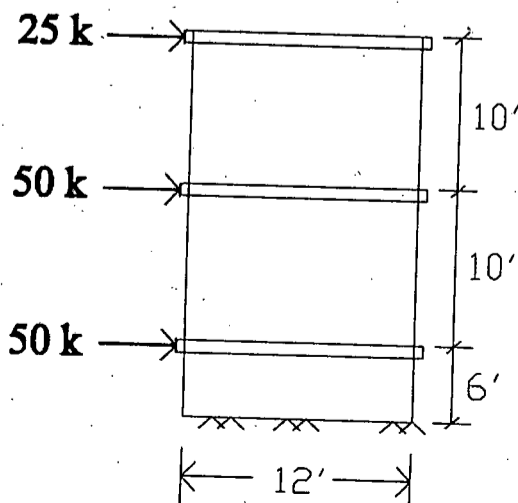

Figure: 03

Figure: 04

Figure: 05

Figure: 06

ANNEXURE 1

$$f_y = 60 \text{ ksi}, \qquad f_c' = 3 \text{ ksi}, \qquad \phi = 0.85$$

$$V_u = \phi V_n \leq 10\phi\sqrt{f_c'}\,dh, \qquad d = 0.8\,l_w$$

$$V_c = 2\sqrt{f_c'}\,dh$$

$$\frac{A_{vh}}{S_2} \geq \frac{V_u - \phi V_c}{\phi f_y d}, \quad S_2 \leq \frac{l_w}{5}, \qquad 3h \text{ or } 18 \text{ in}$$

$$\frac{A_{vv}}{S_1} \geq \left[0.0025 + 0.5\left(2.5 - \frac{h_w}{l_w}\right)\left(\frac{A_{vh}}{S_2 h} - 0.0025\right)\right] h$$

$$S_1 \leq \frac{l_w}{3}, \, 3h \text{ or } 18 \text{ in}$$

$$\frac{A_{vh}}{S_2}\,(\min) = 0.0025h$$

$$\frac{A_{vv}}{S_1}\,(\min) = 0.0025h$$

$$\phi M_n = \phi\left[0.5\,A_{st}\,f_y\,l_w\left(1 - \frac{z}{l_w}\right)\right]$$

$$\frac{z}{l_w} = \left(\frac{1}{2 + \dfrac{0.85\beta_1\,l_w h\,f_c'}{A_{st}\,f_y}}\right)$$

—4—

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-2   B. Arch. Examinations 2016-2017

Sub : ARCH 473 (Housing)

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. Write short notes on   (3×8=24)

    (a) Human Settlements

    (b) Modernization

    (c) Hosing Deficit

2. (a) Define the concept of dwelling   (5)

    (b) Explain with examples the natural and private modes of dwelling.   (9)

    (c) Briefly discuss the social and economic roles of human settlements.   (9)

3. (a) What are the three levels of meaning in the built environment?   (5)

    (b) "House is an institution for dweller's ideal living environment" -Explain. (9)

    (c) Briefly explain with examples the location of Meaning in housing.   (9)

4. (a) Define homelessness.   (5)

    (b) Explain with examples the three types of homelessness in the cities of Bangladesh. (9)

    (c) Explain with examples two perception of housing problem.   (9)

SECTION – A

There are **FOUR** questions in this section. Answer **Q. No. 5** and

any **TWO** from the rest.

5. Write short notes on: (3×8=24)

    (a) Adequate shelter

    (b) Housing process

    (c) Myth of Marginality

6. (a) How does housing differ from 'what it is' to 'what it does'?   (5)

    (b) Explain with examples the four generic components of housing.   (9)

    (c) Draw a sketch of 'Housing Delivery System' and explain it in the context of Dhaka. (9)

ARCH 473

7. (a) Differentiate between Heteronomy from Autarchy.   **(5)**

    (b) Discuss the ends, means and ways of housing.   **(9)**

    (c) Discuss the background, rationale and objectives of Global Shelter Strategy.   **(9)**

8. (a) Draw the multi-scalar and multi-dimensional framework of sustainable housing.   **(5)**

    (b) Locate 'Assemblies', 'Components' and 'Elements' in a graph to explain the roles and
    responsibilities of the public and private sectors in housing.   **(9)**

    (c) What are the objectives of 'providing' and 'Supporting' modes of housing intervention? **(9)**