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B

B.Arch. Degree V Semester Supplementary Examination July 2023

AR 1502 BUILDING MATERIALS AND CONSTRUCTION - IV

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

PART A

(8 × 5 = 40)

I. Write short notes on the following:

(a) Ingredients of paint
(b) Varnish and Lacquers
(c) Types of roofing tiles
(d) Wooden queen post truss
(e) Types of roofing tiles
(f) Parallel and criss cross escalators
(g) Safety components in elevators
(h) Horizontal belt conveyors

(2 × 10 = 20)

II. What elements should be addressed while painting cement plastered surfaces?

OR

III. What are the distinctions between floor tiles and wall tiles? At what locations, would you think of tiling the walls?

IV. List the numerous light weight roofing materials on the market.

OR

V. What are the design considerations for a commercial elevator?

PART B

(2 × 20 = 40)

VI. Create a steel truss for a room with an outside span of 1250 cm. The roof has a 30 degree slope. The roof cover is made of standard-sized corrugated aluminium sheet. Assume the sizes of the members and other relevant information. Display the specifics of two crucial joints.

OR

VII. Design a King post steel roof truss with an 8-meter span in an appropriate scale. Sketch the specifics of any three connections.

VIII. Draw to a suitable scale the plan, section and details of an elevator system for 5 passengers in a residential building.

OR

IX. Draw to suitable scale, plan, section and 30 degree escalator in a commercial building connecting 2 floors. Assume floor to floor height of 4.5 m.

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C

B.Arch. Degree V Semester Supplementary Examination July 2023

AR 1503 HISTORY OF ARCHITECTURE – IV

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Characteristics of Portuguese Colonial Architecture.

(b) Architectural feature of Goan – Portuguese Houses.

(c) Rashtrapathi Bhavan, New Delhi.

(d) Indo – Sarcenic Architecture.

(e) Brief on Victoria Memorial – Kolkata.

(f) Post Renaissance Architecture in Europe.

(g) Eiffel Tower.

(h) Art Nouveau Movement.

PART B

(4 × 15 = 60)

II. Explain with sketches the Architectural characteristics of Bom Jesus Cathedral – Goa.

OR

III. Differentiate the planning and Architectural characteristics of Hindu and Catholic settlement of Fountain has in detail with sketches during the Portuguese Colonial Era.

IV. Explain the evolution of styles and trends of Architecture brought by British to India.

OR

V. Elaborate with the help of sketches the Urban Planning of Edwin Lutyen's Delhi.

VI. Discuss the Material, Social and Cultural impact of Industrial revolution in the field of Architecture.

OR

VII. Give an example of building with sketches which used the advantage of Industrial Revolution in Europe. Describe its technology and materials of Construction.

VIII. Explain the Architecture of Louis Sullivan with examples.

OR

IX. Explain the Architecture of Antonio Gaudi with examples.

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B

B.Arch. Degree V Semester Supplementary Examination July 2023

AR 1504 ECOLOGY AND ENVIRONMENTAL STUDIES

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Scope of ecology.

(b) Carrying Capacity.

(c) Ecophene and Ecotypes.

(d) Grazing and Detritus.

(e) Ecology and Biome.

(f) Freshwater ecosystem.

(g) Nutrient cycle.

(h) Biomass.

PART B

(4 × 15 = 60)

II. What role do environmental studies play in the architecture and construction industry? Explain with examples, how architectural activities affect communities and ecosystems.

OR

III. Describe in detail the various types of biome. Differentiate between ecosystem, environment and biome.

IV. Explain in detail any five methods of measuring productivity.

OR

V. Explain in detail the various types of ecology pyramids with the help of diagrams.

VI. Describe the role of ecology and environmental study in architecture. Also explain how as architects we can bring forward positive impact in environment.

OR

VII. Explain population regulation and carrying capacity. Briefly describe the factors that affect population.

VIII. Explain in detail Nutrient cycle in ecosystem. What is the impact of man in the nutrient cycle?

OR

IX. Describe the various ecosystems of the world, linked to their relative productivity.

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A

B.Arch. Degree V Semester Supplementary Examination July 2023

AR 1505 BUILDING SERVICES II - ELECTRICAL DESIGN AND ILLUMINATION

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

(*Illustrate sketches where ever necessary*)

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Balanced Current

(b) Power factor

(c) Transformer

(d) Balanced and unbalanced loads in 3-phase system

(e) Electrical Flux

(f) Electrical flux Intensity

(g) Rod Earthing

(h) IBMS system

PART B

(4 × 15 = 60)

II. Explain in detail AC and DC. Show the Voltage-time and Current-time graphical relation.

OR

III. What is three phase system? Explain STAR connection.

IV. What are the different classifications of voltages and explain general aspects of electrical design in domestic building?

OR

V. Explain the Idea about a Substation. Draw the Electrical single line diagram for the same.

VI. Elaborate the electrical installation in commercial and high rise buildings.

OR

VII. What are the principles of lighting in buildings? Explain in detail about illumination in an auditorium.

VIII. What are the electrical safety regulations in commercial and high rise buildings?

OR

IX. What is earthing? Explain different types of earthing. What are the considerations for lighting protection in buildings?

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A

B.Arch. Degree V Semester Supplementary Examination July 2023

AR 1506 ARCHITECTURAL DETAILING

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

(i) Drawing sheets will be provided.
(ii) Assume further data, if found necessary.

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Symbols used in working drawing.
(b) Structural framing plan.
(c) Importance of line in working drawing.
(d) Check list for foundation plan and section.
(e) Schedule of doors and windows.
(f) Checklist for toilet details with sketches.
(g) Pros and cons of manual and CAD drafting.
(h) Types of lines and line weights and their importance.

PART B

(3 × 20 = 60)

II. The ground floor plan of a single floor residence is given as figure 1. Draw the center line drawing with all the required dimension for excavation and at least 2 station points. (scale 1:50). Assume necessary details required.

OR

III. Draw detailed wall section to scale 1:50 of an exterior wall of a double floored residence, cutting through the window, foundation, basement with RR masonry. Wall thickness: 23 cm. Roof slab with R.C.C M 20, 12 cm thick. Plastering – cement mortar 1:4, wooden window. Show DPC, sill concrete and lintel 15 cm thick.

IV. Draw a plan and interior of elevation (min. 2 sides) of a toilet with dimension 210 cm × 150 cm in 1:50 scale, for a residence showing location of fixtures, dimension etc. brick wall 23 cm thick, floor and wall finish – ceramic tile and wall finish ceramic tile up to roof level.

OR

V. Draw detailed plan, section and design the elevation of windows and door. D1 – 90 × 210, D2 – 80 × 210, W1 – 60 × 150, W2 – 120 × 150 and FW3 - 150 × 180.

VI. Draw the electrical layout for the plan of the residence shown in figure 1. Show legends in table with the height from finished floor level. (scale 1:50).

OR

VII. Design and draw the plan and section in appropriate scale of a staircase with balustrade and any two details for the construction.

(P.T.O.)

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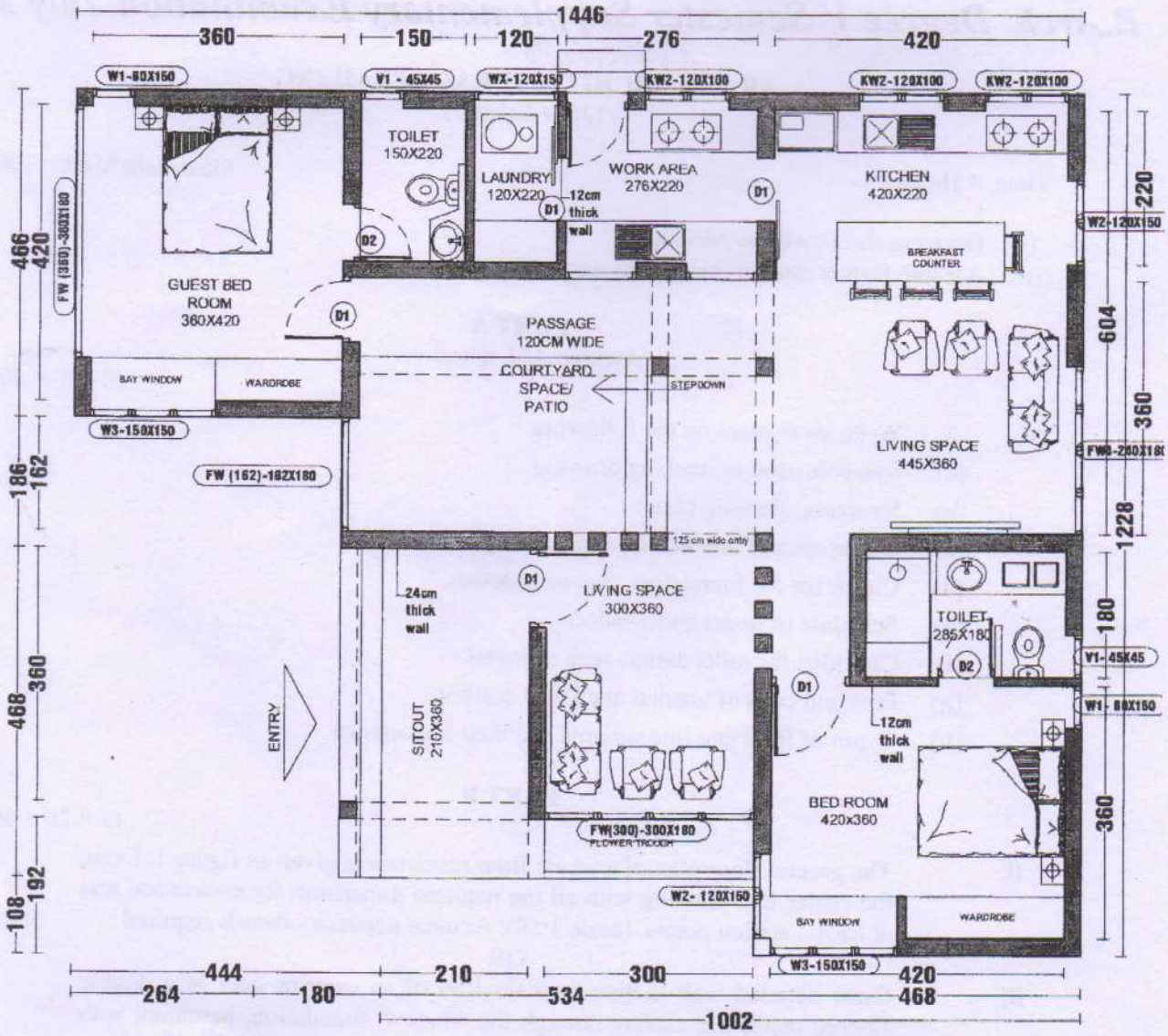

Figure 1. Ground Floor Plan. (Two brick wall thickness – 24 cm, 1 brick wall thickness – 12 cm)

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C

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AR 1507 STRUCTURAL ANALYSIS-III

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. (a) Define the terms normal thrust and radial shear force as applied in three-hinged arches with formulae.

(b) Enumerate the advantages and disadvantages of fixed arch compared to three-hinged arch.

(c) A 3 hinged semi-circular arch carries a point load of 100 kN at the crown. The radius of arch is 4 m. Find the horizontal reaction at the supports.

(d) A cable is suspended between two supports 120 m apart, at the same level. It carries two concentrated loads each of 5 kN at points 30 m and 90 m from the left support. The length of cable is 160 m. Determine the support reactions and tension in various positions of the cable.

(e) How suspension cables resist bending moments?

(f) Explain the force method of analysis of continuous beams.

(g) Briefly explain direct stiffness method of analysis.

(h) Compare displacement method and force method of analysis.

PART B

(3 × 20 = 60)

II. A three-hinged parabolic arch has a span of 30 m and rise of 10 m, it carries a UDL of 18 kN/m over the left half of the span and a point load of 100 kN at 5 m from the right end. Find the bending moment, normal thrust and radial shear at a section 3 m from the left end.

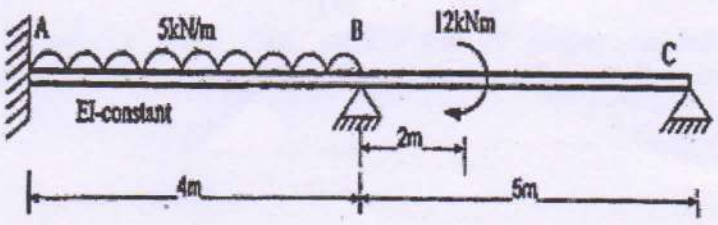
OR

III. A symmetrical three hinged circular arch rib of 20 m span with a central rise of 5.4 m carries a point load of 120 kN at 7 m from the left support. Calculate the horizontal thrust and reactions at the support.

IV. A cable of span 90 m (horizontal) has its ends at heights 8 m and 13 m above the lowest point of the cable. It carries a UDL of 15 kN/m over the horizontal span. Determine the support reactions and maximum tension in the cable.

OR

V. Analyse the beam shown in figure using flexibility matrix method. Draw the BMD.



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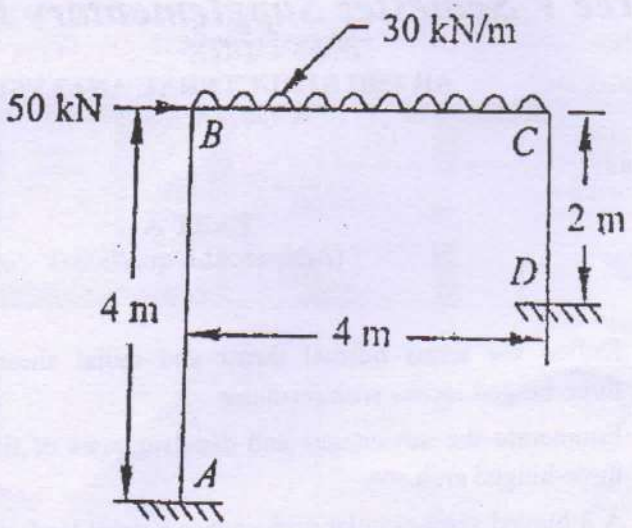
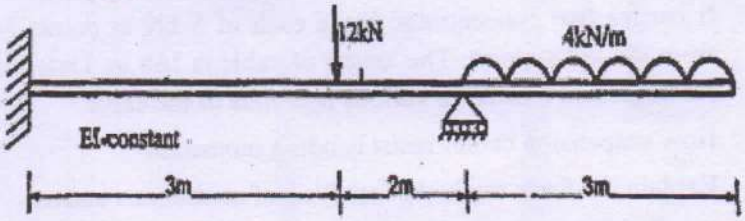
VI. Analyse the portal frame shown in figure using stiffness matrix method. Draw the BMD.



OR

VII. Analyse the beam shown in figure using direct stiffness method. Draw the SFD and BMD.



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