

Khulna University of Engineering & Technology

Department of Architecture

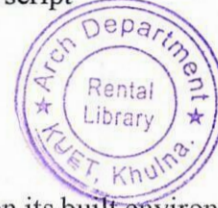
B. Arch. 4th Year Backlog Examination, 2022

Course No: Arch 4131 Course Title: Architecture of Bengal

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 effects of the geo-climatic factors of Bengal on its built environment. 25
b) What is Rural Social Structure? Explain briefly. 10
2. What is the conventional architectural style of houses in Bengal? Evaluate the fundamental components of a house and provide a rationale for their importance. 10+25
=35
3. Write short notes on: 2x17.5
= 35
 - a) Bengal Renaissance
 - b) Evolution of individual urban household in Bengal
4. a) How does religion act as one of the major factors for guiding the formations of rural houses in Bangladesh? Explain. 15
b) What are the 'Social' and 'Cultural' aspects those are inherent in our urban apartments? 20

Section-B

5. a) Do you think 'Mahasthangarh is an influential excavation that holds significant Mauriyan influence'? - Justify your response with necessary sketches. 25
b) Write short note on "Nalanda Vihara" 10
6. a) Briefly describe "Rekha Deul" with neat sketches. 25
b) Write short note on "Bangla" type temple with sketches. 10
7. a) Briefly describe the architectural characteristics of "Kantajee Temple" with neat sketches. 25
b) What roles do Acharyas and Sutradharas play in the temple constructions? 10
8. a) What are the styles of Hindu temples in Bengal? 10
b) Briefly describe "Khelaram Datar Bari Temple" with neat sketches. 25

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Department of Architecture

B. Arch 4th Year Backlog Examination, 2022

Course No: Arch-4271

Course Title: Architectural Conservation

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) | Delineate the conservation principles for sustainable management of Historic Environment. | 15 |
| | b) | Revitalization or rehabilitation, which one will be appropriate for conserving Chuna Khola Mosque? Describe according to the aim of particular method. | 20 |
| 2. | a) | What is preservation? Explain three steps of preservation in brief. | 15 |
| | b) | Distinguish between preservation and conservation process with examples. | 20 |
| 3. | a) | Write short notes on: | 2x10 |
| | | i. Mechanical and chemical stitching | = 20 |
| | | ii. Typological approach of Adaptive Reuse | |
| | b) | Briefly illustrate the traits of Adaptive Reuse conservation process. | 15 |
| 4. | a) | What is Adaptive Reuse? | 05 |
| | b) | “Community participation and active engagement are prerequisite for successful Revitalization processes”, illustrate the statement with example. | 30 |

Section-B

- | | | | |
|----|----|---|-------|
| 5. | a) | Write short notes on: | 7.5x2 |
| | | i. Tangible and Intangible heritage | = 15 |
| | | ii. Policies of Athens Charter (1931) | |
| | b) | Discuss the conservation processes in details. | 20 |
| 6. | a) | Write down the conservation objectives. | 10 |
| | b) | Elaborate the conservation related issues in the context of Bangladesh, give proper examples. | 25 |
| 7. | a) | Give a brief overview of legislation to heritage building in light of Imarat Nirman Bidhimala. | 12 |
| | b) | Detail out a renowned case of international conservation and discuss the protection procedures for the structure. | 23 |
| 8. | a) | Explain the repairing process of the structural elements of a heritage building with necessary details. | 25 |
| | b) | Distinguish between Restoration and Reconstruction. | 10 |

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B. Arch. 4th Year Backlog Examination, 2022

Course No: Arch 4221 Course Title: Housing

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) | Define the term 'Urbanization'. | 05 |
| b) | Write short notes on: | 10x3 |
| | i) Floating homelessness | =30 |
| | ii) Situated homelessness | |
| | iii) Potential homelessness | |
| 2. a) | Define 'Modernity in Housing'. | 05 |
| b) | Describe 'Rural-Urban Migration' as a housing problem focusing on: | 15x2 |
| | i) Rural push factor | =30 |
| | ii) Urban pull factor | |
| 3. a) | Describe briefly about the misconception of housing problems. | 15 |
| b) | What are the differences between 'Architecture' & 'Buildings' according to Sir Nikolaus Pevsner? | 05 |
| c) | Describe the attributes of "Home" according to Hayward. | 15 |
| 4. a) | Describe the reasons behind Bangladesh's 'Real Estate Industry' emergence. | 15 |
| b) | Briefly discuss the economic & social roles of Human Settlements. | 20 |

Section-B

- | | | |
|-------|--|----|
| 5. a) | "The concept of social-ecological systems is an integrated approach to humans in nature and related to the concept of resilience."- Discuss in your own words. | 25 |
| b) | Discuss the principles of Core Housing Approach. | 10 |
| 6. a) | Elaborate the term 'Affordable Housing'. | 10 |
| b) | Discuss the key ideas we need to consider while focusing on 'Affordability' in housing design. | 25 |
| 7. | Elaborate different types of housing delivery systems in Bangladesh. Provide examples with proper justification. | 35 |
| 8. a) | Explain 'Community Resilience'. | 10 |
| b) | Briefly discuss the five forms of capitals available in households with relevant examples. | 25 |

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B. Arch. 4th Year Backlog Examination, 2022

Course No: CE 4125 Course Title: Structure V

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) What is truss? What are the characteristics of truss? 08
b) What are the differences between joint method and section method for truss analysis? Explain with example. 08
c) Determine the force member of CF, GF, and CD of the following truss. 19

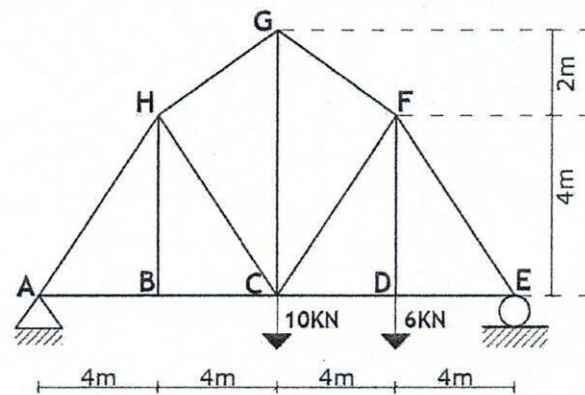


Figure: 01(c)

2. Calculate the forces of all members of the following truss. 35

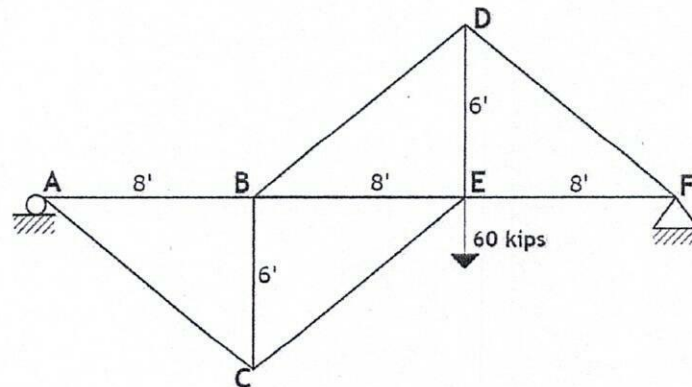


Figure: 02

3. a) A circular foundation of 2m diameter in plan. The soil supporting the foundation has a friction angle, $\phi = 22^\circ$ and $C' = 30 \text{ KN/m}^2$. The unit weight of soil is 20 KN/m^3 . Determine the allowable gross load on the foundation with a factor of safety is 2.5. Assume that the depth of foundation is 1.5m and that general shear failure occurs in soil. (Hints: for $\phi = 22^\circ$, $N_c = 20.27$, $N_q = 9.19$ and $N_\gamma = 5.09$) 15
b) Define the following terms: 09
i) Ultimate bearing capacity.
ii) Consolidation settlement.
iii) Immediate settlement.
c) What are the types of shallow foundation describe briefly. 11
4. a) What are the types of shallow foundation? Describe briefly. 09

- b) What is pile foundation and under what conditions, pile foundation is used? 08
- c) Write short notes on: 18
- End bearing pile
 - Tension pile
 - Friction pile
 - Anchor pile
 - Cohesion pile
 - Pre-cast and in-situ pile.



Section-B

5. a) Where and when steel structures are used? Write down the advantages of steel structures over concrete structures. 13
- b) Determine $\phi_b M_n$ and $\frac{M_n}{\Omega_b}$ for the $W24 \times 176$ ($F_y = 50$ Ksi, $F_u = 65$ Ksi, $b_f = 1.34$ in and $S_x = 450$ in³) beam shown in figure (5b) for the following situations: 22
- Using the AISC specification and assuming two lines of 1-in bolts in standard holes in each flange (as shown in figure 5b).
 - Using the AISC specification and assuming four lines of 1-in bolts in standard holes in each flange.

Given, Maximum Material Thickness (in) for Punching Fastener for A36 steel is $(d + 1/8)$ in.

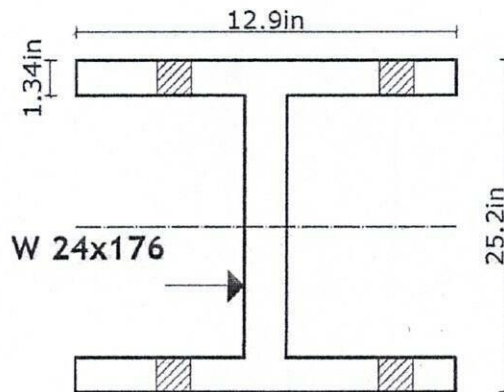


Figure: 05(b)

6. a) Write down the material specifications for the following notations: 10
- 610UB125
 - 150x150x16 EA
- b) Write short note on cold formed steel sections. 05
- c) Is the compact and laterally braced section shown in the following figure sufficiently strong to support the given loads if $F_y = 50$ Ksi? Check the beam with both the LRFD and ASD methods. 20

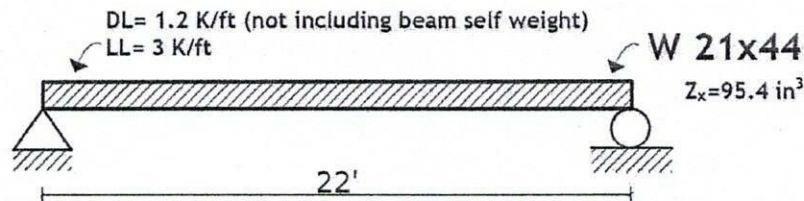


Figure: 06(c)

7. a) What is effective length of column? Show the variation of effective length of column with end support condition. 10
- b) Write down the AISC specifications for designing column strength with neat sketch. 12
- c) Calculate the design strength of $W14 \times 74$ with length of 20 ft and pinned ends. A36 steel is used. 13

8. a) What is pre-stressed concrete? Write down the advantages and disadvantages of pre-stressed concrete over RCC member. 10
- b) Write down the difference between compact and non-compact section. 05
- c) A post tensioned beam of 60 ft span length and the pre-stressing force amount is 1250 Kip applied according to the figure. The beam carries a uniform load of 2.5K/ft including its self-weight. Calculate the stresses in the top and bottom fibers at the mid-span section. Also show the stress diagram. 20

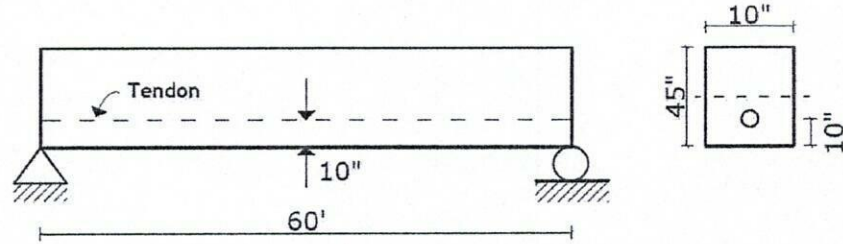


Figure: 08(c)