B.Arch. Degree IV Semester Supplementary Examination May 2025

AR 1402 BUILDING MATERIALS AND CONSTRUCTION – III
(2014 Scheme)

Time: 4 Hours   Maximum Marks: 100

(Use illustrations wherever necessary illustrations carry due marks)

PART A
(Answer *ALL* questions)

(8 × 5 = 40)

I.   Write short notes on the following.
- (a)   Uses of cold rolled light gauge steel sections.
- (b)   Anti-corrosive treatments for steel.
- (c)   Steel roof trusses.
- (d)   Steel handrails for the physically handicapped.
- (e)   Aluminum alloys – properties and applications.
- (f)   Copper and brass in construction.
- (g)   Aluminum windows – types and uses.
- (h)   Aluminum in false ceilings and partitions.

(2 × 10 = 20)

II.   Compare the properties, manufacturing process and applications of cast iron, wrought iron, pig iron and steel.

OR

III.   Explain the different types of connections in steel construction using neat sketches.

IV.   Discuss the properties and uses of aluminum alloys. Include an overview of current developments in non-ferrous metal applications.

OR

V.   Describe the different types of aluminum doors, windows and ventilators used in architectural construction. Include their specific applications and advantages.

PART B

(2 × 20 = 40)

VI.   Draw to scale a steel staircase with handrails and balusters, incorporating design considerations for physically handicapped users. Include plan, elevation and sectional details.

OR

VII.   Draw to scale the detailed plan, elevation and section of a steel openable window, including frame, shutter, hinges and holdfasts. Indicate materials and specifications.

VIII.   Prepare detailed drawings of an aluminum sliding window and an operable aluminum door, showing the frame sections, joinery and relevant dimensions.

OR

IX.   Prepare a detailed drawing of an aluminum partition with integrated fixed glazing and a pivoted door. Include vertical and horizontal sections with frame connections.

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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)   Key Features of Old St. Peter's Basilica in Rome.
  (c)   Flying buttresses in Gothic cathedrals.
  (d)   Characteristic features of Rococo Architecture.
  (e)   Muqarnas.
  (f)   Key characteristics of Alhambra Complex.
  (g)   Torri.
  (h)   Temple Of Angkor Wat.

PART B

(4 × 15 = 60)

II.   Discuss the spatial planning and construction features of Hagia Sophia, Constantinople.

OR

III.   Describe the historical context and characteristics of Romanesque architecture.

IV.   Discuss the characteristics of Renaissance architecture with reference to the Cathedral of St. Peter.

OR

V.   Explain the principles of Palladian architecture and analyze how the Rotunda at the University of Virginia exemplifies these principles.

VI.   Explain the architectural characteristics of Moorish Architecture with Great Mosque of Cordova as example.

OR

VII.   Explain Mayan Architecture focusing on its cultural significance, key features and construction techniques. How did the architectural style reflect Mayan beliefs, astronomy and social organization?

VIII.   Compare and contrast the architectural styles and functions of the Forbidden City and the Summer Palace in Beijing.

OR

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

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AR 1404 LANDSCAPE ARCHITECTURE
(2014 Scheme)

Time: 4 Hours   Maximum Marks: 100

(One drawing sheet to be supplied. All answers should be provided with relevant sketches.)
PART A
(Answer *ALL* questions)

(8 × 5 = 40)

I.   Write short notes on the following.
   (a)   Landscape Design and Building Design.
   (b)   Characteristics of Renaissance Gardens.
   (c)   Manmade elements in Landscape Design.
   (d)   Role of Smell and Sound in Landscape Experience.
   (e)   Microclimate and its impact on Site Planning.
   (f)   Types and functions of Rock Gardens.
   (g)   Transplanting of trees.
   (h)   Role of Potting and Re-potting in Indoor Landscaping.

PART B

(4 × 15 = 60)

II.   Trace the development of landscape architecture from Persian to Mughal landscape movement in India.
                              OR
III.   Discuss how industrialization influenced the evolution of parks and landscape movements in America.

IV.   Elaborate on the principles of landscape design with examples, focusing on Unity, Rhythm and Contrast.
                              OR
V.   Explain how colour, form and texture influence perception in landscape architecture.

VI.   With neat sketches, explain how topography and hydrology, affect functional site planning.
                              OR
VII.   Using relevant sketches explain the landscape construction techniques for ramps, decks and pergolas.

VIII.   Discuss functional and microclimatic aspects of plant selection in landscape architecture.
                              OR
IX.   Describe the role of hydroponics and bonsai in contemporary landscaping, with examples.

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AR1406 ESTIMATION AND SPECIFICATION
(2014 Scheme)

Time: 3 Hours   Maximum Marks: 100

PART A
(Answer *ALL* questions)

(8 × 5 = 40)

I. (a) Define specification. What are its objectives in the context of construction projects?

(b) Write short notes on the specifications for coarse aggregates and cement used in construction.

(c) State the essential components of specification for flooring work.

(d) Write the general specification for stone masonry (Random Rubble).

(e) Briefly explain any two methods of estimating used in construction projects.

(f) Explain the plinth area method of estimation with an example.

(g) Define rate analysis. List any four components considered in rate analysis of an item.

(h) Which are the different types of estimates? Explain.

PART B

(4 × 15 = 60)

II. Prepare a sample detailed specification for 1st class brickwork in cement mortar. Highlight key elements that make a specification effective.

OR

III. Describe in detail the principles of specification writing. Compare the formats used by BIS, PWD and CPWD.

IV. Explain in detail the specification for finishing works such as:
   (i)   Plastering.
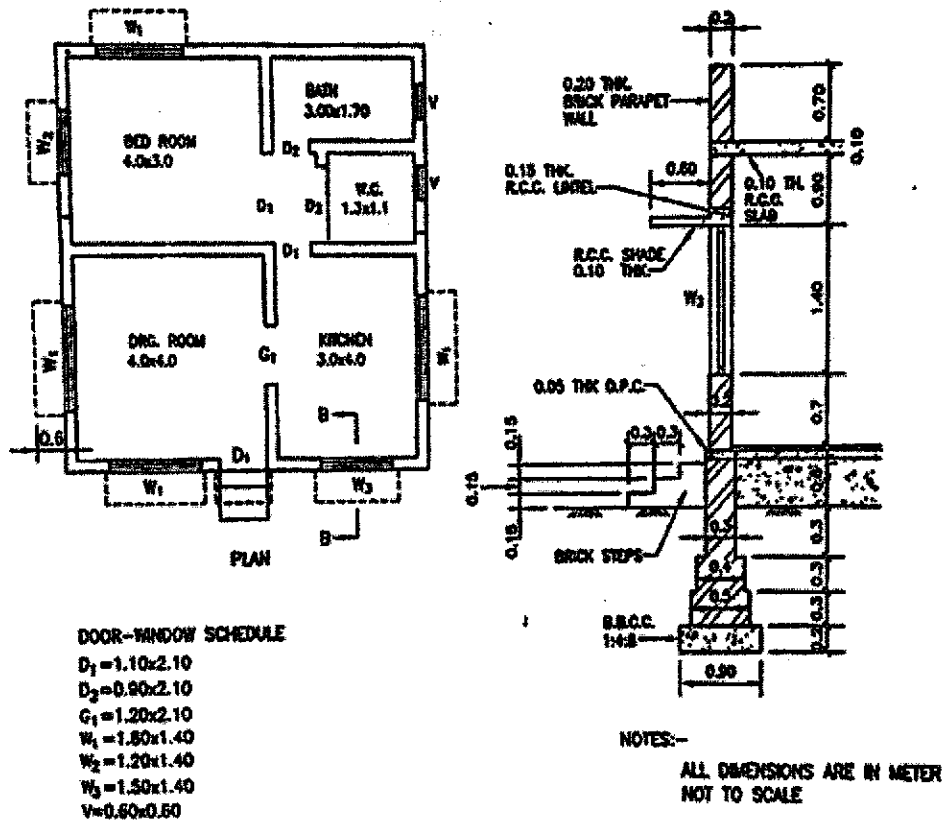   (ii) Painting.
   (iii) Whitewashing.

OR

V. Discuss the specifications involved in dismantling and demolition work. What precautions and procedures must be followed?

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VI.   Calculate the quantities for the following items.

PLAN

DOOR-WINDOW SCHEDULE
D_1=1.10x2.10
D_2=0.90x2.10
G_1=1.20x2.10
W_1=1.60x1.40
W_2=1.20x1.40
W_3=1.50x1.40
V=0.60x0.60

NOTES:-

ALL DIMENSIONS ARE IN METER
NOT TO SCALE

(i)   Earthwork in excavation.
(ii)   PCC (1:4:8) for foundation bed.
(iii) Brickwork in foundation and basement.
(iv)   Brickwork in superstructure.
(v)   12 mm cement plastering on walls (both sides).
(vi)   Cement concrete flooring (1:2:4), 100 mm thick.

OR

VII. Prepare a detailed estimate for a small building with tiled roof (a single-room rural house). Include major items like foundation, brickwork, roofing, and plastering.

VIII. Prepare a detailed rate analysis for 1 m^3 of plain cement concrete (1:2:4) including materials, labour, tools, overheads and contractor's profit.

OR

IX.   Discuss the role of computer software in building estimation. Name any three software tools and their key features.

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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.   Write short notes on:

(a)   Qualities of potable water.

(b)   One-pipe and two-pipe plumbing systems.

(c)   Sewage disposal systems.

(d)   Stormwater infiltration and runoff.

(e)   Self-purification of sewage.

(f)   Soak pit and its function.

(g)   Any two sanitary appliances used in residences.

(h)   Design considerations in the drainage scheme of a kitchen on a residential building.

PART B

(4 × 15 = 60)

II.   Elaborate with sketches – domestic water piping systems, which include hot and cold-water distribution.

OR

III.   Explain the standards of purity and water treatment methods followed for a city.

IV.   Explain the different factors affecting the design of sewers. Sketch at least three types of sewer pipe joints.

OR

V.   Design a septic tank for a public building with a maximum capacity of 150 people.

VI.   Write notes on
        (i)   Manholes
        (ii)   Culverts
        (iii)   Gutters
        (iv)   Catch basins
        (v)   Inspection chambers.

OR

VII.   Discuss the self-purification of sewage. How is sewage disposed of in an isolated building?

VIII.   Discuss and illustrate the planning considerations for bathrooms on a high-rise building.

OR

IX.   Explain with sketches on fire protection systems of buildings.

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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)   Write short note on unit load method.

     (b)   Explain statically indeterminate beams.

     (c)   State and explain Clapeyrons theorem of three moments.

     (d)   State and prove slope deflection method.

     (e)   Explain moment distribution method and state the steps involved in it.

     (f)   State the difference in Kani's and moment distribution method.

     (g)   Write short note on sway and non sway analysis of frames.

   (h)   Explain stiffness matrix.

PART B

(4 × 15 = 60)

II.   A cantilever beam of span 4 m is supported at free end to the level of fixed end. It carries a concentrated load of 40 kN at the centre of the span. Calculate the reaction at the prop and draw the shear force and bending moment diagram.

OR

III.   Analyze the propped cantilever using consistent deformation method.
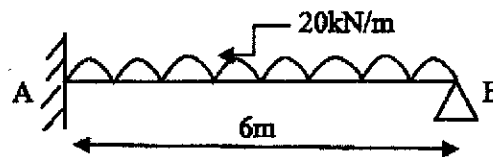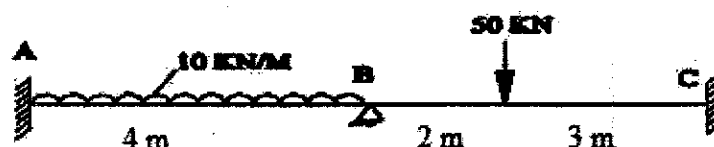

IV.   Analyze the continuous beam shown in figure by the three moment equation. Draw the shear force and bending moment diagram.
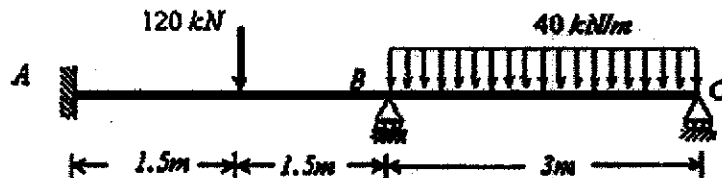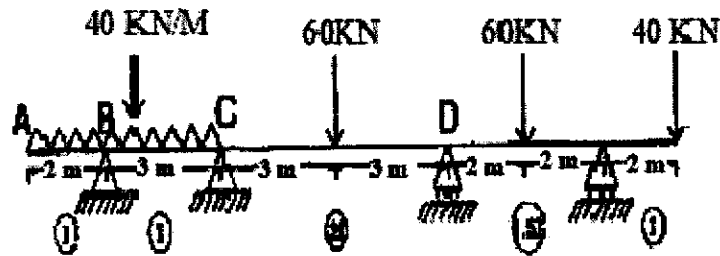

OR

V.   Draw the SFD and BMD for the continuous beam shown in the figure. Take $E = 2 \times 10^5$ N/mm^2, I = 3 × 10^6 mm^4. The support B sinks by 30 mm. Using slope deflection method.
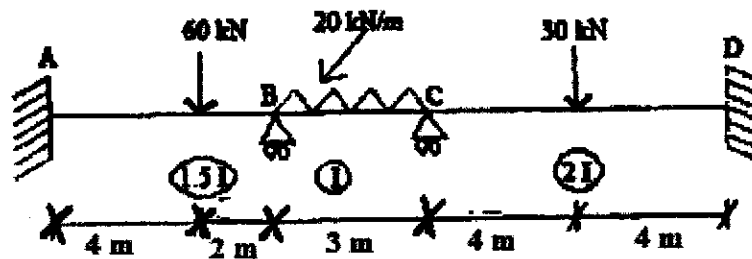

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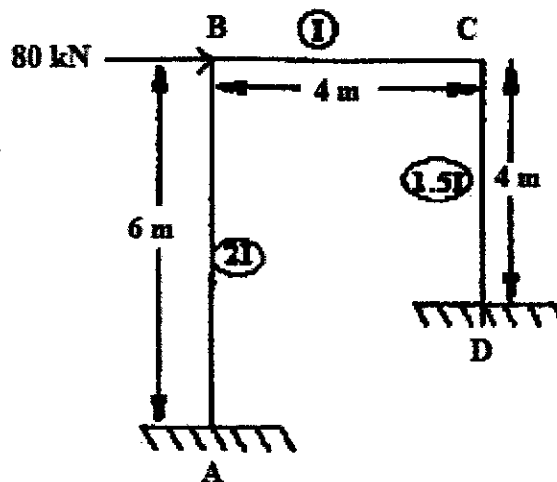VI.   Analyze the continuous beam shown in figure and determine the moment at all supports.

OR

VII.   Determine the support moments and draw the BMD for the continuous beam shown in figure.

VIII. Analyze the rigid frame shown in figure and draw the bending moment diagram.

OR

IX.   Analysis the frame shown in figure by moment distribution method and draw the BMD. Assume EI is constant.

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