

Khulna University of Engineering and Technology

Department of Architecture

B.Arch 2nd Year 1st Term Regular Examination, 2018

Course no: Arch-2131 Course title: Buddhist and Hindu Architecture of Indian Subcontinent

Full Marks: 210

Time: 3 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 influence of local resources to develop physical structure and spatial pattern through illustrating the Indus Civilization. 15
- b. Write short note on (any two): 2X10
 - a) Private house form (Indus period)
 - b) Corbel arch
 - c) Construction techniques of Indus Civilization
2. a. Write down the basic architectural characteristics in Indian subcontinent. 10
- b. How the thoughts of Vedic period made crucial contribution to develop Hinduism in Indian Subcontinent. 15
- c. Describe general characteristics of capital of the Mauryan dynasty. 10
3. a. Illustrate Sanchi stupa with neat sketches. 12
- b. Sketches Ashokan pillars with example. 13
- c. Describe the concept that influenced to develop rock-cut-architecture with neat sketches. 10
4. a) Why Shunga period termed as platform to develop architecture in Indian subcontinent. 15
- b) 'Shunga period reached peak at architectural practice in that time', interpret this statement with examples. 20

Section-B

5. a) What do you mean by metamorphosis of sacred places? Use proper sketches to explain. 15
- b) Identify the factors that makes Gupta period as "The Golden Age" of Indian History of Temple Architecture. 20
6. a) What are the spiritual symbols of temple architecture and how these symbolism can be used in designing a temple? 15
- b. Illustrate the architectural characteristics of Sun temple with proper sketches. 20
7. a) What is Vastusastra? How Vastusastra is related with the building art and architecture? 10



- b) Sketches several phases of brackets developed in Pallava Dynasty. 05
- c) Geometry of Hindu temple differed from region to region but Vastu purusha madala was the basic geometry for temple architecture. To what extent do you agree with the statement? Use proper illustration and references for your position about the statement. 20
8. a) Distinguish architectural characteristics of temple between Pallava and Chola dynasty. Use sketches if needed. 15
- b) 'Pandyas had major contribution on the architecture of Dravidian period'- justify the statement using proper examples and sketches. 15
- c. Draw the principal parts of Orissan Temple. 05

Khulna University of Engineering and Technology
Department of Architecture
B.Arch 2nd Year 1st Term Regular Examination, 2018
Course no: CE-2125 Course title: Structure-I: Mechanics

Full Marks: 210

Time: 3 Hours

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

ii) Figures in the right margin indicate full marks.

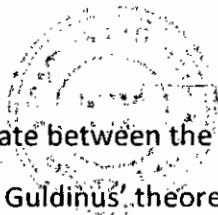
Section-A



1. a) Define force: Write down the characteristics of force. 05
- b) Describe different force system. 10
- c) For the following figures, draw free body diagram of the members. 20
(Check figure section)
2. a) Describe transmissibility of a force. 08
- b) In following figure, neglecting all friction so that the reactions are normal to the surfaces, find the force F on top of the wedge. Assume that each body is subjected to a concurrent force. (Check figure section) 17
- c) Determine the magnitude and sense of the following force system. (Check figure section) 10
3. a) Define the following terms. 08
- I. Free Body.
 - II. Two force Member.
 - III. Moment
 - IV. Moment arm.
- b) Describe Varignon's Theorem. 12
- c) Determine the largest weight W that can be supported by the three wires shown in figure below. The stress in wires A, B, and C is not to exceed 30ksi, 35ksi, and 50ksi. The diameter of each wire is 0.8 inch. (Check figure section) 15
4. a) Differentiate between -- 08
- I. Engineering stress and true stress
 - II. Strain and Deformation
 - III. Elasticity and Plasticity
 - IV. Proportional limit and Elastic limit.
- b) Draw comparative stress-strain diagram for different materials. 05
- c) Discuss different types of stress. 07

d) The following observations were made during the tension test on a mild steel specimen of 15 32mm in diameter and 200mm long. Elongation with 120KN load (within proportional limit)-
 $\delta l = 0.0304$ mm, Yield load=440KN, Maximum load=550 KN, Length of specimen at fracture=248mm.

Determine: i) Modulus of elasticity, E, (ii) Yield stress, f_y , (iii) Ultimate stress, f_{ult} (iv) % elongation

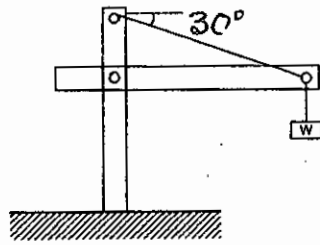


Section-B

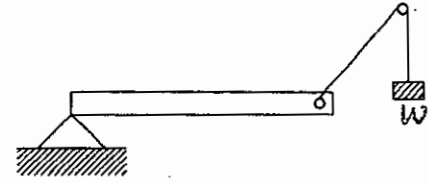


5. a) Differentiate between the terms 'centroid' and 'centre of gravity'. State and prove 'Pappus and Guldinus' theorems. 16
- b) Locate the centroid of an area bounded by a parabola, $x^2 = 2ay$, the line $y = 0$ and $x = 6$ 19
6. a) Locate the centroid of a triangle from its base. 15
- b) Compute the centroid of the shaded area shown in figure below. (Check figure section) 20
7. a) Define 'Moment of Inertia'. Show that the polar moment of Inertia is the summation of two rectangular moment of Inertia. 12
- b) Determine the moment of inertia of area A_1 and A_2 by direct integration method of the following figure. (Check figure section) 23
8. a) Explain the transfer formula of moment of inertia. 10
- b) Determine the maximum and minimum moment of inertia of the following figure. (Check figure section) 25

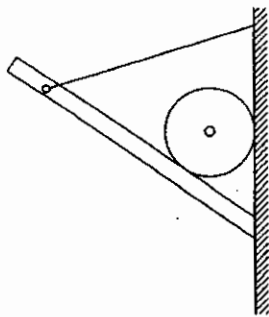
List of Figures



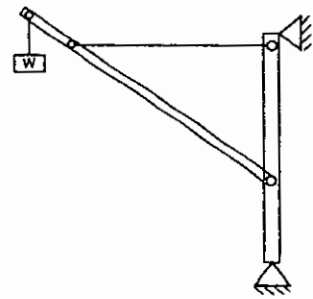
(i)



(ii)

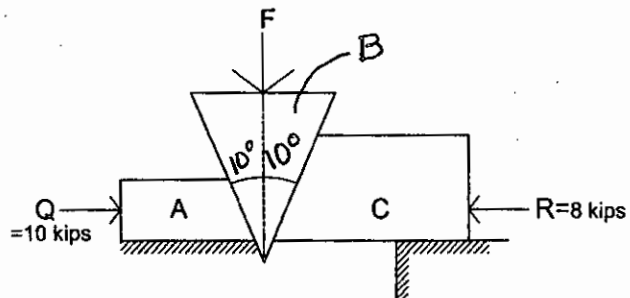


(iii)



(iv)

Figure for question No:1(c)



$W_A = 2 \text{ kips}$
 $W_B = 1 \text{ kips}$
 $W_C = 6 \text{ kips}$

Figure for question No:2(b)

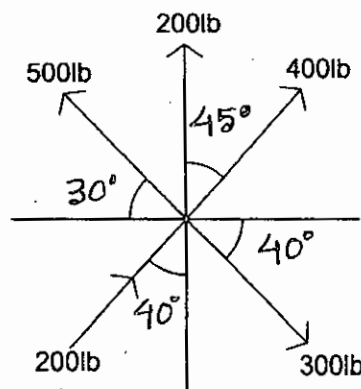


Figure for question No:2(c)

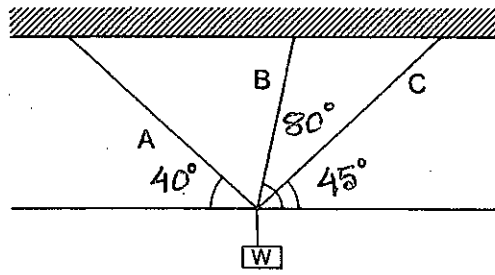


Figure for question No:3(c)

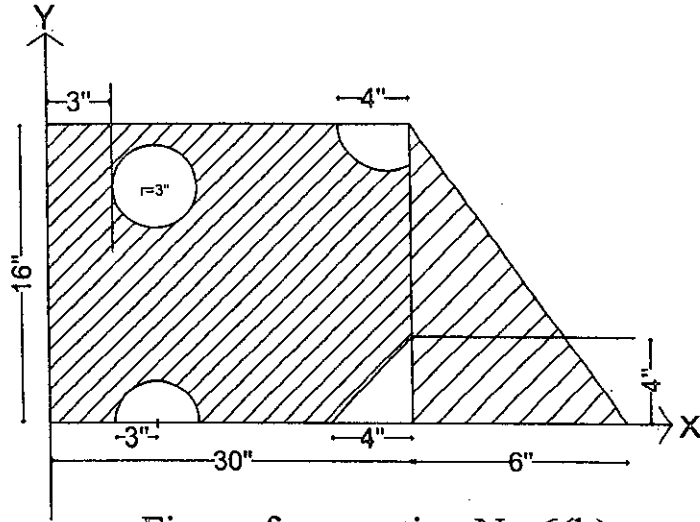


Figure for question No:6(b)

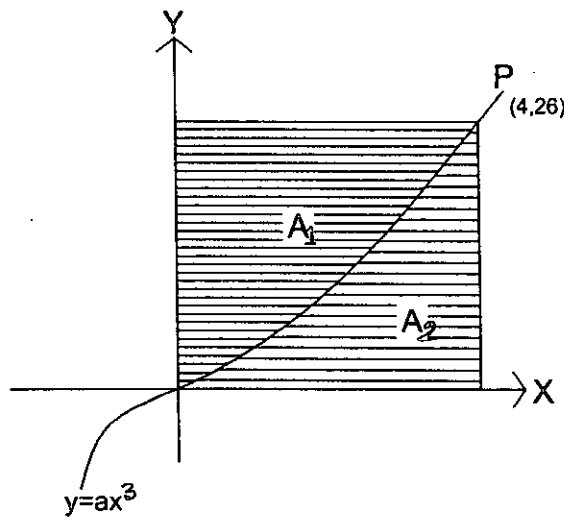


Figure for question No:7(b)

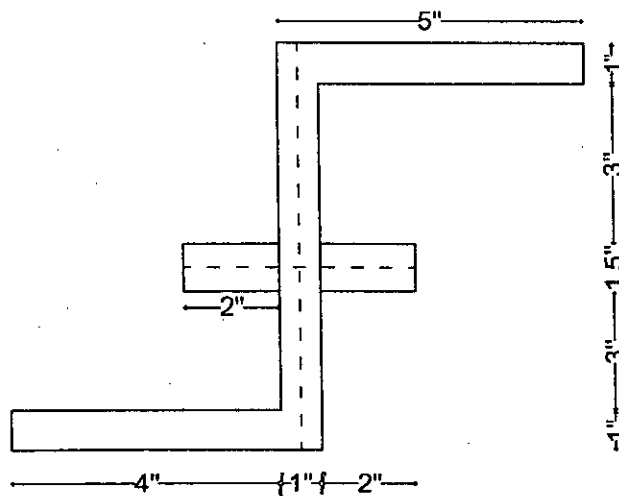


Figure for question No:8(b)

Khulna University of Engineering and Technology

Department of Architecture

B.Arch 2nd Year 1st Term Regular Examination, 2018

Course No : Arch 2161 Course Title : Construction Details

Full Marks 210

3 Hours

Time

N.B Answer any Three questions from each section in separate script.

Figure in the right margin indicate Full Marks.

Section A



- | | | |
|---|--|----|
| 1 | a. State Three basic purposes of foundation | 05 |
| | b. In what condition Grillage Foundation is suitable? Briefly discuss Steel Grillage Foundation with necessary sketches. | 20 |
| | c. In soft soil and under heavy loading condition, if you have to place walls or columns close to the property line, what type of foundation will you choose? Why? | 10 |
| 2 | a. Describe (with sketches) a type of shallow foundation system that would support heavy structural load in soft clay or marshy site. | 25 |
| | b. Discuss Combined Footing. | 10 |
| 3 | a. Briefly discuss Friction Piles and Bearing Piles. | 15 |
| | b. Make a comparative discussion between Precast Concrete Piles and Cast-in-Situ concrete Piles. | 20 |
| 4 | Write Short Notes on, (any three) | 35 |
| | i. Damp Proof Course | |
| | ii. R.C.C Column Footing | |
| | iii. Timber Piles | |
| | iv. Inverted Arch Footing | |

Section B

- | | | |
|---|--|------|
| 1 | a. Which Features can help differentiate a Residential Building Stair from a Public Building Stair? Which features of the two types of stair would you customize and why? Give your opinion with sketches. | 20 |
| | b. Explain the following terms with sketches
i).Nosing ii).Stringer iii)Newel iv)Scotia v)Waist | 15 |
| 2 | Write short notes on (any five) | 7X5= |
| | a. Bifurcated Stair | 35 |
| | b. Swing Door | |
| | c. Pivoted Window | |
| | d. Expansion Joints | |
| | e. Hip Roof | |
| | f. Slenderness Ratio | |
| | g. Curtain Wall | |

- 3 a. Which factors are important during selection of flooring material? 20
Explain with example.
- b. Between marble flooring and cement concrete flooring which one would you suggest for a hospital and why? 15
- 4 a. Explain the general features of Cavity Wall with neat sketches. 15
- b. What are the benefits of Cavity Wall? 10
- c. Explain Splayed Step and Winder Step with necessary sketches 10



Khulna University of Engineering and Technology

Department of Architecture

B.Arch 2nd Year 1st Term Regular Examination, 2018

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

Full Marks 210

Time

3 Hours

N.B Answer any Three questions from each section in separate script.

Figure in the right margin indicate Full Marks.



Section A

- | | | |
|---|--|----|
| 1 | a. Elaborate the concept of Planning. 'Planning is more needed in a developing country like Bangladesh'-Explain. | 10 |
| | b. How will you define 'Paradigm shift in Planning'-Provide an example with the help of planning theories. | 10 |
| | c. Compare between the Positivism and Post Positivism paradigms of Planning Theories | 15 |
| 2 | a. 'Comprehensive Planning is a rigid landuse plan, which is difficult to apply in the real world scenario'-Justify the statement with proper example. | 15 |
| | b. Mention some criticisms of the Rational Planning Theory. | 10 |
| | c. Make a comparison between Top-down and Bottom up approach of Planning. Which is better? | 10 |
| 3 | a. 'Transactive Planning is a tool for developing inter-personal relationship'- explain the statement. | 10 |
| | b. What is your understanding about Advocacy Planning? How a planner can play the role of an advocate in this planning? Provide an example. | 15 |
| | c. What are the fundamental element of Radical Planning approach according to the Grabow and Heskin? | 10 |
| 4 | a. Explain the concept SITAR in planning theory. Provide a short overview of each planning approaches used in SITAR model. | 15 |
| | b. Explain the Mixed Scanning Approach of planning with the help of an appropriate example. | 10 |
| | c. Write short notes (any two) | 10 |
| | 1. Factory Town | |
| | 2. Negotiator | |
| | 3. Limitation and Strength of Advocacy Planning. | |
| | 4. Rational Planning Vs Incremental Planning. | |

Section B

- | | | |
|----|---|----|
| 5. | a. 'Urban Planning is related to three key aspects' (i.e Social, Economic and Physical environment)- Briefly explain the statement with proper example. | 10 |
| | b. 'Planning has three dimensions in terms of Space , Sector and Time.' Explain with relevant examples in the context of Bangladesh. | 15 |
| | c. What are the conditions to be an urban area (Municipality) as per as Pourashava Ordinance 2009 ? | 10 |



6. a. Briefly explain the terms Vision, Mission, Goal and Objectives with relevant. Examples especially in context of Urban Planning. 20
- b. What is understood by Development Plan? Draw a schematic diagram for four stages plan for a city. (A city considered at a local scale.) 15
7. a. The lifecycle of urban development contains several phases. Briefly explain the phases with pertinent examples. 20
- b. Differentiate Structure Plan and Master Plan with appropriate examples. 15
8. a. Draw the figure 'A ladder of citizen participation' and explain the stages with relevant examples. 20
- b. 'Plan'(in context of urban and regional planning) should be Specific, Measurable, Achievable, Realistic and Time Bound'-Why? 15

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B.Arch 2nd Year 1st Term Regular Examination, 2018

Course no: Hum 2125 Course title: Principles of Economics

Full Marks: 210

Time: 3 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. Why does economic problem arise in a society? 15
b. Discuss the process of solving basic economic problems of a society under different economic system. 20
2. a. Draw a curve which explain demand law. 10
b. What is meant by extension and contraction of demand? 10
c. Show the equilibrium situation of a market under the functions, 15
 $Q_d = 60 - 5P$ and $Q_s = -10 + 5P$
3. a. What determines the quantity of a good that sellers supply? 10
b. Explain the relationship between total utility and marginal utility. 10
c. Explain with the help of indifference curves how a consumer allocates his income in order to attain equilibrium. 15
4. a. 'Slope of budget line is the ratio of Price of two products' - Explain. 10
b. Explain the relation of AC and MC. 10
c. Explain the following terms- 15
(i) AFC (ii) TFC (iii) AVC (iv) AC

Section-B

5. a. What is GDP? Why do economists use real GDP rather than nominal GDP to gauge economic well-being? 15
b. Which contributes more to GDP - the production of an economy car or the production of a luxury car? Why? 10
c. List the four components of GDP. Give an example of each. 10
6. a. Define inflation. Discuss the causes of inflation. 20
b. "True inflation begins only after the level of full employment" - Explain. 15
7. a. What is the role of Financial system? What is stock? What is Bond? How are they different? How are they similar? 20
b. Define private savings, public savings, national savings, and investment. How are they related? 15
8. Write short notes on the followings.
a. The GDP Deflator. 10
b. The consumer price index (CPI). 10
c. Market for loanable funds. 15