

Khulna University of Engineering & Technology

Department of Architecture

B. Arch 2nd Year 1st Term Regular Examination, 2023

Course No: URP 2125 Course Title: Fundamentals of Planning Process

Full Marks: 210

Time: 03 Hours

- N.B. i) Answer any three questions from each section in separate script
ii) Figures in the right margin indicate full marks



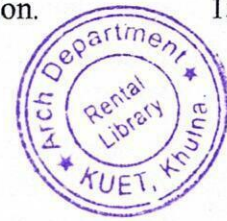
Section-A

1. a) Explain the evolution of the roles of planners from designers to negotiators over time. 12
b) Distinguish between the positivist and post-positivist paradigms of planning with relevant examples. 08
c) Suppose, a natural disaster is approaching in the coastal belt of Bangladesh. Explain whether a bottom-up approach would be more advantageous than a top-down approach for the government of Bangladesh for managing the natural disaster. 15
2. a) "Transactive planning is a tool for developing inter-personal relationships"- explain this statement. 10
b) Explain the principles of Incremental planning. 10
c) Which planning approach is better suited for Bangladesh's context, and what are the reasons behind the choice? Provide relevant examples? 15
3. a) What are the distinctions between comprehensive planning and rational planning? 10
b) Why comprehensive plan is known as land use plan? Explain with an example. 15
c) Create a diagram illustrating the process of rational planning. 10
4. a) How does advocacy planning propose managing the representation of different interest groups, including governmental entities? 15
b) What steps are involved in understanding the target audience in advocacy planning? Explain. 10
c) Illustrate the advocacy planning process with the help of a case study. 10

Section-B

5. a) Urban planning is related to three key aspects (Social, economic, and physical environment)- briefly explain the statement with proper example. 12
b) Show the settlement hierarchy with diagram. 08
c) Briefly explain the stages of conventional planning process with appropriate examples. 15

6. a) Explain your understanding on Metropolitan Area with relevant examples. 10
b) Briefly describe the planning disciplines. 10
c) Draw the Arnstein's ladder of citizen participation and explain it with relevant examples. 15
7. a) Illustrate the terms- Project, Programme, and Policy with relevant examples. 09
b) Differentiate structure plan and master plan with appropriate examples. 12
c) Elaborate the term VMOSA and describe it with relevant examples especially in context of Urban Planning. 14
8. a) What do you mean by primate city? What are the advantages and disadvantages of living in a primate city? 10
b) Briefly explain the evolution of planning commission in Bangladesh. 10
c) Write down the structure and functions of the planning commission. 15



Khulna University of Engineering & Technology

Department of Architecture

B. Arch 2nd Year 1st Term Regular Examination, 2023

Course No: Arch-2131

Course Title: Buddhist and Hindu Architecture
of Indian Subcontinent

Full Marks: 210

Time: 03 Hours

- N.B. i) Answer any three questions from each section in separate script
ii) Figures in the right margin indicate full marks

Section-A



1. a) Illustrate the elevation of an ideal Buddhist Stupa with proper annotations. 15
b) Elaborate the Great Bath of Mohenjodaro and discuss the sewerage system of the city. 20
2. a) Draw a neat elevation of typical window opening seen during the Andhra period. 10
b) Mention the main features of the Mauryan City of Pataliputra and elaborate its difference with the cities of Harappa and Mohenjodaro. 25
3. a) Discuss the different features of the Aryan Village Fence and Gateway with proper sketches. 10
b) Illustrate the layout of an ideal Vedic town explaining its different characteristics. 10
c) Write a short note on the excavated remains of Nalanda University illustrating the plan. 15
4. a) Explain the reasons behind choosing circle in plan of Asokan architecture. Illustrate how the cave architecture of Asokan period resemble thatch and timber huts of the Aryan Village. 20
b) Explain briefly with necessary details 'The Buddhist torana of Stupa at Sanchi'. 15

Section-B

5. a) Evaluate the notion of 'Vastu Purasa Mandala' and explain how it demonstrate temple architecture. 15
b) Discuss the principal elements of a Hindu Temple with proper sketches and references. 20
6. a) Why the era of 'Guptas' is referred to as the 'Golden Age' of Indian history, explain briefly. 10
b) Evaluate the basic construction system of Hindu temples and mention the materials used to build them, give necessary illustrations. 25

7. a) Mention the changes in 'Dravidian Order' during the Vijayanagar architecture style. 10
b) Demonstrate the architectural characteristics of the 'Vittala Temple'. 10
c) Evaluate the architectural design language of the 'Sun Temple'. Mention the factors which made this example unique. 15
8. a) Demonstrate the evolution of the design pattern of Mahendra group in Dravidian style. 20
b) Write short notes on the following topics (Any 03): 5x3
i) Chaitya types Rathas =15
ii) Draupadi Rathas
iii) Seni and Silpas
iv) Shore Temple



Khulna University of Engineering & Technology

Department of Architecture

B. Arch 2nd Year 1st Term Regular Examination, 2023

Course No: HUM-2125

Course Title: Principles of Economics

Full Marks: 210

Time: 03 Hours

- N.B. i) Answer any three questions from each section in separate script
ii) Figures in the right margin indicate full marks

Section-A



1. a) Explain the scarcity definition of Economics. 05
b) What are the basic problems that an economy faces? 15
c) What is law of demand? What determines the quantity of a goods that buyer demand? 15
2. a) Define perfect competition. Show the differences between monopolistic competition and monopoly. 05
b) Define short-run. Show with the aid of graph, the short-run equilibrium of a firm under perfect competition. 20
c) At what point, a firm in the perfect competition should shut-down. Explain. 10
3. a) What do you understand by factors of production? Explain fixed cost, variable cost and marginal cost of production. 15
b) "A rationale producer will always produce in stage-2." Explain the statement. 20
4. a) Define price-elasticity of demand. List the determinants of price-elasticity of demand with example. 15
b) Sajib trader is the producer of tea. The organization hires an economist to determine the demand for its product. After months of hard work the economist informs the firm that the demand for the firms tea is given by the following equation:
$$Q_x = 12000 - 5000P_x + 5I + 500P_c$$

where,
 P_x = Price charged for Sajib trader's tea
 I = Income per Capita
 P_c = Price of tea from competing tea producers

Assume the initial values of P_x , I and P_c are \$5, \$10,000 and \$6, respectively. Using the above information the manager wanted to determine:

 - i) What effect a price increased would have on Total Revenue (TR)?
 - ii) Evaluate how sales of the tea would change during a period of rising income.
 - iii) Assess the probable impact if competing tea producers would raise their price.

Section-B



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|----|--|----|
| 5. | a) Distinguish between GNP and GDP. | 05 |
| | b) Describe the methods of measuring national income. | 15 |
| | c) Explain what types of problems arise in calculating national income. | 15 |
| 6. | a) Formulate a hypothetical saving schedule. From that schedule draw a savings curve and interpret it. | 15 |
| | b) Discuss the different types of propensities of consumption. | 10 |
| | c) How do savings and investment relate to each other in classical system? Illustrate. | 10 |
| 7. | a) Define inflation. How does inflation affect the economy? | 15 |
| | b) Discuss the reasons of inflation in a developing country like Bangladesh. | 10 |
| | c) How can you suggest to control inflation through monetary policy? | 10 |
| 8. | a) Distinguish between expansionary monetary policy and contractionary monetary policy. | 10 |
| | b) Illustrate the instruments/tools of trade policy. | 15 |
| | c) Why does government take fiscal policy in an economy? Describe. | 10 |

Full Marks: 210

Time: 03 Hours

- N.B. i) Answer any three questions from each section in separate script
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Section-A

1. a) Describe in detail the 'Purpose of Foundation'. Why is it important to explore the site before choosing the appropriate foundation? 09+14=23
b) Write short notes on: 03x4=12
i) Bearing pile
ii) Sheet pile
iii) Anchor Pile
iv) Friction pile
2. a) A reinforced concrete footing (fig. 02) supports 12"x12" column reaction $P=130$ kips at the top of the footing. Based on the soil test, the allowable bearing capacity of the soil is 5 ksf. Check the adequacy of the footing based on the bearing pressure. 035

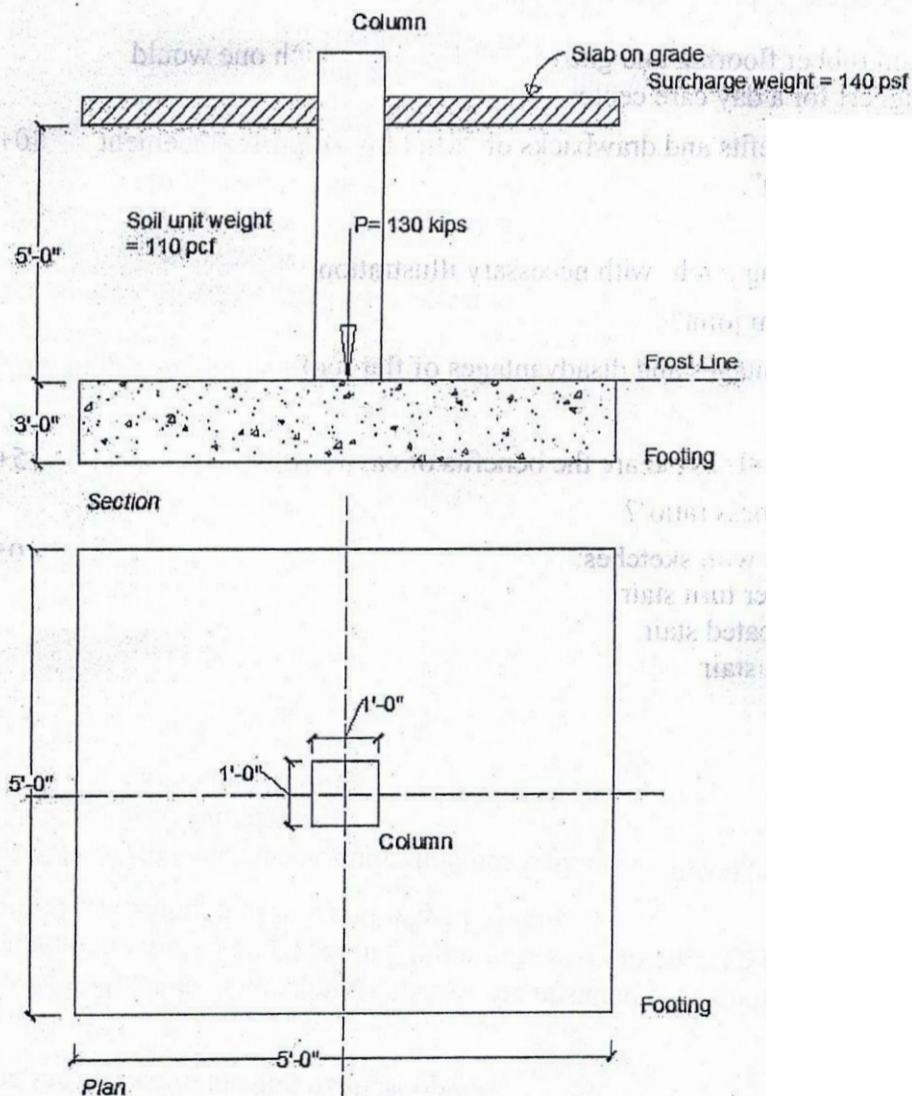


Figure: 02

- | | | | |
|----|-----|--|---------|
| 3. | a) | Briefly discuss Timber Pile (with sketches). Discuss the advantages and disadvantages of Concrete Piles compared to Timber Piles. | 25 |
| | b) | Briefly describe the type of materials for DPC (Damp Proof Course) and the rules of choosing the best option. | 10 |
| 4. | a) | Given no budgetary constraints and no site obstacles, which form of foundation would you prefer in Khulna zone to construct a typical six-storied residential building and why? Explain. | 15 |
| | b) | Briefly describe the construction methods with necessary sketches of: | 10x2=20 |
| | i) | Raft foundation | |
| | ii) | Combined Footing | |

Section-B

- | | | | |
|----|------|--|----------|
| 5. | a) | What points should be kept in mind while fixing the positions of doors and windows? | 15 |
| | b) | Define the following terms with sketches: | 05x4=20 |
| | i) | Sash window | |
| | ii) | Bay window | |
| | iii) | Dormer window | |
| | iv) | Pivoted window | |
| 6. | a) | Between rubber flooring and glazed tile flooring, which one would you suggest for a day care center and why? | 15 |
| | b) | Describe the benefits and drawbacks of "Mud flooring" and "Cement Concrete flooring". | 10+10=20 |
| 7. | a) | Explain 'Relieving Arch' with necessary illustration. | 10 |
| | b) | What is expansion joint? | 07 |
| | c) | Explain the advantages and disadvantages of flat roof. | 18 |
| 8. | a) | What is cavity wall? What are the benefits of cavity wall? | 5+10=15 |
| | b) | What is 'Slenderness ratio'? | 05 |
| | c) | Write short notes with sketches: | 05x3=15 |
| | i) | Quarter turn stair | |
| | ii) | Bifurcated stair | |
| | iii) | Spiral stair | |



Khulna University of Engineering & Technology

Department of Architecture

B. Arch 2nd Year 1st Term Regular Examination, 2023

Course No: CE 2125 Course Title: Structure I: Mechanics

Full Marks: 210

Time: 03 Hours

- N.B. i) Answer any three questions from each section in separate script
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Section-A

1. a) Describe different types of force system with appropriate figures. 10
 b) Draw the free body diagram of the members as shown in the following figure (Figure 1b). 10

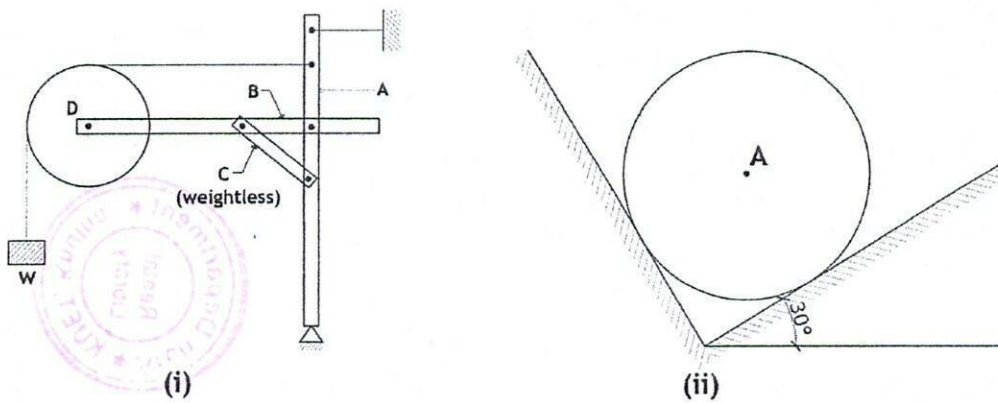


Figure 1(b)

- c) A 3000 lb wheel with a radius of 4 ft. is acted upon by a force F (Figure 1c), 15
 which tends to pull the wheel over the obstruction at A. At the instant the wheel is about to move, the pressure between the wheel and the ground is zero. What is the magnitude of the force F at this instant if $\theta = 35^\circ$?

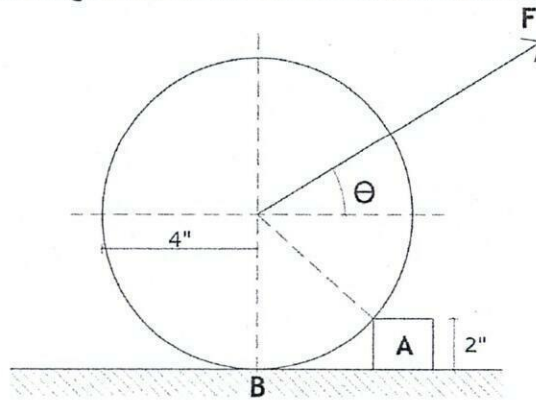


Figure 1(c)

2. a) Define the following terms: 12
 i. Two force member
 ii. Moment of a force
 iii. Shear force
 iv. Bending moment
 b) Describe the principle of transmissibility of force. 08
 c) The permissible internal force on timber AC (Figure 2c) is 6 Kips. If $\theta = 28^\circ$, 15
 what maximum safe load may be suspended at C?

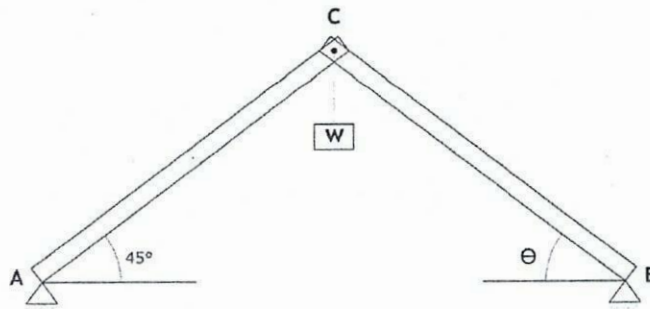


Figure 2(c)

3. a) Differentiate between 16
- i. Engineering stress & true stress
 - ii. Strain & deformation
 - iii. Elasticity & Plasticity
 - iv. Proportional limit & Elastic limit
- b) Write down the name of various types of beams with simple sketches. 04
- c) A 4700 lb sphere rests on a smooth plane inclined at an angle $\theta = 45^\circ$ with the horizontal and against a smooth vertical wall. What are the reactions at the contact surfaces A and B? (Figure 3c) 15

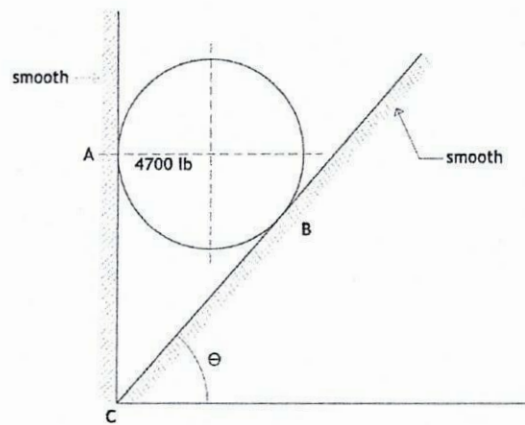


Figure 3(c)



4. a) What is support? Write the various types of support and their properties. 09
- b) Draw comparative stress-strain diagram for different materials. 06
- c) A simply supported beam is loaded as shown in the figure below (Figure 4c). Determine the support reactions. Also determine the shear force and bending moment at section (i)-(i) and (ii)-(ii) 20

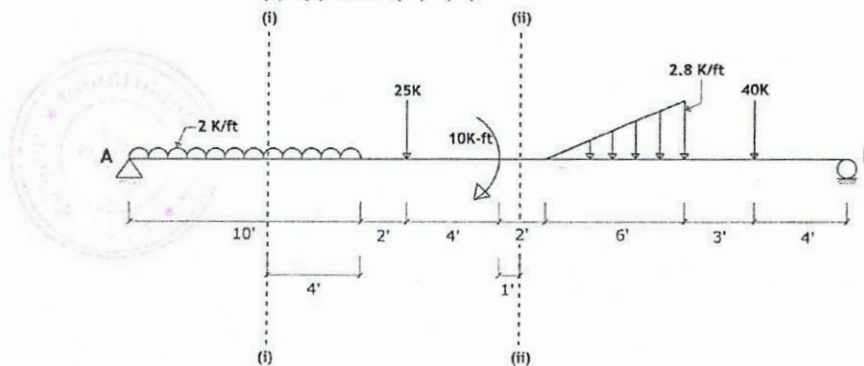


Figure 4(c)

Section-B

5. a) Find the centroid of a "circle" of radius r & the central angle is 2β . 10
- b) Find out the centroid of the shape formed from the equations (\bar{x}, \bar{y}) 17
- $$y^2 = 25x$$
- $$x^2 = 16y$$
- c) Define centroid & centre of mass & elaborate with examples. 08

6. a) Prove with neat sketch that for any of the arbitrary shape, the centre of gravity is 10
 $\bar{x} = \int xdw/w$ &
 $\bar{y} = \int ydw/w$ where, the symbols bear their usual meaning.
- b) Find out the location of centroid (\bar{x}, \bar{y}) for a triangle. 10
- c) Find the centroid of the unshaded portion of the following figure (Figure 6c). 15
 (only for x axis).

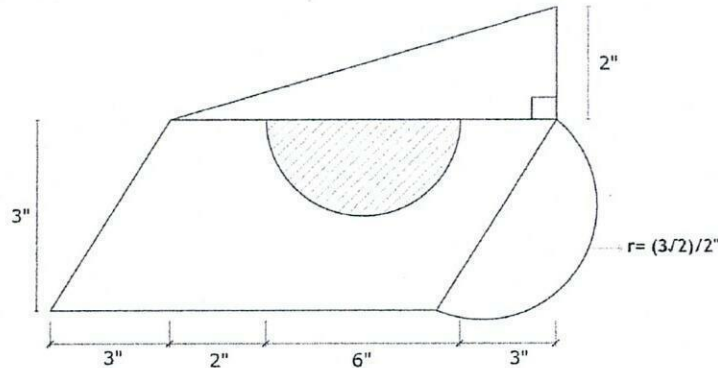


Figure 6(c)

7. a) Determine the I_x and I_y for the following shape (Figure 7a). 15

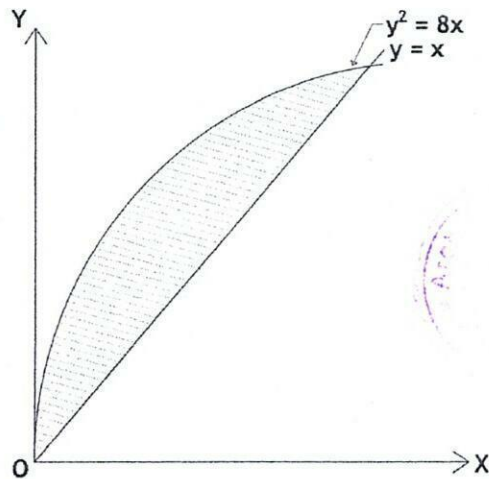


Figure 7(a)

- b) Determine the moment of inertia of a circular area about x axis whose radius is "r". 10
- c) Prove that $I = \bar{I} + Ad^2$ where the symbols bear their usual meaning. 10
8. a) Show for a triangle the moment of inertia $I_x = bh^3/12$ where the symbols bear their usual meanings. 10
- b) Determine the I_x, I_y, \bar{I}_x and \bar{I}_y for the following shape (Figure 8b). 25

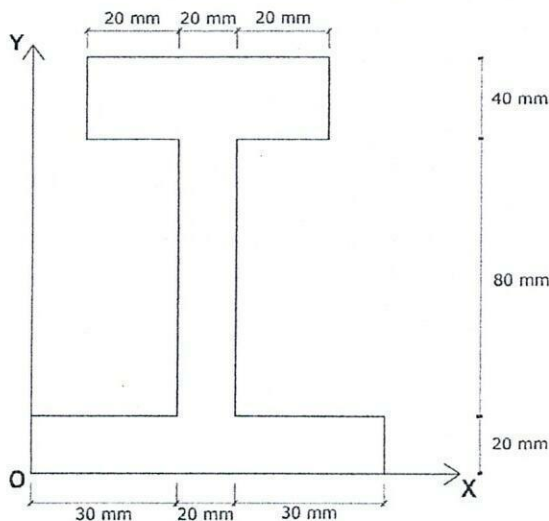


Figure 8(b)