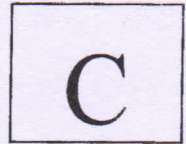


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***B.Arch. Degree V Semester Regular/Supplementary Examination
November 2021***

**AR 1502 BUILDING MATERIALS AND CONSTRUCTION IV
(2014 Scheme)**

Time : 4 Hours

Maximum Marks : 100

**PART A
(Answer *ALL* questions)**

(8 × 5 = 40)

I. Write short notes on the following.

- (a) Varnish
- (b) Properties of good paint.
- (c) Marble floor finish
- (d) Epoxy products
- (e) GRP roofing.
- (f) King post truss
- (g) Capsule lift
- (h) Natural floor finishes.

(2 × 10 = 20)

II. Name any two special purpose paints and discuss their uses and properties in detail.

OR

III. Discuss properties of different types of natural floor finishes and its application.

IV. Discuss the properties and advantages of the light roofing materials shingles and polycarbonate sheets in the construction industry.

OR

V. What are the different types of elevators based on operation and function? Elaborate on the planning consideration for elevators.

PART B

(2 × 20 = 40)

VI. Draw to a suitable scale a King post truss roof with fixing details for a span of 5.4 m and name the different parts. Draw the detailed drawing of Joints (i) Ridge piece meeting Principal rafters and King post and (ii) King post meeting the Tie beam.

OR

VII. Draw to a suitable scale of steel tubular truss roof with fixing details for an effective span of 6.5 m and name the different parts. Draw the detailed drawing of any two connections.

VIII. Draw the plan, section and details of a eight passenger elevator to be installed in an apartment building with floor to floor height 3.6 metres.

OR

IX. Draw the plan, section and details of a 30 degree escalator to be installed in a shopping mall to connect two floors. Floor height: 4.2 metres.

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***B.Arch. Degree V Semester Regular/Supplementary Examination
November 2021***

**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 along with sketches:
- Describe the architectural characteristics of Bom Jesus Cathedral along with neat sketches.
 - Briefly explain about Fountainahs and its architectural features.
 - Elements of Indo-Saracenic Architecture.
 - Architectural character of Victoria Memorial in Kolkata.
 - Explain the advancement in engineering during post Renaissance architecture with Eiffel Tower as example.
 - Explain about Crystal Palace along with neat sketches.
 - Explain the architectural contribution by Victor Horta.
 - Briefly explain about Joseph Paxton and his contribution to Architecture.

PART B

(4 × 15 = 60)

- II. Explain the impact of Portuguese colonial architecture in India along with neat sketches.
- OR**
- III. Describe the architectural impact by Portuguese on the religious and residential buildings of Goa with sketches and examples.
- IV. Describe about Edwin Lutyen's Delhi, also explain his design and planning principles used for building the capital city.
- OR**
- V. Discuss about the Impact of British colonial architecture in India, also explain about Indo-Saracenic style and its Trends brought by British to India.
- VI. Describe about Industrial revolution and its influence in Architecture, Building technology and materials with examples
- OR**
- VII. Explain about how the technological advancement during industrial revolution impact the design of crystal palace.
- VIII. Describe about Art Nouveau Architecture, Art and crafts movement and Contributions by William Morris to Arts and craft movement.
- OR**
- IX. Explain the Architectural Philosophy of Louis Sullivan and FL Wright with sketches of their works.

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***B.Arch. Degree V Semester Regular/Supplementary Examination
November 2021***

**AR 1504 ECOLOGY AND ENVIRONMENTAL STUDIES
(2014 Scheme)**

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer *ALL* questions)

(Draw sketches wherever necessary)

(8 × 5 = 40)

- I. Write short notes on the following.
- Components of ecosystem.
 - Principles and types of Environment.
 - r and K selection.
 - Ecotypes and Ecophenes.
 - Energy flow through Ecosystem.
 - Food chain.
 - Impact of man on nutrient cycle.
 - Carbon cycle.

PART B

(4 × 15 = 60)

- II. Cite with examples the concept of studying environment and ecology and its relevance in the present world with regard to climate change.
- OR**
- III. Briefly explain Biome and the main biomes of the world.
- IV. Explain population regulation and the factors that determine how population grow and disperse.
- OR**
- V. Explain in detail the Concept of carrying capacity and also describe the measures of population growth with diagrams.
- VI. Describe the different types of ecological pyramids. How do they represent the term 'ecological efficiency'?
- OR**
- VII. Explain in detail different methods of measuring productivity.
- VIII. Explain the impact of man on nutrient cycle. And also discuss bio-geochemical cycles.
- OR**
- IX. Explain the major ecosystems of the world. Explain Wetland, Marine and Freshwater ecosystems.

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**B.Arch. Degree V Semester Regular/Supplementary Examination
November 2021**

**AR 1505 BUILDING SERVICES II-ELECTRICAL DESIGN AND ILLUMINATION
(2014 Scheme)**

Time: 3 Hours

Maximum Marks: 100

**PART A
(Answer ALL questions)**

(8 × 5 = 40)

- I. (a) Write notes on emergency power supply system.
 (b) Distinguish between 3 phase system and single phase system.
 (c) Explain the difference between AC and DC system.
 (d) Explain the working principle of transformer.
 (e) Explain the following:
 (i) Luminous
 (ii) Illumination
 (iii) luminous intensity.
 (f) Write notes on MCCB.
 (g) Explain the need of earthing in electrical installation.
 (h) Write notes on plate earthing.

PART B

(4 × 15 = 60)

- II. Prove that line voltage = $\sqrt{3}$ times of phase voltage in a star connected three phase system.

OR

- III. A balanced 3-phase load consists of three coils, each of resistance 6Ω and inductive reactance of 8Ω . Determine the line current and power absorbed when the coils are;
 (i) star connected
 (ii) delta-connected across 400 V, 3-phase supply.

- IV. Explain the working of MCB and ELCB with neat sketch.

OR

- V. What is a substation? With neat layout, explain the various components in a substation.

- VI. Draw the layout of a panel board and explain each equipment.

OR

- VII. Design the illumination scheme in an auditorium with a seating capacity of 200 with estimation.

- VIII. Explain pipe earthing with neat sketch?

OR

- IX. What are the safety factors to be considered for the design of a high rise building?

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***B.Arch. Degree V Semester Regular/Supplementary Examination
November 2021***

**AR 1506 ARCHITECTURAL DETAILING
(2014 Scheme)**

Time: 4 Hours

Maximum Marks: 100

**PART A
(Answer ALL questions)**

(8 × 5 = 40)

- I. Write short notes on:
- Line types and their relevance.
 - Write down the checklist for wall section drawing.
 - Checklist of a Floor Plan
 - Structural Framing Plan
 - Why are scales of the drawings varied in working drawings? Sketch an example.
 - Pros and Cons of CAD Detailing
 - Sketch and explain various Material indication in construction document
 - Checklist for Reflected Ceiling Plan (R.C.P)

PART B

(3 × 20 = 60)

- II. The Ground Floor Plan of a residence is given as Figure 1. Draw the Centre line drawing with all the required dimensions for excavation (Scale 1:50) Assume necessary details required for the drawing.

OR

- III. Draw detailed Wall Section to scale 1:50 of an exterior wall of a double storeyed residence, cutting through the window. Foundation and Basement - Random Rubble. Wall - 23 cm thick brick work in cement mortar. Roof Slab - R.C.C. 1:1.5:3, 12 cm thick. Plastering - Cement mortar 1:4, Window - wooden. Show DPC, sill concrete, joinery detail between roof slab and brick wall.

- IV. Draw a plan and interior elevations (minimum 2 Nos.) of a toilet of size 210 cm × 180 cm in 1:50 scale, for a residence, showing location of fixtures, dimensions etc. Brick wall 23 cm thick, floor finish - ceramic tile and wall finish ceramic tile of height 210 cm.

OR

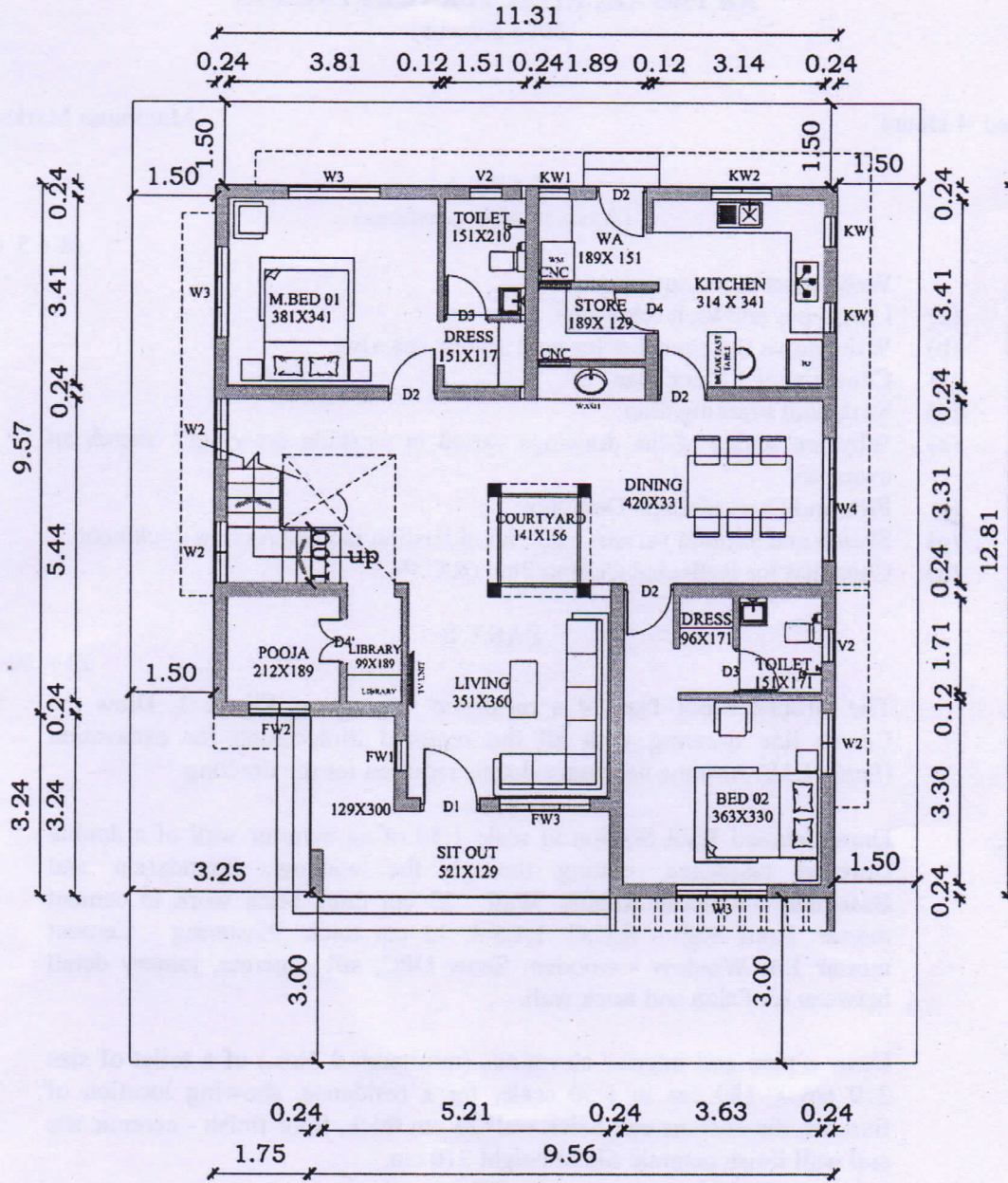
- V. Draw a plan and interior elevations (minimum 2 Nos.) of a Kitchen of size 330 cm × 300 cm in 1:50 scale, for a residence, showing cabinets and necessary fixtures. Brick wall 23 cm thick, floor finish - ceramic tile and counter - granite.

- VI. Prepare the electrical layout for the plan of residence shown in figure 1. Show legends in table with the heights from finished floor level. (Scale 1:50).

OR

(P.T.O.)

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



GROUND FLOOR PLAN

Figure-1

**B.Arch. Degree V Semester Regular/Supplementary Examination
November 2021****AR 1507 STRUCTURAL ANALYSIS -III
(2014 Scheme)**

Time: 3 Hours

Maximum Marks: 100

**PART A
(Answer ALL questions)**

(8 × 5 = 40)

- I. (a) A three hinge arch is statically determinate or not. Justify your answer with figure.
- (b) A three hinge arch of span 'l' and rise 'h' carries a UDL of w per unit run over the whole span. Find the horizontal thrust.
- (c) What are the fundamental concepts of two hinged arch?
- (d) Write short notes on suspension cables with assumptions.
- (e) Explain flexibility method of analysis with steps.
- (f) Derive flexibility matrix for a beam element
- (g) Compare displacement method and force method of analysis
- (h) Discuss the effect of settlement of supports on internal forces in structures

PART B

(3 × 20 = 60)

- II. A parabolic arch hinged at the springing and crown has a span of 20 m. The central rise of the arch is 4 m. It is loaded with a UDL of intensity 2 kN/m on the left 8 m length. Calculate
- (i) Reaction components.
- (ii) Radial shear and normal thrust at 15 m from the left end.
- (iii) Bending moments (maximum positive and negative).

OR

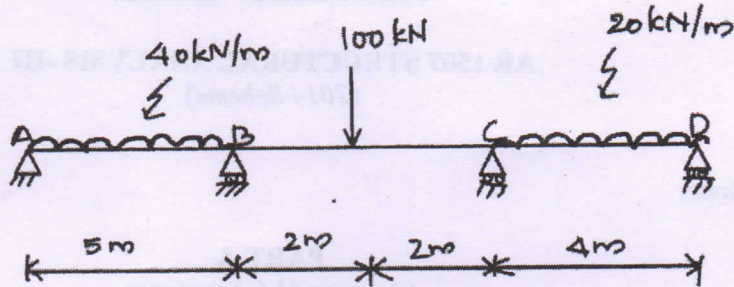
- III. A symmetrical three hinged circular arch has a span 16 m and a rise to the central hinge of 4 m. It carries a vertical load of 16 kN at 4 m from the left hand end. Calculate
- (i) The magnitude of the thrust at the springings.
- (ii) The reactions at the supports.
- (iii) Bending moment of 6 m from the left hand hinge.
- (iv) The maximum positive and negative moment.

- IV. A cable of span 150 m and dip 12 m carries a load of 10 kN/m of horizontal span. Find the maximum tension in the cable and the inclination of cable at the support. Find the force transmitted to the supporting pier if the cable passes over smooth pulley on the top of the pier. The anchor is set 35° to the horizontal. Determine the maximum bending moment for the pier if the height of the pier is 15 m.

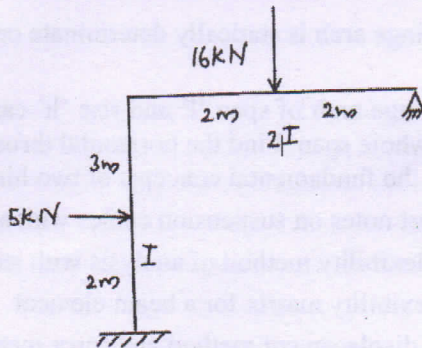
OR

(P.T.O.)

V. Analyse the continuous beam as shown in figure by force method. AB is acting an udl of 40 kN/m and BC with 100 kN point load acting at centre and CD is acting an udl of 20 kN/m. Draw the BMD.



VI. Analyse the given frame using force method of analysis.



OR

VII. Analyse the frame using stiffness method of analysis.

