BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1   B. Arch. Examinations 2017-2018

Sub : **ARCH 441** (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 **THREE** questions in this Section. Answer Q. No. 1 and any **ONE** form the rest.

1. Write short notes on: **(3×10=30)**

   (a) Human Settlements

   (b) Homelessness

   (c) Modernization

2. (a) What do you mean by dwelling?   **(10)**

   (b) Explain with examples the modes dwelling.   **(15)**

   (c) Discuss with examples the role of Values, life styles and activity systems in the

   ultimate understanding of housing.   **(15)**

3. (a) Housing problem   **(10)**

   (b) How would you estimate housing problem in a City?   **(15)**

   (c) Describe with examples the tonns of homelessness in Bangladesh.   **(15)**

SECTION – B

There are **THREE** questions in this Section. Answer Q. No. 4 and any **ONE** form the rest.

4. Write short notes on: **(3×10=30)**

   (a) Housing delivery system

   (b) Adequate Shelter

   (c) Myth of marginality

5. (a) Explain housing process.   **(10)**

   (b) What are the generic components of housing? Describe with examples.   **(15)**

   (c) Explain with examples the ends, beans and ways of housing.   **(15)**

6. (a) Define housing paradigm.   **(10)**

   (b) Compare the objectives and methods of providing and supporting housing paradigm.   **(15)**

   (c) Discuss the background, rationale and national requirements for preparing a Global

   Shelter Strategy.   **(15)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA
L-4/T-1   B. Sc. Engineering Examinations 2017-2018
Sub : **ARCH 461** (Survey and Research 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 any **THREE**.

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

2. Review and compare the following methods of data collection with advantages and disadvantages : surveys, focus groups, observations, tests, documents studies and case studies. **(23⅓)**

3. Discuss issues with a checklist that need to be considered to deliver a successful research presentation. **(23⅓)**

4. 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)**

SECTION – B

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

5. Write short definition of research. Distinguish the difference between qualitive and quantitive research methods with examples. **(23⅓)**

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

7. Describe the different stages of a scientific research. **(23⅓)**

8. What are the principal methods of collecting data? Explain the suitable approaches of interviewing in context of Dhaka with their relative advantages and disadvantages. **(23⅓)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

B. Arch. Examinations

Sub : **HUM 315** (Logic and Philosophy)

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** questions.

1. (a) What is logic? Discuss the utility of studying logic.   **(10)**

   (b) What are the different rules of inference?   **(13⅓)**

2. (a) Define syllogism. Discuss different characteristics of syllogism.   **(10)**

   (b) Explain with example different rules of syllogism.   **(13⅓)**

3. (a) Explain with example 'definien's and 'defniendum'.   **(10)**

   (b) Give a critical exposition of different rules of definition.   **(13⅓)**

4. (a) Show the distinction between simple and compound statement.   **(8⅓)**

   (b) Construct truth-table for the following compound statement forms.   **(15)**

   (i) p∨q   (ii) p ⊃ q   (iii) p.q

SECTION – B

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

5. (a) What is philosophy? Discuss the nature of philosophy.   **(13⅓)**

   (b) Discuss epistemology, ethics and cosmology as scope of philosophy.   **(10)**

6. (a) Why is Thales called the father of philosophy?   **(10)**

   (b) Discuss different factors related to the origin of philosophy.   **(13⅓)**

7. (a) What is knowledge? How does locke refute the innate ideas of Descartes?   **(13⅓)**

   (b) Explain the fundamental principle of classical empiricism.   **(10)**

8. (a) What are the fundamental canons of NSPE code of ethics?   **(13⅓)**

   (b) Explain any two rules of practice related to NSPE code of ethics.   **(10)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1/ B. Arch. Examinations 2017-2018

Sub : **CE 467** (Structure IV : 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. Give examples of structures using Vierendeel truss.   **(8⅓)**

   (b) Vierendeel steel trusses, spaced 25′ apart are used to support a slab carrying a total unfactored load of 55 psf (Figure 01). Each truss consists of 12 panels 5 ft × 7 ft each. The outer diameter of the hollow circular truss members is 5″ and ultimate bending stress of the material is 46 ksi and the allowable bending stress is 27.6 ksi. Calculate the required moment of inertia of web bar between panel 2 and 3 of an exterior girder.   **(15)**

2. (a) Differentiate between pretensioning and posttensioning prestressing.   **(8⅓)**

   (b) A prestressed concrete beam supports a live load of 4 kN/m over a simply supported span of 8 m. The beam has an I-section as shown in Figure 02. (i) If the beam is to be prestressed by an effective presstressing force of 235 kN at a suitable eccentricity such that the resultant stress at the bottom fiber of the beam at the central of the span is zero. Find the eccentricity required for the force, (ii) If the tendon is concentric, what should be the magnitude of the prestressing force for the resultant stress to be zero at the bottom fiber of the central span section.   **(15)**

3. (a) Compare between prestressed and reinforced concrete.   **(7⅓)**

   (b) A posttensioned bonded concrete rectangular beam (12″×24″) has a prestress of 350 kips in the steel immediately after prestressing, which eventually reduces to 300 kips due to losses. The beam carries a concentrated live load of 10 kip in addition to its own weight of 300 plf (Figure-03). Compute the maximum fiber stresses in the concrete at the location of concentrated load. (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 that the intensity of hoop stress at crown for selfweight of dome is $\dfrac{wr}{2t}$ where the symbols carry the usual meaning.   **(18)**

   (b) Write down the names of at least five types of dome.   **(5⅓)**

CE 467(ARCH)

SECTION – B

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

5. (a) Write down the ACI provisions for ties. **(5)**

   (b) Design a square tied column with about 2.5% reinforcement to support an axial dead load of 280 kips and a live load of 220 kips using $f_c' = 3.5$ ksi and $f_y = 60$ ksi. Also design the necessary ties required and show the reinforcement details with neat sketches. **(18 ⅓)**

6. (a) Draw the failure modes of high-rise shear wall with neat sketches. **(5)**

   (b) A three storied shear wall is subjected to lateral forces are shown in Figure 4. The wall is 14 feet long and 9″ thick. Design the shear wall for both moment and shear showing the reinforcement details with neat sketches. All the relevant formulae are provided in Annexure 1. Use $f_c' = 3.5$ ksi and $f_y = 60$ ksi. **(18 ⅓)**

7. Draw the shear force and bending moment diagrams for all the girders of the frame as shown in Figure 5. Use Portal method. **(23 ⅓)**

8. 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 6. All the columns have same cross section and are uniform throughout the height. Use un-factored load. **(23 ⅓)**
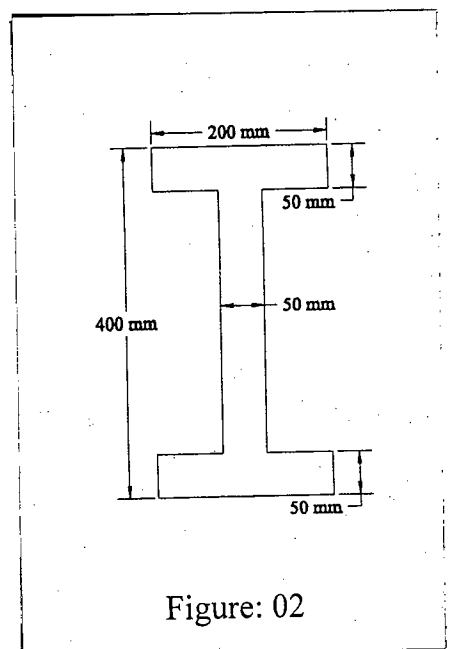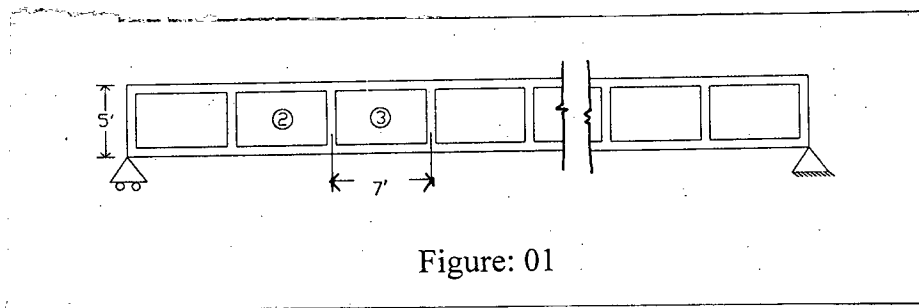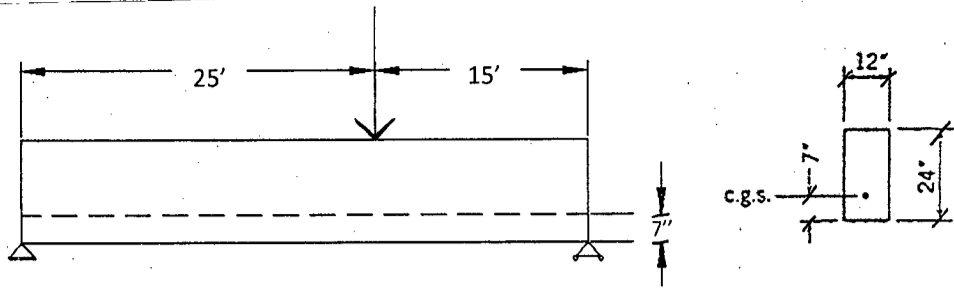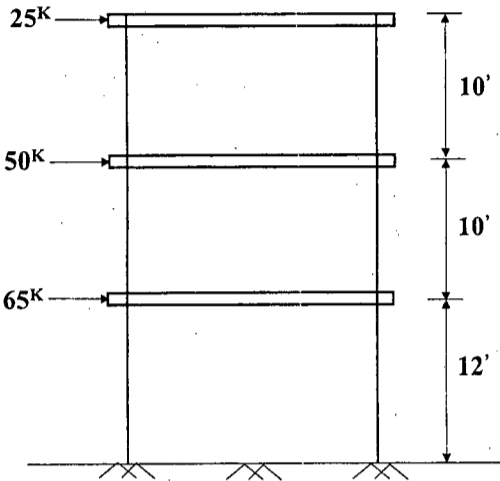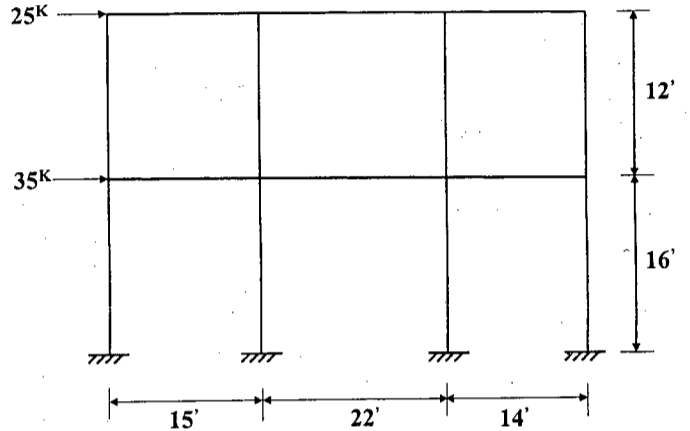

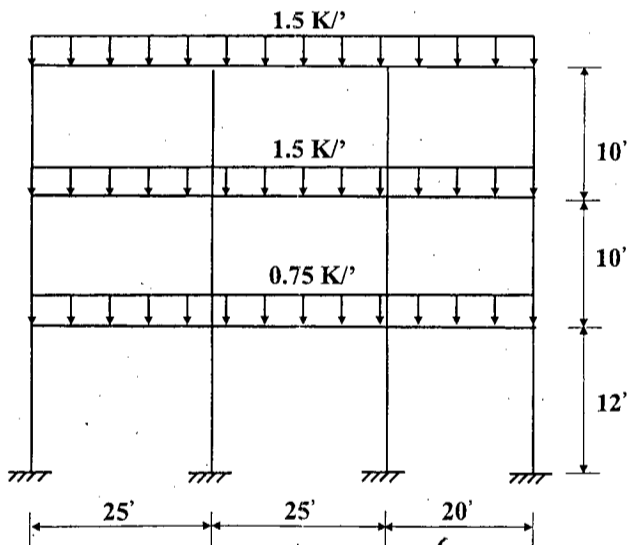
Figure: 01

Figure: 02

Figure: 03

Figure: 4

Figure: 5

Figure: 6

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

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

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

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

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

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

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

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

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

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

Annexure 1

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1   B. Arch. Examinations 2017-2018

Sub : **PLAN 411** (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) What is Planning? According to you, what are the five most significant planning approaches? –Explain.   **(4+12=16)**

    (b) The term 'urban area' is typically used as a synonym for 'city', though the two are not the same – Explain.   **(7⅓)**

2. (a) Discuss different levels of planning.   **(16)**

    (b) Why zoning is important? Justify your answer as an architect.   **(7⅓)**

3. (a) What is ethics in planning? What are the ethical principles in planning profession? **(2+5⅓=7⅓)**

    (b) Explain height zoning in both national and international context.   **(16)**

4. (a) What is a Masterplan? Discuss the pros and cons of masterplan.   **(3+13=16)**

    (b) Discuss different types of local plan.   **(7⅓)**

SECTION – B

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

5. (a) Briefly explain the barriers to effective planning in the context of Bangladesh.   **(10)**

    (b) Briefly explain the advantages and disadvantages of participatory planning process in the context of Bangladesh.   **(13⅓)**

6. (a) The inauguration of the Hatirjheel-Begunbari project promised enriching urban living in a densely-built, traffic congested and green-starved Dhaka city. The main objectives of Hatirjheel-Begunbari development project were to connect the eastern and western part of Dhaka city, reduce traffic congestion and improve the drainage and sewerage system. RAJUK (Rajdhani Unnayan Kartripakkha), 16 Engineering Construction Battalion of Army, Dhaka WASA (Dhaka Water Supply & Sewerage Authority) and LGED (Local Government Engineering Department) jointly implemented the project with BUET. Now, identify the different stakeholders of this project with relevant examples. Describe the benefits of stakeholder analysis.   **(7+8=15)**

PLAN 411
Contd ... Q. No. 6

(b) "Planning is a decision-making and resource allocation activity concerned with making choices and future options, taking into account of probabilities and the value of what may be achieved, and then securing the implementation of the chosen option" – Explain the statement with example. **(8⅓)**

7. (a) "Environment contains both predictable and unpredictable factors" – Do you agree with the statement? Justify your answer in the context of Bangladesh. **(5⅓)**

(b) Briefly explain the process of evaluating different alternative solutions. **(8)**

(c) Compare between "Sector Model" and "Multiple Nuclei Model" with diagram. **(10)**

8. (a) Compare between "Physical Planning" and "Economic Planning" with examples. **(6)**

(b) What do you understand by community participation in the planning process? Briefly explain the need of community participation in the context of Bangladesh. **(3+6=9)**

(c) Explain the stages of planning process with a neat diagram. **(8⅓)**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1   BARCH. Examinations 2017-2018

Sub : **ARCH 809** (Health Facilities Planning and Design)

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) Define "AmbulatoryCare". Identify the major functions and planning objectives of outpatient department. $(10\frac{1}{3})$

   (b) Discuss the general design principles of combined consulting and Examination room in the outpatient department. **(13)**

2. (a) Point out the advantage and disadvantage of single room layout in the inpatient unit. $(10\frac{1}{3})$

   (b) Illustrate different types of single room layout based on toilet location in the inpatient unit. **(13)**

3. (a) What are the objectives of Planning Operation Theater (OT)? Categorise different types of Planning model of Operation Theater (OT). $(10\frac{1}{3})$

   (b) Discuss different zones and basic design principles of operation theater complex. **(13)**

4. (a) Sketch the patient flow diagram of Emergency Department. **(5)**

   (b) Point out the functional relationship of Emergency Department with the different parts of hospital. $(5\frac{1}{3})$

   (c) Compare different types of floor plan layout of Emergency department. **(13)**

SECTION – B

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

5. Briefly discuss different stages of hospital planning process. Define the role of different planning teams in the hospital planning process. $(23\frac{1}{3})$

6. (a) Discuss about the design consideration that should be followed for planning a master plan of a district hospital. **(13)**

   (b) Assume that the population of a district is 2,50,000; Average length of stay in hospital is 5 days and Annual Rate of Admission is 1 per 20 population. Calculate the number of Bed when the occupancy is 80%. $(10\frac{1}{3})$

ARCH 809

7. Define with sketches different types of hospital building layouts applicable in developing countries. Discuss hospital planning and design considerations based on climate. **(23 ⅓)**

8. Write short notes on: Regionalized hospital system; public and Private Hospital; Average length of Stay; and Bed Occupancy Rate. **(23 ⅓)**