

Khulna University of Engineering & Technology

Department of Architecture

B. Arch 2nd Year 2nd Term Regular Examination, 2019

Course No.: Arch 2231

Course Title: Islamic Architecture in the Indian Subcontinent

Full Marks: 210

Time: 03 Hours

Section-A

1. a. What is Islamic Architecture? How would you define the three styles of Islamic Architecture in the Indian Sub-Continent? (02+09)
- b. What was the reason behind the construction of Qutb Minar? What function did it serve as a built structure? (02+02)
- c. Discuss the architectural characteristics of Qutb Minar with neat sketches. 20

2. a. Illustrate the following characteristics of Alai Darwaja with neat sketches. (05X02)
 - i. Blind Windows
 - ii. Horse-shoe shaped Arch
 - iii. Spear-head Fringe
 - iv. Socket
 - v. Jali
- b. Indicate the purpose behind the construction of the City of Tughlaqabad. (05+20)
Discuss the architectural features of the city with neat sketches.

3. a. How would you characterize the Tomb of Telengani as a significant example of Tughlaq dynasty? Explain with neat sketches. (15+10)
- b. Draw the plan and section of Hawa Mahal. Identify Ashok Lat from the section. 10

4. a. Illustrate the plan and bird's eye view of Khirki mosque. (10+10)
- b. Discuss the architectural features of the Garden Tomb of Sikandar Lodi with neat sketches. 15

Section-B

5. a. "Taj Mahal is the finest example of Mughal Architecture"- Justify it with neat sketches. 28
- b. Draw and identify the features of "Shahjahan Column". 07

6. a. What is exceptional comparing Mughal style that you have found in "Jami Mosque" at Fatehpur Sikri? 25
- b. Elucidate the architectural features of "Shalimar bagh" at Kashmir. 10

7. a. "Humayun's tomb represents an Indian interpretation of a Persian conception"- explain with necessary illustration. 25
- b. Write short note on "Mosque at Panipath". 10

8. a. Draw and identify the architectural features of "Panch Mahal" 07
- b. Describe the planning layout of Fatehpur Sikri with its major building features. 22
- c. Sketch neatly "Sabj Burj" at Delhi. 06

Khulna University of Engineering and Technology
 Department of Architecture
 B. Arch 2nd Year 2nd Term Regular Examination, 2019
 Course no: Arch-2251 Course title: Architectural Acoustics

Full Marks: 210

Time: 3 Hours

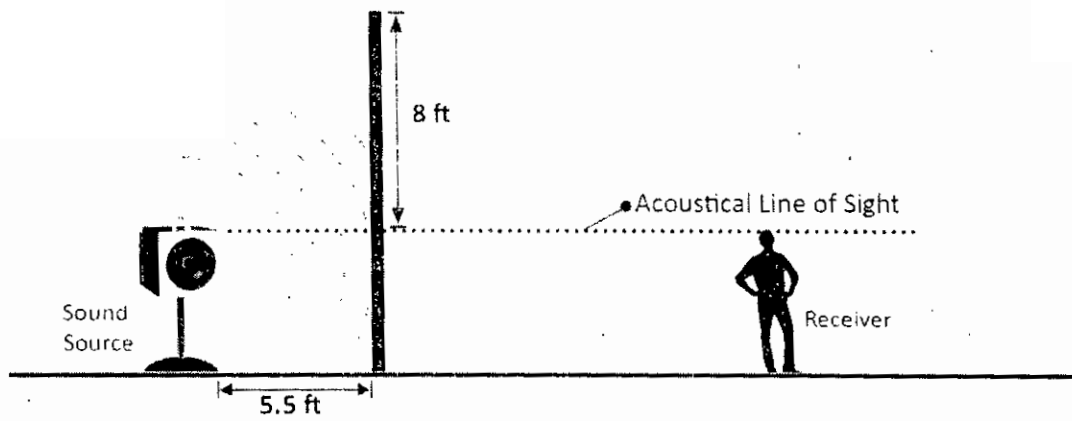
- N.B i) Answer any three questions from each section in separate script.
 ii) Figures in the right margin indicate full marks.

Section-A

- | | | |
|-------|---|----|
| 1. a) | “Design for the ear”, Describe the idea focusing on education. | 10 |
| | b) Illustrate acoustical treatments of a rectangular living room having one entertainment unit at the end of the room, with details about the acoustical treatments. | 25 |
| 2. a) | Explain the acoustical considerations for ancient Greek theatres with sketch showing various components of those theatres. | 35 |
| 3. a) | In a concert, 2 lead guitars are playing at 65 dB, 2 base guitars are playing at 68 dB, one key-board producing 73 dB and a drum set playing with $W = 1.167 \times 10^{-3} \text{ W}$ (watt) power at a distance of 10 ft. Calculate the combined sound intensity level. | 20 |
| | b) A train is producing noise of 90 dB at a distance of 10 ft. At what distance a man needs to move from the train to hear the horn at 72dB. | 15 |
| 4. a) | Briefly discuss what happens when sound wave hits a surface including different surfaces with diagrams. | 20 |
| | b) Rearrange the plan layouts to ensure better work environment. [Fig.01] | 15 |

Section-B

- | | | |
|-------|---|--------------|
| 5. a) | Describe general design considerations for determining an “Auditorium” layout. | 10 |
| | b) What are the major factors to be considered to determine an auditorium layout? Explain with appropriate illustration | 25 |
| 6. a) | In schematic sections, show example of “poor and good acoustical options” for Ceiling and Balcony design for an auditorium. | 15 |
| | b) Explain the following singular phenomena; (Any four) | (4x5)
=20 |
| | i. Reverberation. | |
| | II. Flutter Echo. | |
| | III. Sound Foci. | |
| | IV. Dead Spots. | |
| | V. Acoustical Site Planning. | |
| 7. a) | How does a barrier work for noise control? Describe the effectiveness of “tree” and “wall” as a noise controlling element. | 15 |
| | b) A source of noise is located at 5.5ft from a thin-wall barrier which extends 8ft above the acoustical line of sight. Find the barrier attenuation ‘A’ at 250 Hz. | 20 |



8. a) Explain appropriate techniques for noise control in Buildings through Architectural Acoustics design. Use proper illustrations where necessary. 20
- b) What are the advantages and disadvantages of "Acoustical Board" and "Acoustical Tiles" as an acoustical material? 15

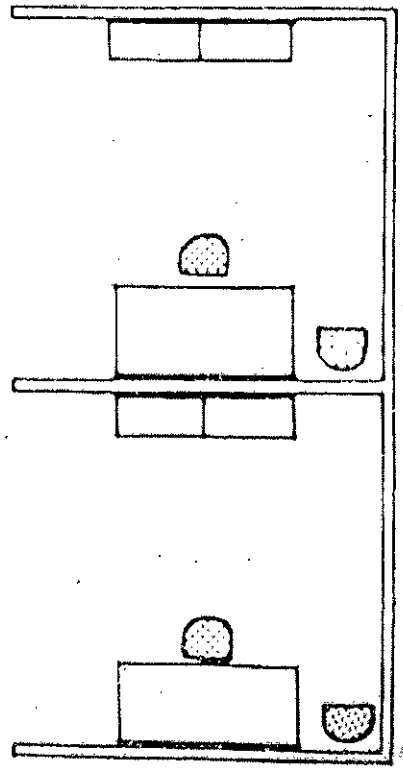
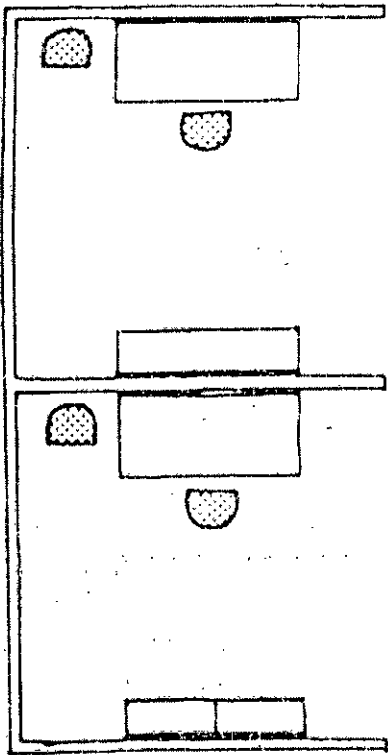
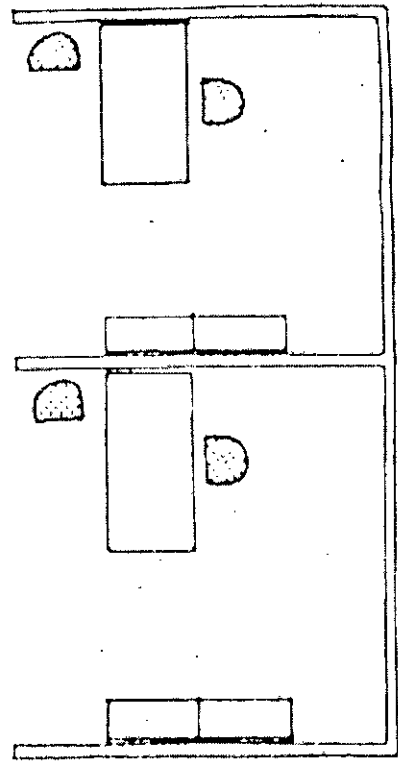
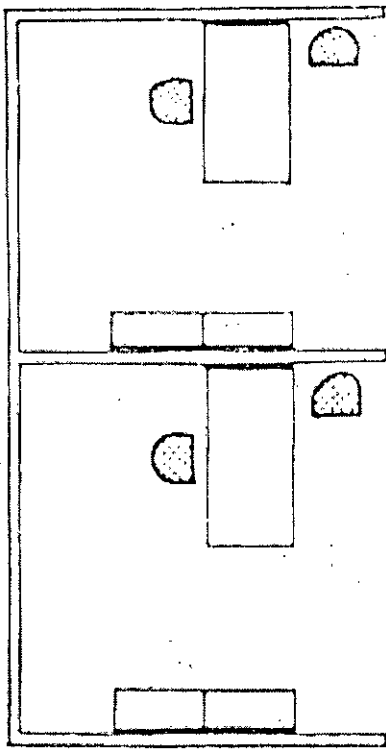


Fig 01

Khulna University of Engineering and Technology

Department of Architecture

B.Arch 2NDYear 2ndTerm Regular Examination, 2019

Course no: Hum2225

Course title: Philosophy

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. What do you mean by Philosophy? 10
- b. Discuss the scope of Philosophy. 10
- c. Explain the function of Philosophy 15
2. a. Is Philosophy Love of Wisdom? Explain It. 10
- b. What is knowledge? 10
- c. How many theories of the Origin of Knowledge? Describe this. 15
3. a. 'I think therefore I exist' – Explain this quotation. 10
- b. John Locke's 'Tabula Rasa' (Clean Sheet/Slate) describe according to his Empiricism theory. 10
- c. What is intuitionism? Which theory is the best of the origin of knowledge and why? 15
4. a. Truth, Beauty and Value-explain these three principles of philosophy. 15
- b. What is environmental philosophy? 10
- c. Why environmental philosophy is now very important.10

Section B

5. a. What is Evolution? Explain the Mechanical theory of Evolution. 10
- b. Distinguish between Creation and Evolution as theories of the origin of the world. Which one do you like? 10
- c. Give a critical exposition of Darwin's theory of Evolution. 15
6. a. Who is God? Is God one or two or many? 10
- b. Briefly explain the traditional proofs for the existence of God. 10
- c. How does Kant reconcile Empiricism and Rationalism in his theory of Knowledge? 15
7. a. Explain briefly the common characteristics of Indian Philosophy. 10
- b. Explain briefly about 'suffering' of Buddhism. 10
- c. Explain the 'cause of suffering' of Buddhism. 15
8. a. Indicate some main characteristics of Evolution. 10
- b. How many Noble Truths of Buddhism? Briefly Explain. 10
- c. Explain briefly the Eightfold Noble Path of Buddhism. 15

Khulna University of Engineering and Technology

Department of Architecture

B.Arch 2nd Year 2nd Term Regular Examination, 2019

Course no: URP 2225 Course title: Urban Planning Principles

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 Urban Planning. Explain the scopes of Urban Planning with example. | 15 |
| | b. Write down some criticism of Residential Developments with proper examples. | 08 |
| | c. Clarify the concept of 'Town Centre'. Discuss about the functions of a town centre. Use proper example. | 12 |
| 2. | a. How can you measure the intensity of residential uses? Give a short description about the concepts. | 15 |
| | b. Discuss the present condition of open space in the cities and towns of Bangladesh. | 12 |
| | c. Write down the differences between satellite town and new town. | 08 |
| 3. | a. Suppose you are working as a Town Planner at Khulna Development Authority (KDA). As a planner what factors should you consider for developing a new bus terminal in Khulna City. | 15 |
| | b. Draw a representative diagram showing minimum distance that any facility should be located from a station entrance measured along the pedestrian path. | 15 |
| | c. What type of facilities should be introduced as per passengers view for a bus station? | 05 |
| 4. | a. Draw a diagram with proper explanation of the changing phenoma about 'New town from Satellite town' concepts. | 15 |
| | b. Write short notes on the followings (answer any four): | 20 |
| | i) Functions of Open Space | |
| | ii) Greenbelt | |
| | iii) Components of Town Centre | |
| | iv) Who are Leisure users and tourists in a Railway Station | |
| | v) Draw a diagram to show maximum walking distance of a pedestrian to station facilities from station entrance. | |

Section-B

- | | | |
|----|---|----|
| 5. | a. Classified the town based on function and physical pattern. | 20 |
| | b. Describe three principles in the arrangement of central place theory with necessary diagram. | 15 |
| 6. | a. Write down the Christaller's consumptions of central place theory. | 05 |
| | b. Make comparison among urban local, collector and arterial roads. | 15 |

- c. Illustrate the simplified Burgess/concentric zone model with necessary diagram. 15
7. a. What do you mean by industrial park? Discuss about the transportation and labor force parameter of it. 12
- b. "Industrial agglomeration has some merits and demerits"- justify the statement with example. 13
- c. How do you control the location of industry in perspective of policy guideline? 10
8. Discuss any five from the followings: 5X7=35
- i. Concept of urbanism with diagram.
 - ii. Airport runways based on orientation.
 - iii. Rank size Rule according to Zipf.
 - iv. Fluctuations of sea port cost curve and ship cost curve perspective to other cost.
 - v. Linear city.
 - vi. Diagrammatically representation of the components of airport.
 - vii. Components of transportation system.

Khulna University of Engineering and Technology
Department of Architecture
B.Arch 2nd Year 2nd Term Regular Examination, 2019
Course no: CE-2225 Course title: Structure II

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

Question-01

- a) Briefly describe the following terms- 08
(i) Shearing stress (ii) Normal stress (iii) Bearing stress (iv) Strain
- b) The homogeneous bar shown in figure below is supported by a smooth pin at C and a cable that runs from A to B around the smooth peg at D. Find the stress in the cable if its diameter is 0.8in and bar weights 6500 lb. [see figure 1(b)] 13
- c) The members of the structure in the following figure weigh 250lb/ft. Determine the smallest diameter pin that can be used at A if the shearing stress is limited to 3920 psi. Assume Single Shear. [see figure 1(c)] 14

Question-02

- a) Write short notes on (i) Hook's Law and (ii) Poisson's Ratio. 10
- b) Draw a typical Stress-Strain diagram of structural steel (mild steel) showing the features and also discuss about the mechanically important points of this diagram. How can you determine the yield point of brittle material? 13
- c) A mild steel rod of length 100cm and weight 2249.5gm was tested to determine the ultimate capacity of the bar. The following data were observed during the test- 12
(i) Yield load = 180KN
(ii) Ultimate load = 199KN
(iii) Elongation in 10cm = 10.9cm, 11.2cm

Calculate unit weight, actual diameter of bar, yield strength, ultimate strength and % elongation of the bar.

Question-03

- a) What are the assumptions used in the elementary analysis of trusses? For the truss members shown in figure below, find the stresses in members AB, AG, BC and CE. The cross sectional area of each member is 1800mm². [see figure 3(a)] 20
- b) The rigid bars AB and CD shown in figure below are supported by pins A and C and the two rods. Determine the maximum force P that can be applied as shown if its vertical movement is limited to 5mm. Neglect the weight of all members. [see figure 3(b)] 15

Question-04

- a) State and describe the theorems of area moment method. 15
- b) Briefly discuss the principles of rigidities. A reinforced concrete column 300mm in diameter is designed to carry an axial compressive load of 350 KN. Determine the required area of the reinforcing steel if the allowable stresses are 6MPa and 120MPa for the concrete and steel respectively. Use $E_{co}=14GPa$ and $E_{st}=200Gpa$. 20

Section-B

Question-05

- a) Define (i) Shear force, (ii) Point of contra-flexure, (iii) Inflection Points, (iv) Dangerous Section, (v) Shear force, (vi) Bending moment. 12
- b) Establish the relationships between load, shear and moment. 10
- c) Calculate shear force and bending moment at section a-a and b-b. [see figure 5(c)] 13

Question-06

Draw SFD and BMD of the following loaded simply supported Beams [see figure 6(a), 6(b), 6(c)] 35

Question-07

- a) A simply supported beam 120mm wide, 240mm deep, and 6m long carries a uniformly distributed load of 4KN/m, as shown in figure. (i) Compute the shearing stress developed at horizontal layers 60mm apart from top to bottom for a section 1m apart from the left end. (ii) Compute the maximum shearing stress developed in the beam. [see figure 7(a)] 15
- b) Show that, the maximum shearing stress in a rectangular section is 50% greater than the average shear stress. 10
- c) A uniformly distributed load of 200lb/ft is carried on a simply supported span. If the cross-section is shown in figure below, determine the maximum length of the beam if the shearing stress is limited to 80psi. Assume the load acts over the entire length of the beam. [see figure 7(c)] 10

Question-08

- a) Write down the assumptions to be taken when deriving the flexure formula. 05
- b) Determine the maximum safe value of 'w' that can be carried by the beam shown in figure below if $\sigma_t \leq 20\text{MPa}$ and $\sigma_c \leq 60\text{MPa}$ [see figure 8(b)] 15
- c) Determine the maximum tensile and compressive flexure stresses for the cantilever beam shown in figure below. [see figure 8(c)] 15

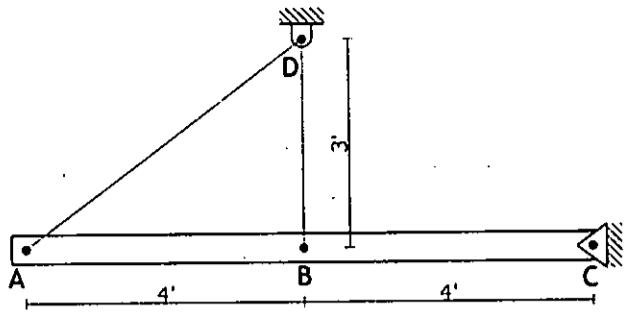


Figure 1(b)

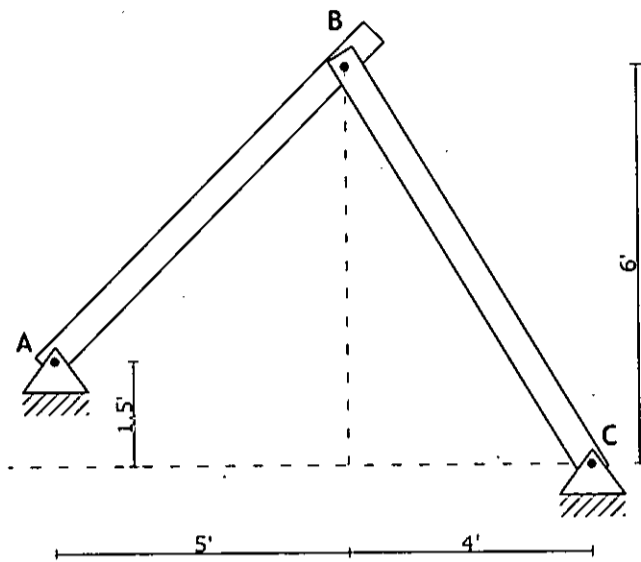


Figure 1(c)

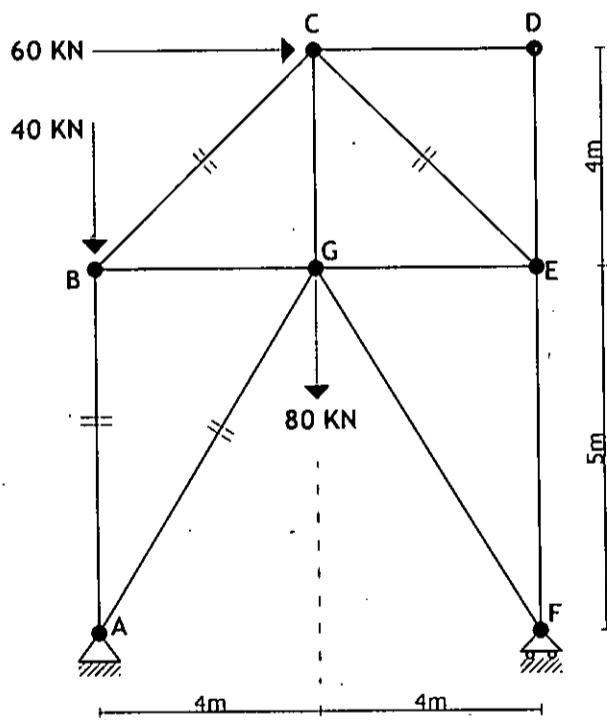


Figure 3(a)

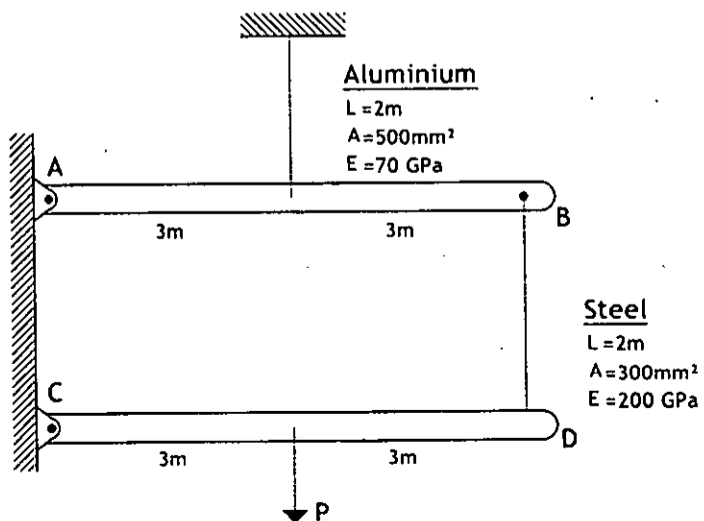


Figure 3(b)

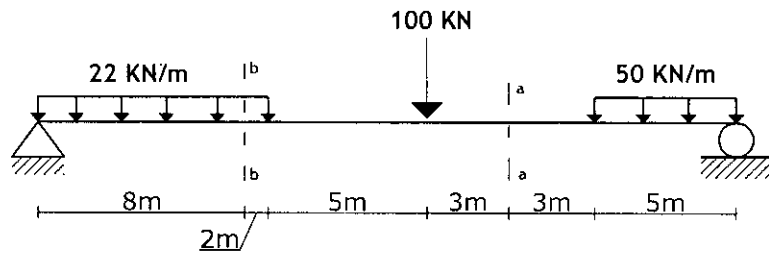


Figure 5(c)

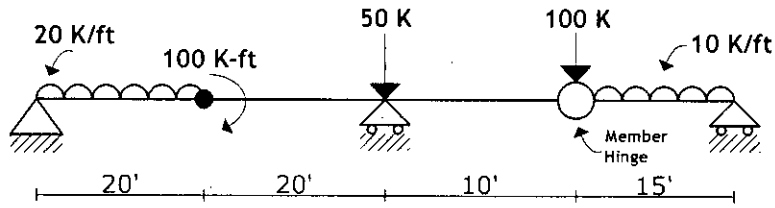


Figure 6(a)

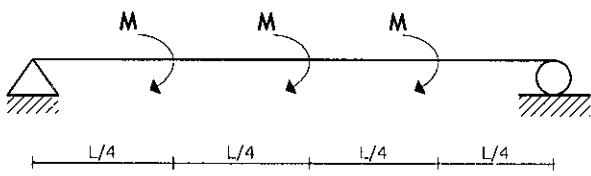


Figure 6(b)

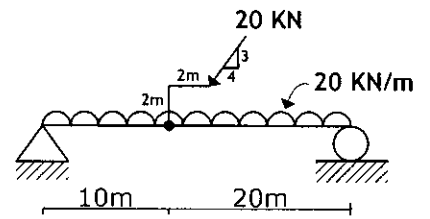


Figure 6(c)

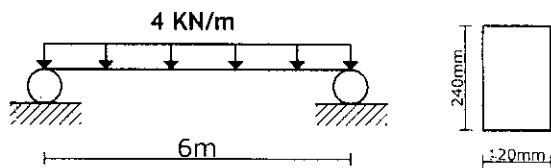


Figure 7(a)

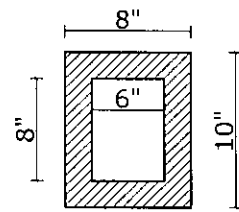


Figure 7(c)

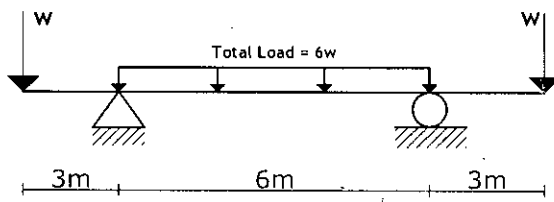


Figure 8(b)

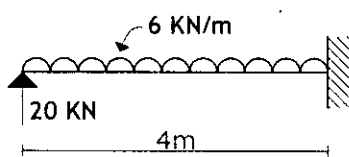
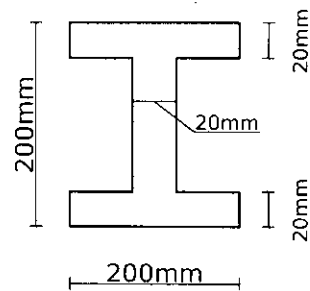


Figure 8(c)

