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April 2020

B.Arch. Degree IV Semester Examination April 2020

AR 1402 BUILDING MATERIALS AND CONSTRUCTION III
(2014 Scheme)

(One drawing sheet will be supplied. Illustrate answers with sketches wherever necessary.)

Time: 4 Hours

Maximum Marks: 100

PART A

(8 × 5 = 40)

I. Write short notes on the following:

- (a) Uses of stainless steel in building constructions
- (b) Causes of corrosion of steel
- (c) Bolt connections for steel structural members
- (d) Shingle roof construction
- (e) Aluminium extruded sections for fixing glass
- (f) Non ferrous metal for use in building construction
- (g) Acoustic false ceiling
- (h) Design standards for physically challenged

II.

Explain various forms of steel sections available in the market for various structural applications in buildings-indicate one standard dimension for each.

(2 × 10 = 20)

OR

III.

Describe with illustrative sketches, constructional details of a truss suitable for a span of 15 m. Label the parts and indicate approximate sizes.

IV.

What are the advantages and limitations of aluminium as a building material-indicate various types available in the market?

OR

V.

Describe with sketches, various metal sheets available for roofing-indicate standard profiles and dimensions.

PART B

(2 × 20 = 40)

VI.

Draw part plan and section of a straight steel staircase to a mezzanine floor of shop 250 cm above the main floor level. Mezzanine floor has steel deck structure. Width of staircase 120 cm. Use standard steel section. Detail the connections. Choose appropriate scale and assume other details, if necessary.

OR

VII.

Draw to a suitable scale plan, elevation and section of a steel window for masonry opening size 90 cm × 120 cm to be fixed to brick masonry wall. Use standard steel sections. Show interface construction details, description and full dimensions of parts. Give a blown up detail of the jamb. Assume other necessary details required for drawing.

(P.T.O.)

B

VIII.

Draw to a suitable scale plan, elevation and section of an anodized aluminium operable door of size 120 cm × 210 cm in a shop front glazing. There will be fixed glass on top and sides of the door. Indicate connection details in enlarged size. Use standard profiles. Assume other necessary details required for drawing.

OR

IX.

Draw to a suitable scale plan, elevation and section of an anodized aluminium sliding window to be fixed in a masonry opening size 120 cm × 120 cm. Use standard profiles. Give connection details in blown up scale. Description of parts and full dimensions have to be given in the drawing. Assume necessary details required for drawing.

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AR 1403 HISTORY OF ARCHITECTURE III (2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer ALL questions)

(8 × 5 = 40)

I. Write short notes on the following:

- (a) Evolution of church form
- (b) Triforium gallery
- (c) Rose window
- (d) Rib vault/ Groin vault
- (e) Alhambra Complex
- (f) Horseshoe Arches
- (g) Shinto Architecture
- (h) Angkor wat

PART B

(4 × 15 = 60)

II. Elaborate on the techniques adopted to construct domes in byzantine period taking Hagia Sophia as an example.

OR

III. Explain the planning principles and characteristics of Pisa Cathedral.

IV. Explain the following:

- (i) Characteristics of Baroque architecture.
- (ii) Features of Rococco architecture

OR

V. Compare and contrast the English and French Gothic styles of architecture with examples.

VI. 'Moorish Architecture reached its peak with construction of the magnificent Alhambra complex at Granada'. Justify

OR

VII. What are the key generators and factors influencing the development of Mayan Architecture?

VIII. 'Shinto shrines are more than any other architecture the crystallization of the Japanese homage to tradition'. Justify the statement.

OR

IX. Outline the planning concepts of Temple of Angkor wat, Cambodia and describe its architectural characteristics.

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B.Arch. Degree IV Semester Examination April 2020**AR 1404 LANDSCAPE ARCHITECTURE**
(2014 Scheme)

Time: 4 Hours

Maximum Marks: 100

*(One drawing sheet to be supplied. All answers to be supported with relevant sketches.)***PART A**

(Answer ALL questions)

(8 × 5 = 40)

- I. Write short notes on:
- Evolution of landscape design.
 - Japanese garden.
 - The importance of water in landscape.
 - Balance in landscape design.
 - Irrigation systems.
 - Underwater construction.
 - Planting techniques.
 - Plant selection criteria.

PART B

(4 × 10 = 40)

- II. Trace the development of the English Landscape Garden relating it with chief characteristics from the 'era of romanticism'.
- OR**
- III. Describe the three major forms of Roman Gardens with examples.
- IV. Explain with examples the principles of landscape design in relation to their visual characteristics.
- OR**
- V. Briefly explain the importance of plants and built element in landscape design.
- VI. Describe the role that landscape design plays in coastal construction. How can it solve issues alongside river banks?
- OR**
- VII. Explain in detail importance of Landscape services like lighting in Landscape design.
- VIII. Explain the process of preparing and maintaining lawns. Suggest how this effect can be created through indoor landscaping, specifying the functions and behaviour of indoor plants.
- OR**
- IX. Explain with examples the physical characteristics and habits of trees, shrubs, climbers and ground cover.

(P.T.O.)

PART C

(1 × 20 = 20)

- X. Design a courtyard in a campus surrounded by administrative block to the west, director's room to the north and an academic section to the south. The courtyard of size 12 m × 8 m adjoins the main entry on the eastern side. The courtyard area should include a lawn with seating and other creative landscape elements. Make a presentation drawing with plan and section in 1:50 scale and details with minimum 2 views. All other information can be assumed.

OR

- XI. Design a covered terrace garden of size 15 m × 10 m for a five star hotel which will also serve as a party area. Garden design must include a dining space, swimming pool and an area to conduct events and functions. Make a presentation drawing with plan and section in 1:50 scale and details with minimum 2 views. All other information can be assumed.

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B.Arch. Degree IV Semester Examination April 2020**AR 1405 ARCHITECTURAL ACOUSTICS**
(2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A
(Answer ALL questions)

(8 × 5 = 40)

- I. Write short notes on the following:
- (a) Sound intensity levels.
 - (b) Audible Sound.
 - (c) Noise.
 - (d) Reverberation time.
 - (e) Whispering galleries
 - (f) Functional absorbers.
 - (g) Sound absorptive materials.
 - (h) Wave length of sound.

PART B

(4 × 15 = 60)

- II. Explain the nature and propagation of sound ?
OR
- III. Explain in detail noise and human behavior.
- IV. Explain the behavior of sound in enclosures.
OR
- V. Tabulate the possible acoustical defects in a class room. Explain the acoustical remedies employed for the defects.
- VI. List the permissible noise levels of five major activity space. How this can be achieved in the design stage?
OR
- VII. What are the sources of noise in a generator room? Explain how the noise can be controlled.
- VIII. What are the acoustical requirements for designing an recording studio? Explain the design requirement in details.
OR
- IX. Differentiate between variable absorbers and membrane absorbers used for acoustical absorption. Give the mounting details of both the absorbers?

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AR 1406 ESTIMATION AND SPECIFICATION (2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer ALL questions)

(8 × 5 = 40)

- I. Write short answers on the following:
- Brief note on importance of specification in construction.
 - Differentiate BIS and PWD specification formats.
 - General specification for first class bricks.
 - Contingencies, dismantling and demolition.
 - Different methods of estimation in building works.
 - Detailed estimate and rough estimate.
 - Bill of quantities and contract document.
 - Data required for preparing detailed estimate.

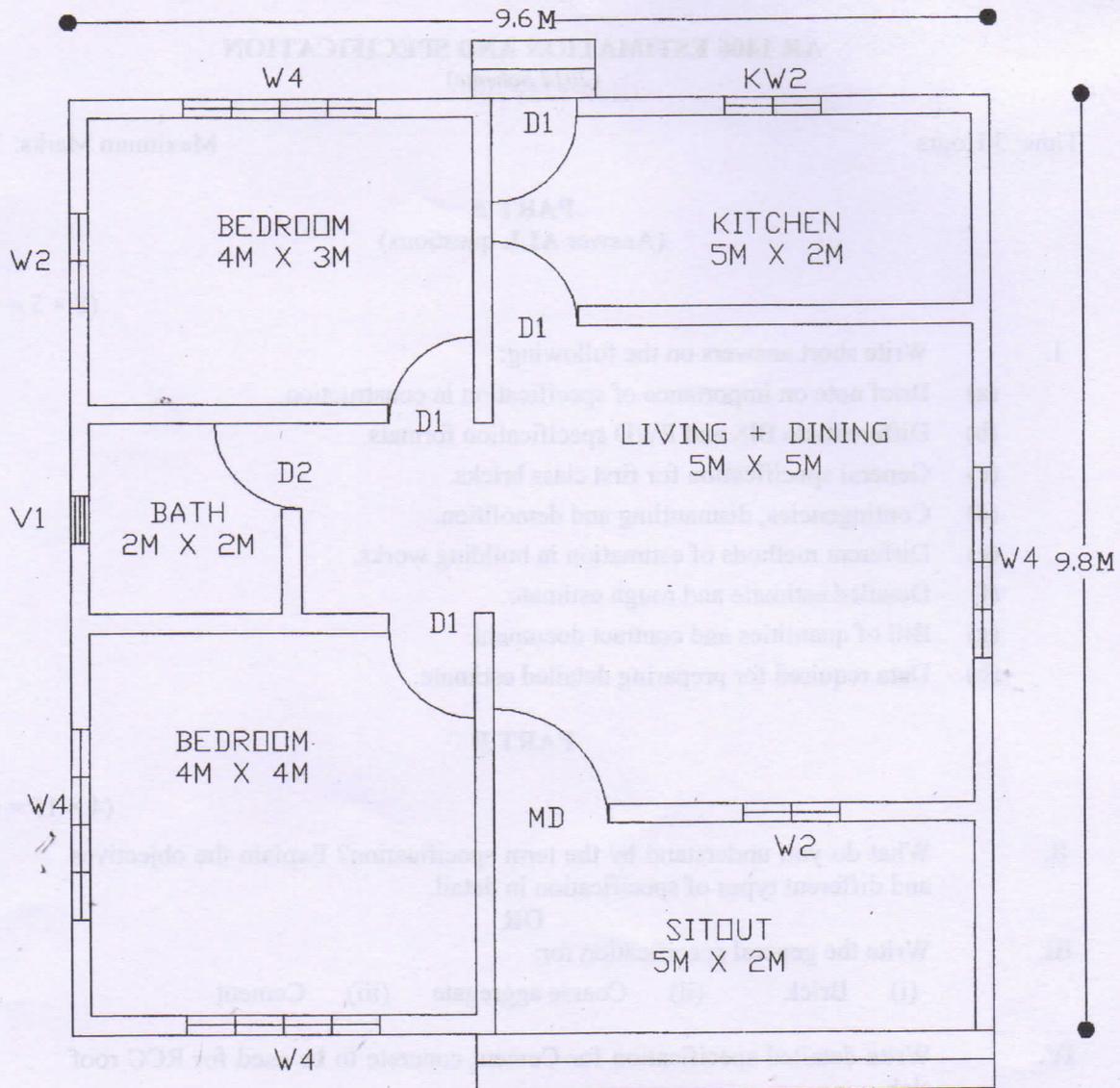
PART B

(4 × 15 = 60)

- II. What do you understand by the term specification? Explain the objectives and different types of specification in detail.
- OR
- III. Write the general specification for:
- Brick
 - Coarse aggregate
 - Cement
- IV. Write detailed specification for Cement concrete to be used for RCC roof slab.
- OR
- V. Write detailed specification for earth work excavation and random rubble masonry for foundation.
- VI. Prepare an estimate of quantities for the items based on attached drawing. Assume any appropriate data, if found necessary.
- RR Masonry in 45 cm × 45 cm plinth
 - Brickwork in cement mortar 1:6 for 300 cm high walls.
 - Plastering with cement mortar 1:4 for the interior and exterior of walls.
- OR
- VII. Prepare an estimate of quantities for the item shown below based on the attached drawing. Assume any appropriate data, if found necessary.
- Earthwork in excavation for foundation
 - Earthwork in plinth filling
 - Tile floor finish and skirting for living + dining and bedrooms.

(P.T.O.)

Reference drawing for question No: VI and VII



Ground Floor Plan

Wall thickness	= 20 cm
Main Door (MD)	= 120 cm × 210 cm
Door (D1)	= 90 cm × 210 cm
Two panel window (W2)	= 100 cm × 150 cm
Four panel window (W4)	= 200 cm × 150 cm
Kitchen window (KW2)	= 100 cm × 100 cm
Ventilator (V1)	= 50 cm × 50 cm

VIII. Calculate unit rate for brick work for walls in cement mortar 1:4. Assume any appropriate data and rate, if found necessary.

Bricks $19 \text{ cm} \times 9 \text{ cm} \times 9 \text{ cm}$ - 500 Nos.

Cement - 72 kg/ cu m

M sand - 0.20 cu m/cu m

Mason - 0.70/ cu m, Man - 0.35/ cu m

Woman - 0.70/ cu m

OR

IX. Calculate unit rate for cement mortar 1:6 for plastering walls, 12 mm thick. Assume any appropriate data and rate, if found necessary.

Cement - 43 kg/ 10 sq. m

M Sand - 0.15 cu m/10 sq. m

Mason - 1.00/ 10 sq. m

Man - 0.50/ 10 sq. m

Woman - 0.50/ 10 sq. m

*Rate for material and labour

Brick - ₹12 for 1 no.

Cement - ₹420 for 50 kg bag

M sand - ₹2100 for 1cu m

Mason - ₹1000 per person

Man - ₹800 per person

Women - ₹800 per person

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B.Arch. Degree IV Semester Examination April 2020**AR 1407 BUILDING SERVICES - I (WATER SUPPLY AND SANITATION)**
(2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A
(Answer ALL questions)

(8 × 5 = 40)

- I. (a) What are the general requirements of domestic water storage tank?
- (b) Explain with a neat sketch working of a sluice valve and relief valve.
- (c) Explain the terms (i) self cleansing velocity (ii) non scouring velocity used in the design of sewer.
- (d) How is quantity of sewage estimated?
- (e) Write short note on ventilation of sewers.
- (f) How do you fix the gradient for laying of drains and sewers?
- (g) What are the general principles governing the design of a sanitary plumbing system?
- (h) What are the mandatory requirements regarding fire protection of a building?

PART B

(4 × 15 = 60)

- II. What are the common sources of water for a water supply scheme? State the factors that govern the final selection.
OR
- III. Enumerate with neat sketches the four principal systems adopted in plumbing of drainage work in a building.
- IV. Describe the various systems of sewage disposal and their principles.
OR
- V. Explain the construction and working of septic tank with a neat sketch. Design the dimensions of a septic tank for a small colony of 150 persons provided with an assured water supply from municipal head works at a rate of 120 litres per person per day. Assume any data needed.
- VI. Explain the various methods of disposal of effluent from a septic tank.
OR
- VII. Explain in detail the testing of sewer.
- VIII. Explain with neat sketch, the different types of traps used in house sewer connections. What are the requirements of a good trap?
OR
- IX. Enumerate the various sanitary conveniences required in a public building. Indicate the minimum requirement of such conveniences for a school of 500 boys and 500 girls, according to Indian standards.

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AR 1408 STRUCTURAL ANALYSIS II (2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A (Answer ALL questions)

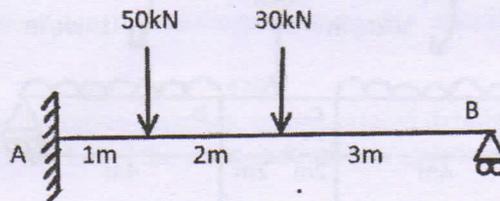
(8 × 5 = 40)

- I. (a) What is meant by consistent deformation method?
- (b) Differentiate a statically Indeterminate beams from a determinate beam.
- (c) Write short note on slope deflection method for the analysis of the structure.
- (d) Mention any three assumptions in slope deflection method.
- (e) Explain briefly the methods of analysis of continuous beams.
- (f) Write short note on Principle of super position.
- (g) Write short notes on moment distribution method of continuous beams with fixed ends.
- (h) Write a short note on sway analysis in frames.

PART B

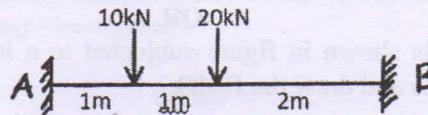
(4 × 15 = 60)

- II. Determine the SFD and BMD of the beam shown in figure. EI is constant through out.

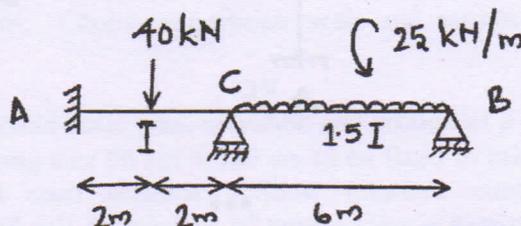


OR

- III. Draw the SFD and BMD for the given beam by Consistent deformation method. EI is constant through out.



- IV. Analyse the beam shown in figure by the theorem of three moment and draw the SFD and BMD.

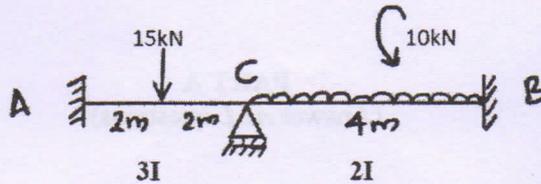


OR

(P.T.O.)

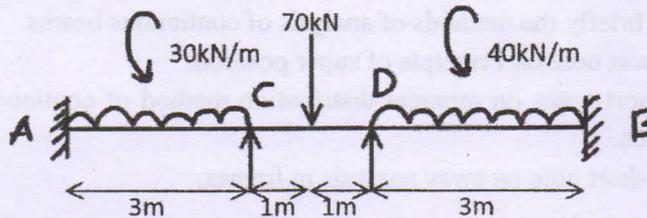
V. A continuous beam ABC of uniform section, with span AB and BC as 3 m each, is fixed at A and simply supported at B and C. The beam is carrying a uniformly distributed load of 5kN/m throughout its length. Find the support moments and reaction. Also draw SFD and BMD.

VI. Analyse the 2 span continuous beam shown below by moment distribution method.

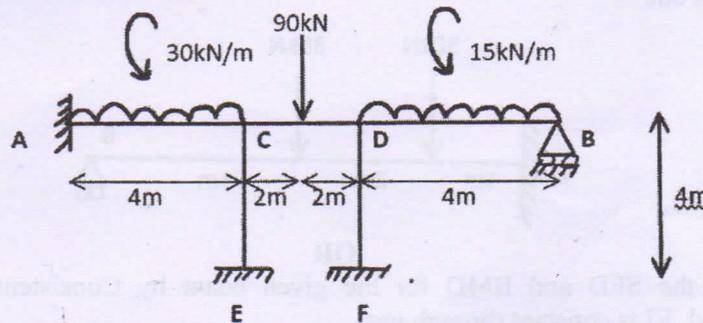


OR

VII. Determine the support moments and draw the BMD for the continuous beam shown in figure. If the support sinks by 2.5mm and $I = 3.5 \times 10^7 \text{mm}^4$ $E = 200 \text{kN/mm}^2$ for all members.



VIII. Analyse the rigid frame shown in figure and draw the BMD. EI is constant throughout the beam.



OR

IX. A portal frame is shown in figure subjected to a loading as shown in figure. Analyse the frame and draw the BMD.

