Khulna University of Engineering and Technology

Department of Architecture

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

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. Explain the acoustical considerations for ancient Greek theatres with sketch showing various components of those theatres. 35

2. a. Derive the decay of sound with distance by using inverse-square law with necessary diagram. 20

   b. A car is producing noise of 96 dB with its horn at 30 ft distance from it. At what distance a man needs to move from the car to hear the horn at 72 dB? 15

3. What are the factors that affect the efficiency of sound absorption? Explain the effects of material properties on absorption efficiency. 35

4. A lecture room of 50 ft X 30 ft with 12 ft high has NRC 0.20 for walls, 0.03 for ceiling and 0.10 for floor. Compute the reduction in reverberation time if 70% of the ceiling is treated with materials having its NRC 0.80. 35

Section-B

5. Explain the acoustical & visual parameters to determine the layout of an auditorium with necessary diagrams. 35

6. Illustrate the Echo controlling principles for spaces with necessary sketches. 35

7. Describe the effectiveness of Earth Berms and Thin Wall as noise controlling elements. 35

8. Describe vibration isolation guidelines for Boilers, Cooling towers and Transformers. 35

Khulna University of Engineering and Technology

Department of Architecture

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

Course no: Arch 2231 Course title: Islamic Architecture in the 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. How would you classify the styles of Islamic Architecture in the Indian Sub-continent? 08

   b. (i) Which mosque of the slave dynasty was joint venture between Hindu master builders and Muslim overseers? 02

   (ii) What was the basic concept behind it? 02

   (iii) Which features of Hindu and Islamic architecture were utilized in the mosque? Explain with neat illustration. 15+08

2. a. How were turrets used in the Qutb Minar? Illustrate with neat sketches. 03+06

   b. In your opinion, which architectural characteristic made the Tomb of Iltutmish significant? 03

   c. How would you define the squinch system? Give clear sketches of its use in the Tomb of Iltutmish. 05+18

3. a. Draw the plan of the Qutb Complex including extensions carried out by Ala-ud-din Khalji. Indicate the location of "Sahn" in the plan. 15+02

   b. Draw the plan of Alai Darwaja. 08

   c. Illustrate the following characteristics of Alai Darwaja with neat sketches: 05x02 =10
   (i) Blind windows
   (ii) Horse shoe shaped arch
   (iii) Spear- head fringe
   (iv) Socket
   (v) Jali

4. a. Discuss the architectural characteristics of the City of Firuz Shah Kotla with neat sketches. 15

   b. Give an overview on the following structures within the city: 05x04 =20
   (i) Hawa Mahal
   (ii) Ashok Lat
   (iii) Jami Masjid
   (iv) Baoli

Section-B

5. a. What is 'Nine Fold Plan'? Explain with proper diagram. 10

   b. Do you think that "Nine Fold Plan" became the common pattern of Mughal Buildings? Justify your position with examples and necessary illustrations. 25

6. a. Do you agree that Qila Kunha Mosque is a combination of Tughlaqian and Mughal architectural style? Justify your consideration with necessary illustrations. 15

   b. For which features the tomb of Sher Shah can be addressed as a Lodi style tomb? Give your opinion with illustrations. 20

7. a. What was the concept of "Din-i-Ilahi"? 10

   b. How do you think the "Din-i-Ilahi" Akbar established religious justice through various architectural demonstrations in Fatehpur Sikri? Justify your opinion with proper illustration. 25

8. a. "The architectural ideals of Shah Jahan's period were governed by symbolic and hierarchical accents"-elaborate on the overall planning scheme of 'Taj Mahal'. Use necessary sketches. 25

   b. Draw the plan and section of "Buland Darwaza" and identify the features. 10

Khulna University of Engineering and Technology

Department of Architecture

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

Course No: Hum 2225 Course Title: Philosophy

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.	Discuss the nature of Philosophy.	15
	b.	Explain the method of Dogmatism.	10
	c.	What is meant by Philosophy?	10
2	a.	What is Epistemology?	10
	b.	Describe the method of Criticism.	10
	c.	Discuss the functions of Philosophy.	15
3	a.	Explain the theory of Authoritarianism about the origin of knowledge.	15
	b.	"Man is the measure of all things"-Explain the statement of Protagoras.	10
	c.	What is Cosmology?	10
4	a.	Explain Freedom of Will about John Locke.	15
	b.	Explain the theory of impressions and ideas of David Hume.	15
	c.	What is Axiology?	05

Section B

5	a.	What is knowledge? There are how many source of knowledge?	10
	b.	Discuss Rationalism as a theory of the origin of knowledge.	10
	c.	Discuss Empiricism as a theory of the origin of knowledge. Is it satisfactory theory of the origin of knowledge?	15
6.	a.	What is criticism?	10
	b.	What is Kant? Explain the critical theory of Kant.	10
	a.	What according to you is the best theory of the origin of knowledge and why?	15
7.	a.	Who is God? Is God one or two or many?	10
	b.	How many theory of existence of God? Discuss in short brief.	10
	c.	Explain the Cosmological theory of Existence of God.	15
8.	a.	What is Evolution?	10
	b.	Discuss the theory of creation.	15
	c.	Discuss the chief characteristics of Evolution.	10

Khulna University of Engineering and Technology
Department of Architecture
B.Arch 2nd Year 2nd Term Regular Examination, 2018
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.
iii) Assume reasonable value for any missing data.

Section-A

1. (a) Define 10
(i) Shear force
(ii) Bending moment
(iii) Proped beam
(iv) Inflection point
(v) Point of Contra-flexure

(b) Show that the change of bending moment and the change of shear between any two sections equal to the area of the shear diagram and the area of the load diagram for this interval respectively. 08

(c) Draw Shear force and Bending moment diagram for the loaded beam as shown below:- 17

Figure-1(c)

2. (a) What is meant by statically determinate and indeterminate Beam? Check the degree of indeterminacy and stability of the following beams:- 18

Figure-2(a)

(b) A reinforced concrete foundation beam ABCD that supports a uniform load intensity q *lb/ft.* Determine the maximum load intensity q if maximum shear force and maximum moment are 2000 *lb* and 3000 *lb-ft* respectively. Assume factor of safety for shear and bending moment are 2.5 and 3, respectively. 17

Figure-2(b)

3. (a) Derive an expression for bending stress at any section of a beam. 12

(b) Determine the maximum load 'p' that can be supported by the beam as shown in the figure below if the flexure stress in tension and compression are not to exceed 25 *MPa* and 60 *MPa* respectively. 23

Figure-3(b)

4. (a) Show that the maximum shearing stress in a rectangular section is 50% greater than the average shear stress. 10

(b) For the following loaded simply supported beam determine shearing stress at point A, B, C, and D. 25

Figure-4(b)

Section-B

5. a) Define the following terms with examples:- 09
(i) Normal stress
(ii) Shearing stress
(iii) Bearing stress

(b) An aluminium rod is rigidly attached between a steel rod and bronze rod as shown in figure. Axial loads are applied at the positions indicated. Find the maximum value of P that will not exceed a stress in steel of 150 *MPa*, in aluminium of 90 *MPa*, or in bronze of 100 *MPa*. 12

Figure-5(b)

(c) Determine the largest weight W that can be supported by two wires shown in figure. The stress in either wire is not to exceed 30 *ksi*. The cross-sectional areas of wires AB and AC are 0.4 in^2 and 0.5 in^2 respectively. 14

Figure-5(C)

6. (a) In the following figure, assume that a 20 mm diameter rivet joint the plates that are each 110 mm wide. The allowable stresses are 120 *MPa* for bearing in the plate material and 60 *MPa* for shearing of the rivet. Determine (i) the minimum thickness of each plate (ii) the largest average tensile stress in the plates. 15

Figure-6(a)

(b) Write down the assumptions that are used in truss analysis. For the truss shown in figure, determine the stress in members AC, BD and BE. The cross-sectional area of each member is 1000 mm^2. 20

Figure-6(b)

7. (a) What is strain? Draw Stress-strain diagram of mild steel. 06

(b) State and prove theorems of area-moment method of beam deflection. 11

(c) The rigid bar ABC in figure is pinned at B and attached to the two vertical rods. Initially, the bar is horizontal and the vertical rods are stress free. Determine the stress in the aluminium rod if the temperature of the steel rod is decreased by 40^0 c. Neglect the weight of bar ABC. 18

Figure-7(c)

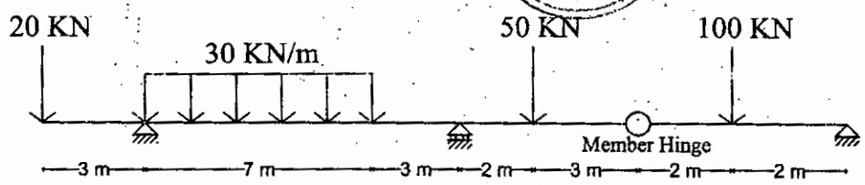
8. (a) Compute the total elongation by caused an axial load of 100 KN applied to a flat bar 20 mm thick, tapering from a width of 120 mm to 40 mm in a length of 12 m as shown in figure. Assume, E=200 GPa 17

Figure-8(a)

(b) A horizontal bar of negligible mass hinged at A in figure and assumed rigid, is supported by a bronze rod 2.0 m long and a steel rod 1.0 m long. Using the data in the accompanying table, compute the stress in each rod. 18

Table- 8(b) Figure-8(b)

List of Figures



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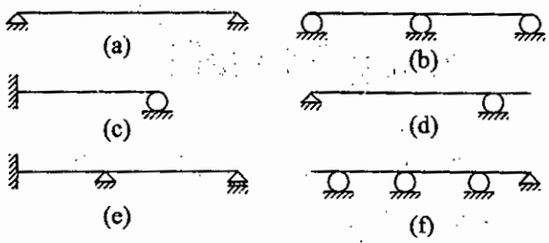

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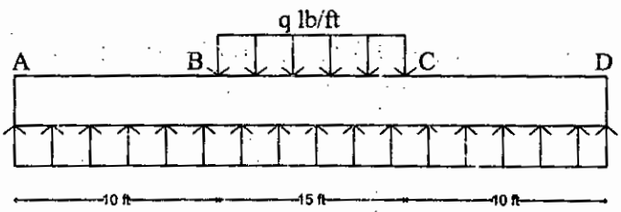

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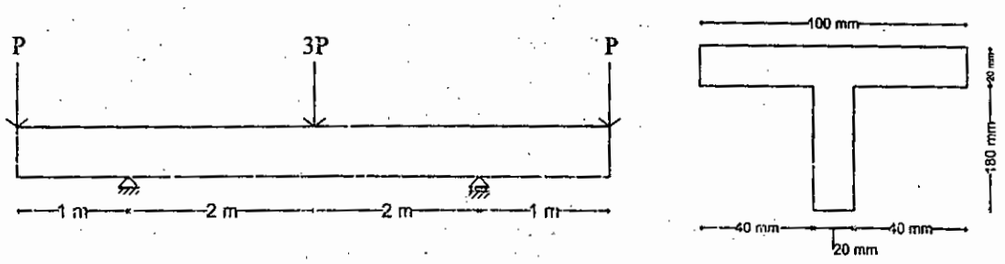

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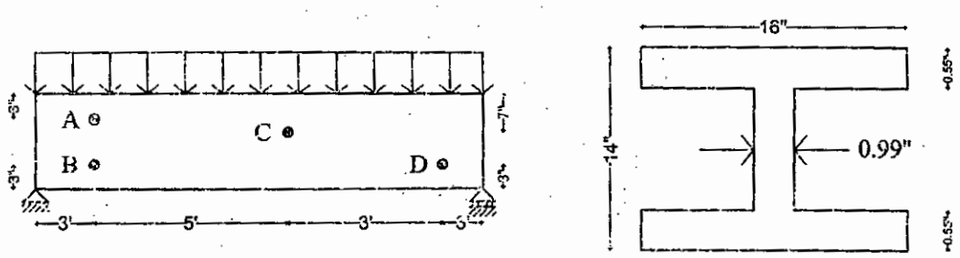

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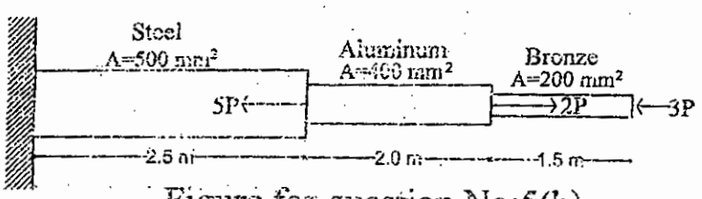

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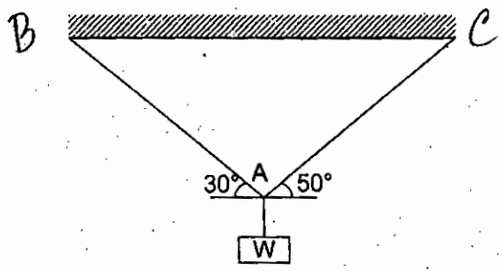

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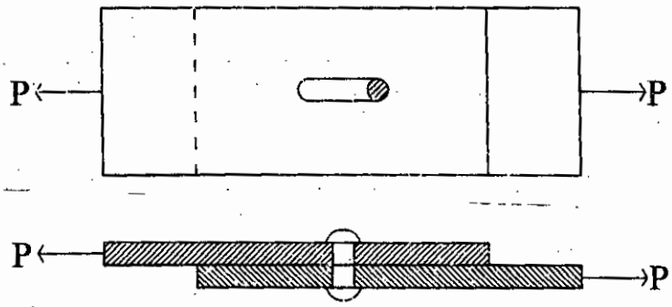

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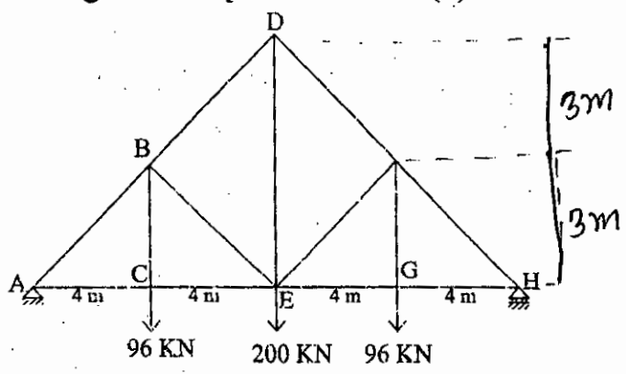

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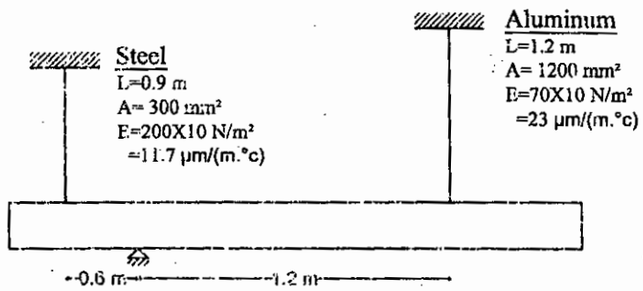

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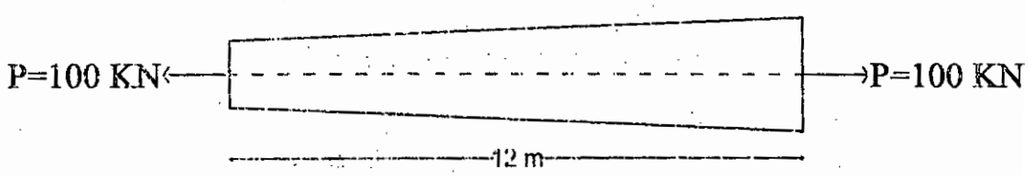

Figure for question No:8(a)

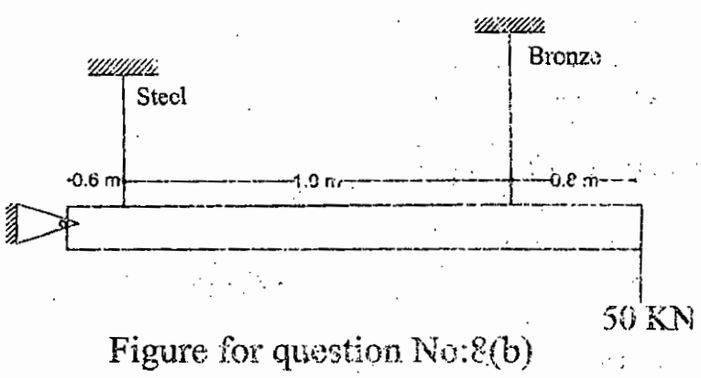

Figure for question No:8(b)

	Steel	Br
Area(mm²)	600	
E (GPa)	200	
Proportional limit (MPa)	240	

Table for question No

Khulna University of Engineering and Technology

Department of Architecture

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

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. Describe various functional parts of an urban area with necessary example. 10

   b. How urban areas are classified based on function? Discuss with necessary examples. 10

   c. With respect to physical pattern, how towns are classified? Illustrate with necessary examples. 15

2. a. Illustrate various functions performed by an urban area. 10

   b. What do you mean by urban system? Discuss the Rank size rule and Private City theory of Urban system with necessary example. 10

   c. What do you mean by central place? Discuss the Central Place theory with necessary example. 15

3. a. Discuss various types of industries with necessary example. 15

   b. Describe various parameters and elements of design that are considered to establish an industrial park. 10

   c. Illustrate the concept eco-industrial park and industrial ecology with necessary example. 10

4. a. Draw your concept on transportation system and its various sub system. 10

   b. Based on function how roads are classified? Discuss with necessary example. 15

   c. How do the transportation networks shape the land use distribution and vice versa in varied context in North America, Europe and Asia? Discuss with necessary example. 10

Section-B

5. a. Describe your understanding about urban planning. Explain the four essential objectives of town planning with relevance to the context of Bangladesh. 10

   b. Define Town Centre. Describe the process of designing a Town Centre as a precinct. 10

c. Write down the principles for creating a successful Town Centre and explain any two brief. 15

6. a. Draw a layout of a typical residential plot showing the various existing features on it. 10

b. Discuss the role of development plans and local area plans in residential development. 15

c. Make a list of factors that must be considered for a sustainable residential development. 10

7. a. Draw your concept on New Town. Illustrate the main characteristics of New Town. 10

b. Briefly discuss the emergence of Satellite towns. How does the satellite town contribute to better management of the main urban center/main city? 10

c. Draw your concept on Green belt and Boulevard. Make a critical evaluation of the existing open spaces in Dhaka city. 15

8. a. Write down the principles of a good railway station design. 10

b. Discuss the facilities to be provided in a railway station for business travelers. 15

c. List out the data that need to be collected for planning and designing a bus terminal/station. 10