BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-2   B. Arch. Examinations 2014-2015

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

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. (a) What is 'Surveying'? Classify and Discuss.   **(25)**

   (b) What is the importance of surveying in Architecture?   **(5)**

2. What is 'Chain Survey'? Explain the field procedure of chain survey.   **(15)**

   (b) What is 'offset stuff'? How does it work?   **(5)**

3. (a) What is Traverse surveying? Classify and explain.   **(10)**

   (b) What would you do if the lines of a close traverse do not close?   **(10)**

4. What is Plane Table Surveying? Explain its procedure.   **(20)**

SECTION – B

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

5. What is a questionnaire? Describe with example the factors to be considered while framing questionnaires.   **(23⅓)**

6. 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)**

7. What are the principal methods of data collection? Analyze the suitable approaches of interviewing in context of Dhaka with their relative advantages and disadvantages.   **(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 2014-2015

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) Housing Problem

   (c) Modernization

2. (a) Define the concept of Dwelling.   **(5)**

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

   (c) Briefly explain the present two goals of human settlement developments in relation to

   housing.   **(9)**

3. (a) What are the three basic ways of defining culture?   **(5)**

   (b) "House is an institution for dwellers' ideal living environment" – explain. **(9)**

   (c) How values and life style influence housing design from a cultural perspective? **(9)**

4. (a) Define Homelessness.   **(5)**

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

   (c) What are the policy responses to rural-urban migration in developing countries? **(9)**

SECTION – B

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) Housing Process

   (b) Myth of Marginality

   (c) The World Bank Housing Model

ARCH 473

6. (a) Define housing paradigm. **(5)**

   (b) Compare the objectives and methods of providing and supporting housing paradigms. **(9)**

   (c) Explain with examples the existence and opportunities for providing and supporting paradigms in Dhaka. **(9)**

7. (a) Differentiate Heteronomy, Auterchy in Housing. **(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) Explain the adequacy and affordability aspects of shelter sustainability. **(9)**

   (c) Write down the attributes of sustainable housing. **(9)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-2   B. Arch. Examinations 2014-2015

Sub : **CE 467** (Structure VI: Elements of Building Structure)

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) Vierendeel Truss does not fit the strict definition of a truss" – explain. **(4⅓)**

   (b) Vierendeel Steel Trusses, spaced 25′ apart" are used to support a slab carrying a total unfactored load of 70 psf. Each truss Figure 01 consists of 10 panels 6 ft × 10 ft each. The outer diameter of the truss members is 10″ and allowable bending stress of the material is 27 ksi. Determine shear force of chords at panel 3, 4 and moment of inertia required in the web between panel 3 and 4. **(19)**

2. (a) Write the differences between pretensioned and posttensioned prestressing. **(5⅓)**

   (b) A pretensioned member has a section of 10 in. by 15 in. It is concentrically prestressed with 1.1 sq in. of high tensile steel wire, which is anchored to the bulkheads of a unit stress of 210000 psi. The prestressing wire has horizontal profile and its location concides with the center of gravity of the beam. Assuming that n = 6, compute the stresses in the concrete and steel immediately after transfer. **(9)**

   (c) Make a preliminary design for section of a prestressed-concrete beam to resist a total moment of 410 k-ft. The overall depth of the section is given as 40 in. The effective prestress for steel is 140,000 psi and allowable stress for concrete under working load is 1600 psi. Also draw the cross-section of the beam. **(9)**

3. (a) Describe five factors contributing to loss in prestress. **(7⅓)**

   (b) A posttensioned bonded concrete rectangular beam (12″ × 22″) has a prestress of 300 kip in the steel immediately after prestressing, which eventually reduced to 260 kips due to losses. The beam carries two live loads of 10 kip each in addition to its own weight of 210 plf (Figure 02). Compute the extreme fiber stresses in the concrete at mid span: (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)**

4. (a) Derive the equation of hoop stress in a dome due to a concentrated load at the crown. **(19)**

   (b) Write down the names of at least five types of dome. **(4⅓)**

CE 467/ARCH

SECTION – B

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

5. Draw the shear force and bending moment diagrams for all the girders of the frame as shown in Figure 03. Use Cantilever method. Values in circles indicate relative cross sectional areas of the column. (Constant throughout the height). **(23 $\frac{1}{3}$)**

6. 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 04. Use 2 k/ft uniformly distributed load (UDL) acting downwards on all the beams. All the columns have the same cross section and are uniform throughout the height. Use un-factored load. **(23 $\frac{1}{3}$)**

7. (a) What is a slender column? Draw a qualitative critical stress vs slenderness ratio diagram. **(4)**

   (b) What are the purposes of lateral ties and spiral in a column? **(3)**

   (c) Design a column as a square tied column to support gravity loads only using f'_c = 4 ksi and f_y = 60 ksi. Assume a proper steel ratio within limits and design the necessary ties also. Show in detail drawing. Given that: P_{DL} = 500 kip and P_{LL} = 400 kip. **(16 $\frac{1}{3}$)**

8. (a) Show the failure modes of shear wall in drawings. **(4 $\frac{1}{3}$)**

   (b) A three storied shear wall is subjected to lateral forces as shown in Figure 05. The wall is 12 feet long and 12″ thick. Design the shear wall for both moment and shear. All the relevant formulae are provided in Annexure 1. Use f'_c = 3 ksi and f_y = 60 ksi. **(19)**
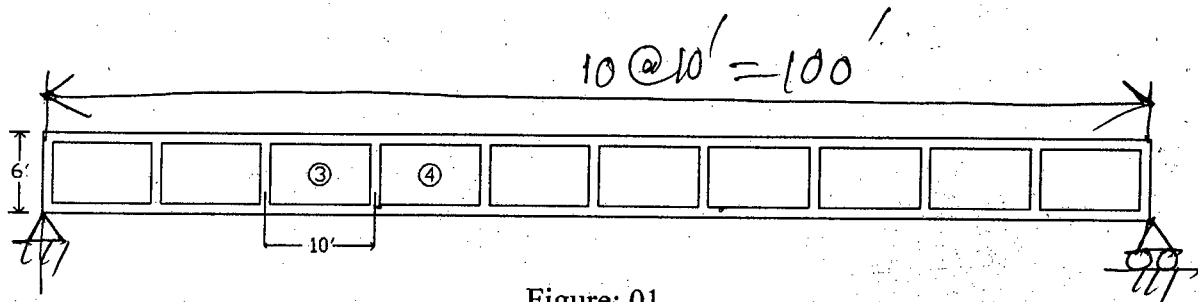
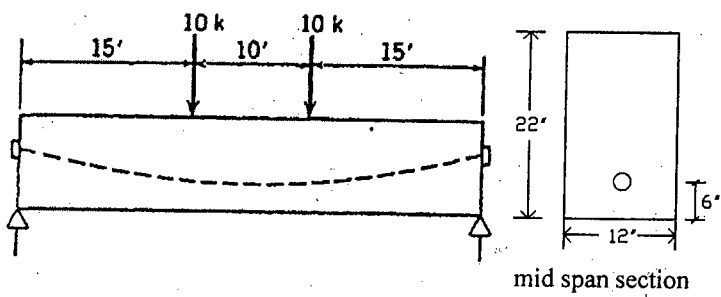---
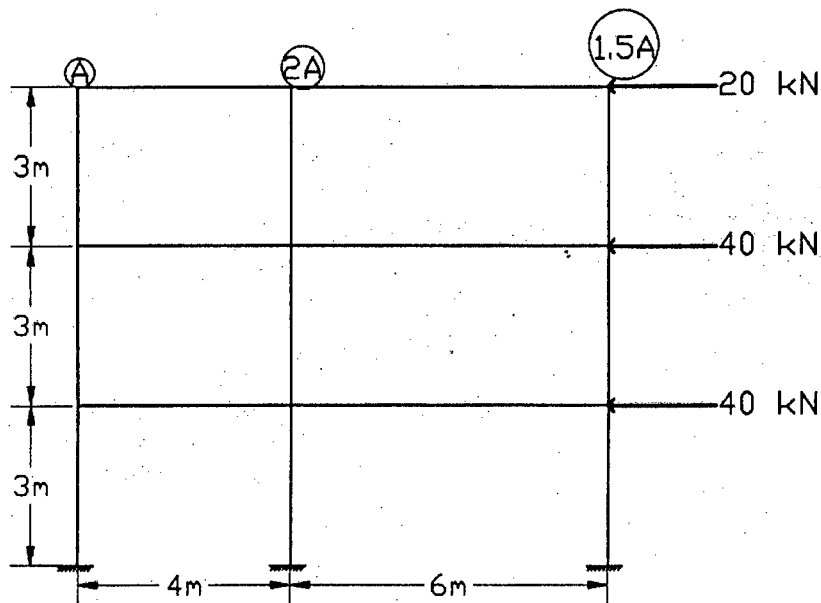
Figure: 01

mid span section

Figure: 02

Figure: 03

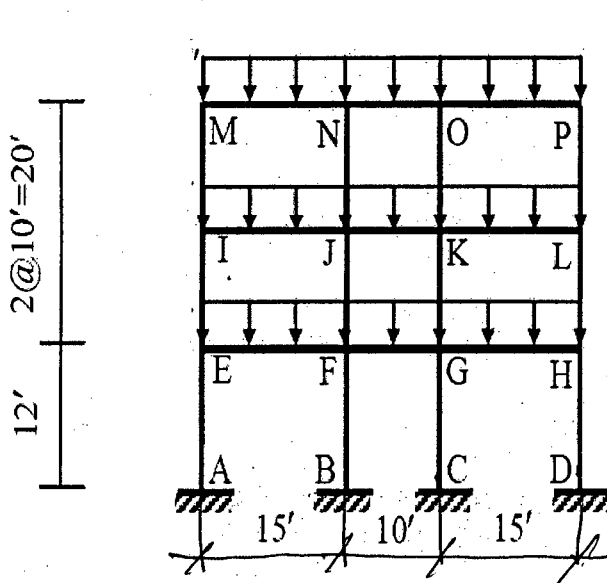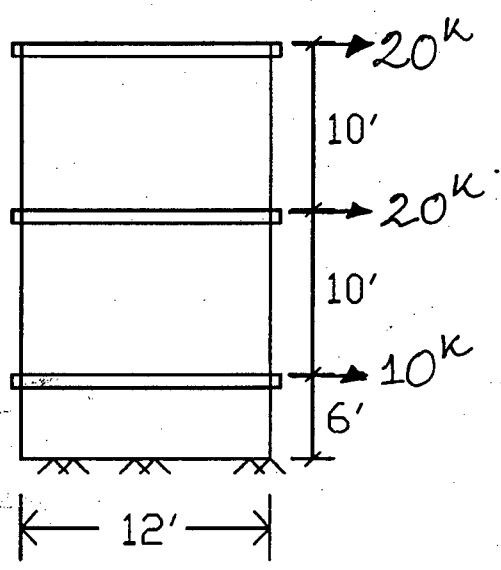
Figure: 04

Figure: 05

ANNEXURE 1

$f_y = 60$ ksi, $\qquad f'_c = 3$ ksi, $\quad \phi = 0.85$

$V_u = \phi V_n \le 10\phi\sqrt{f'_c}\,dh\,, \qquad d = 0.8\,l_w$

$V_c = 2\sqrt{f'_c}\,dh$

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

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

$$S_1 \le \dfrac{l_w}{3}, \; 3h \text{ or } 18 \text{ in}$$

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

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

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

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

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-2   B. Arch. Examinations 20154-2015

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. (a) What were the main contributions of Modern movement in architecture.   **(10)**

    (b) Why do you think some of the most successful buildings designed during the last century have been custom houses?   **(5)**

    (c) What were the two types of "gaps" that resulted in many design that we regard as failures? Explain the "Gaps".   **(5)**

    (d) Explain why it is claimed that modern buildings have not been functional enough.   **(5)**

2. (a) Write the differences between first and second machine aesthetics.   **(5)**

    (b) Second machine aesthetics was adopted mainly by what type of architects?   **(2)**

    (c) Charles Jencks mentioned that the late modernists took three paths of Sculptural form, Extreme articulation, and the Second machine aesthetics to get rid of the boredom of Modern architecture. Briefly discus the main characteristics of the three paths.   **(12)**

    (d) Why Geometric expressionism became popular in the corporate world?   **(3)**

    (e) What metaphor was used in ORF Studio, Austria designed by Gustav Peichl?   **(3)**

3. (a) Who were the architects known as the Five?   **(5)**

    (b) Name the famous painter with whom Architect Richard Meier's work has similarities?   **(2)**

    (c) Briefly explain how the relationship between architecture and nature is treated differently by Richard Meier and Frank Lloyd Wright.   **(3)**

    (d) *Richard Meier's early white pavilions are inversion of Corbusian syntax.* Describe this statement with the help of Meier's early white pavilions.   **(15)**

4. Write short notes of any TWO of the followings: **(10×2=20)**

    (a) Architect Frei Otto

    (b) Symbolic element at Portoghesi's Islam center at Rome

    (c) Historical eclecticism

ARCH 447

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

5. (a) Briefly explain how known norms are changed by Architect John Hejduk in his One Half House Project. Use sketches if necessary. **(5)**

(b) What were the inspirations for John Hejduk's Diamond Series Project? **(3)**

(c) What has Peter Eisenman implied by the term 'Post-Humanism'? **(10)**

(d) "The transformational drawings are more important than the building, they are what the building ultimately signifies". In your opinion, what was Peter Eisenman implying with the statement. **(5)**

(e) Name the Italian architect whose influence is apparent in Peter Eisenman's architecture. **(2)**

6. (a) Michael Graves mentioned two types of language in architecture. Explain. **(5)**

(b) Describe the main characteristics of Architect Price's architecture with the help of his built and un-built projects. **(15)**

(c) "Cedric Price's architecture influenced other architects of later period", name such an architect. **(5)**

7. (a) "If we can look backward to go forward than we can also look downward to go upward" which painter made this statement? Discuss what he meant. **(10)**

(b) Discuss the main characteristic of Charles Moore's architecture. **(10)**

(c) In your own words discuss the architectural characteristics of Moore's own living room. **(5)**

8. Write short notes on any two of the followings: **(10×2=20)**

   (a) Neo-Vernacular Architecture

   (b) House at Chestnut Hill by Robert Ventury.

   (c) Lillington street housing by Darbourne and Darke.