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**B.Arch. Degree III Semester Special Supplementary Examination
August 2025**

AR 1302 BUILDING MATERIALS AND CONSTRUCTION - II

(2014 Scheme)

Time: 4 Hours

Maximum Marks: 100

Instructions:

- (i) Illustrate answers with sketches wherever necessary.
- (ii) Candidates will be supplied with one drawing sheet of approximate A2 size.

PART A
(Answer *ALL* questions)

$(8 \times 5 = 40)$

I. Write short notes on:

- (a) Physical properties of soil
- (b) Varieties of Cement
- (c) Water-cement ratio
- (d) Joints in concrete
- (e) Design of Deep Foundation
- (f) One-way slab and Two-way slab
- (g) Types of staircases
- (h) Finishes for staircases

$(2 \times 10 = 20)$

II. Define bearing capacity of soils. Explain briefly methods of improving bearing capacity of different types of soil.

OR

III. Explain briefly the concreting process starting from batching till curing.

IV. What are the major functions of a foundation? Explain with sketches, various types of shallow foundations used in constructions.

OR

V. What are the factors involving staircase design? Discuss the guidelines involved in designing and detailing the access for physically challenged.

PART B

$(2 \times 20 = 40)$

VI. Draw to a suitable scale, plan and section of a combined column footing for a column of size 30 cm \times 30 cm at a c/c spacing of 300 cm. Assume any other data required.

OR

VII. Draw to a suitable scale, detailed plan and section of lintel and sunshade for a residential building. Assume necessary details required for drawing.

VIII. Draw to a suitable scale, detailed plan and section of a dog-legged RCC staircase for a three storied commercial building. Draw up to first floor level and assume necessary details required. Floor height = 375 cm.

OR

IX. Draw to scale the plan and section of an RCC straight stair of width 1 m to reach a height of 2.4 m. Provide a landing after ten risers.

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B.Arch. Degree V Semester Special Supplementary Examination
August 2025

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) Properties of good paints.
 - (b) Bituminous paints.
 - (c) Vinyl flooring.
 - (d) Natural stone flooring finishes.
 - (e) Poly carbonate sheets.
 - (f) Space frames.
 - (g) Types of elevators based on purpose.
 - (h) Travelators.

(2 × 10 = 20)

- II. Explain in detail the different types of defects in painting along with their causes and solutions.

OR

- III. List the materials commonly used as wall finishes. Briefly describe each material.

- IV. What are light weight roofing materials? Explain the properties, advantages, disadvantages and the method of fixing of any two light weight roofing materials available in the market.

OR

- V. What are the different planning considerations and detailing of elevators? Explain with diagrams if required.

PART B

(2 × 20 = 40)

- VI. Draw to a suitable scale a King Post truss roof with fixing details for a span of 9 m and name the different parts. Draw the details of any two joints.

OR

- VII. Draw to a suitable scale a steel tubular truss roof with fixing details for a span of 5 m and name the different parts. Draw the details of any two joints.

- VIII. Draw the plan, section and details of a passenger elevator system for a shopping complex. Assume the necessary details including capacity.

OR

- IX. Draw the plan, section and details of an escalator for a shopping complex. Assume the necessary details and floor height.

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**B.Arch. Degree V Semester Special Supplementary Examination
August 2025**

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

Time: 4 Hours

Maximum Marks: 100

Instructions:

- (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:

- (a) What is included in a working drawing set checklist?
- (b) What is typically represented in a roof plan?
- (c) Why are symbols and conventions important in construction drawings?
- (d) Explain the three-part dimensioning system in working drawings.
- (e) List the essential components of a floor plan.
- (f) What information does a grading plan typically convey?
- (g) Explain the function of a reflected ceiling plan (RCP).
- (h) What do room finish schedules include?

PART B

(3 × 20 = 60)

- II. The ground floor plan of residential unit is given in figure 1. The soil condition of the site is relatively hard. Prepare the central line drawing with all required dimensions for earth excavation (Scale 1:50). Assume necessary details required for the drawing.

OR

- III. (a) Prepare a schedule of door, window and ventilator for the given plan in figure 1.
(b) Prepare a detailed working drawing for one of the windows (plan, sections, elevation and joinery details).

- IV. Draw the interior working drawing details for the kitchen (figure 1), with detailed furniture layout and elevations. (Scale 1:20).

OR

- V. Draw the interior drawing details for the Bedroom (figure 1), with detailed furniture layout and elevations. (Scale 1:20).

- VI. Prepare site planning and landscape details as working scheme (Scale: 1:50) for the given site plan.

OR

- VII. Draw the interior working drawing details for the Toilet (figure 1), with detailed furniture layout and elevations. (Scale 1:20).

(P.T.O.)

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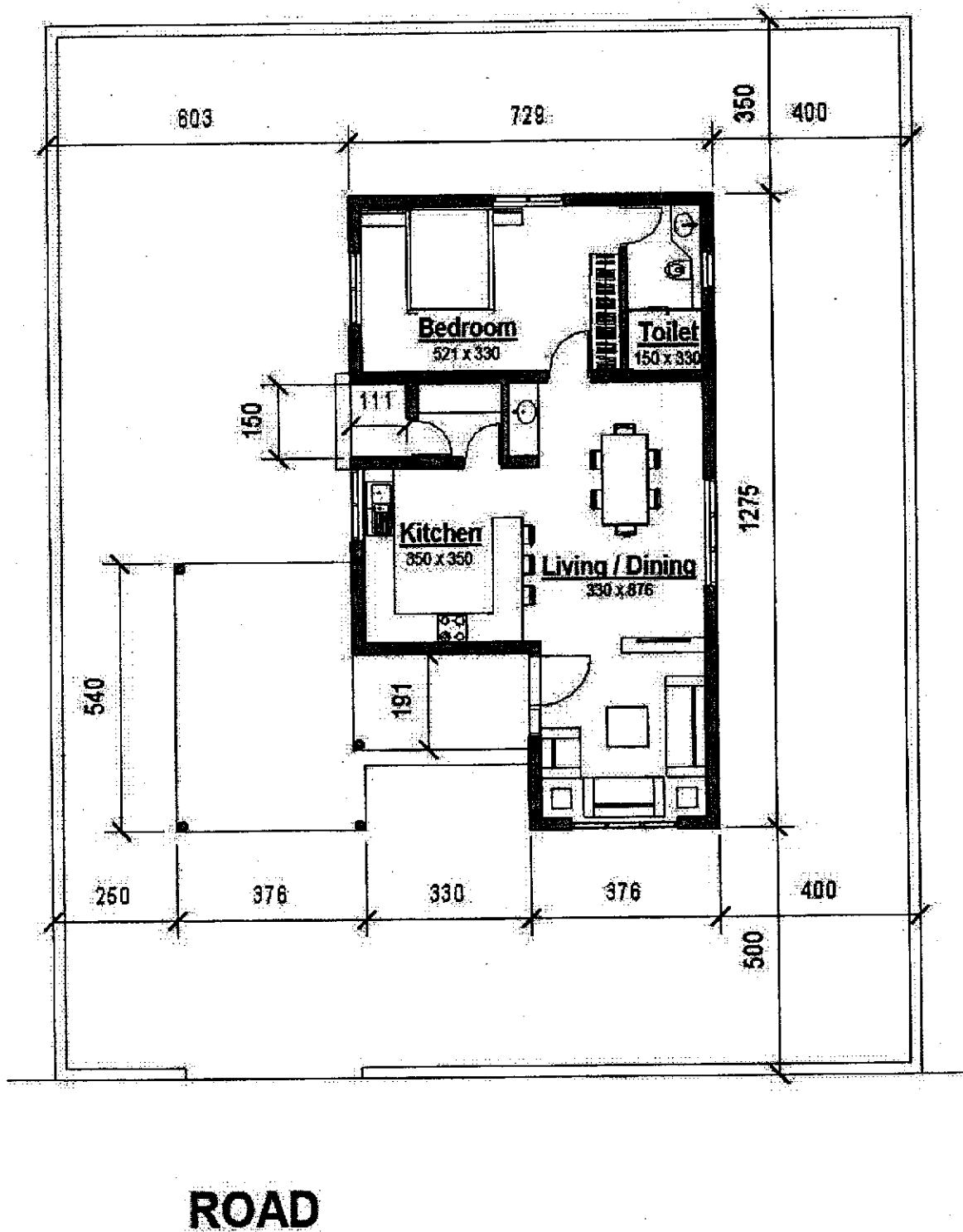


Figure 1

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B.Arch. Degree VI Semester Special Supplementary Examination
August 2025

AR 1602 BUILDING MATERIALS AND CONSTRUCTION – V
(2014 Scheme)

Time: 4 Hours

Maximum Marks: 100

Instructions :

- (i) Drawing sheets to be supplied.
- (ii) Assume suitable details and dimensions wherever necessary.
- (iii) Illustrations in answer carry due mark.

PART A
(Answer ALL questions)

(8 × 5 = 40)

I. Write short notes on the following:

- (a) SERC.
- (b) Ferro cement properties and preparation.
- (c) Distinguish between wired glass and fiber glass.
- (d) Application of plastic in building construction.
- (e) False ceiling using plaster of paris.
- (f) Compare two materials used in wall panelling.
- (g) Steps in prevention of collapse.
- (h) Components of earthquake resistant buildings.

(2 × 10 = 20)

II. Explain any three innovations in floor, wall and roofing systems each.

OR

III. Types of glass and its application in building construction.

IV. Discuss about False ceiling using different materials.

OR

V. Discuss the Architectural details of earthquake resistant buildings.

PART B

(2 × 20 = 40)

VI. An air conditioned play class of size 4 × 6 meter use gypsum boards for false ceiling with aluminum. Prepare an appropriate drawing in suitable scale to explain the details.

OR

VII. Draw and label the details of wooden wall panelling with joinery details to a suitable scale and label them.

VIII. Draw in appropriate scale: Reinforcement and bending details in RC Band.

OR

IX. Draw in detail and label: Vertical steel bars in brick masonry.

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***B.Arch. Degree VII Semester Special Supplementary Examination
August 2025***

**AR 1706 (a) SUSTAINABLE ARCHITECTURE (ELECTIVE I)
(2014 Scheme)**

Time: 3 Hours

Maximum Marks: 100

**PART A
(Answer ALL questions)**

(8 × 5 = 40)

- I. Write short notes on the following.
- (a) Sustainability in environmental science
 - (b) Factors that connect climate to sustainability
 - (c) Life cycle analysis
 - (d) Differentiate between reuse and recycle with examples
 - (e) Concept of Green building
 - (f) BREEAM
 - (g) Urban Heat Island
 - (h) Urban Ecology

PART B

(4 × 15 = 60)

- II. Explain carrying capacity and its relation to sustainable development.
OR
- III. Discuss the salient features of Brundtland report.
- IV. Define biomimicry in architecture. State two benefits of applying biomimicry in building design.
OR
- V. Examine the importance of eco building materials in sustainable development.
- VI. Explain in detail GRIHA rating system.
OR
- VII. Explain LEED Certification and example of a Platinum-Certified Building in India.
- VIII. What are the key characteristics of a sustainable community with a suitable case study?
OR
- IX. Discuss the social and economic dimensions of sustainability highlighting their interlinkages and importance in sustainable development.

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B.Arch. Degree VI Semester Special Supplementary Examination August 2025

AR 1606 STRUCTURAL DESIGN (2014 Scheme)

(Use of IS:456 code, design charts in SP:16 only are permitted)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer ALL questions)

(8 × 5 = 40)

- I. Answer the following:
- Define characteristic load and characteristic strength.
 - What are the safety and serviceability requirements in the design based on limit state method?
 - Briefly explain the design parameters considered for designing a T-beam.
 - Enumerate the procedure for designing a one-way slab using limit state method.
 - Describe the characteristics of a two-way slab and draw its reinforcement details.
 - Define slenderness limit and minimum eccentricity of columns.
 - Enumerate the assumptions of limit state of collapse in compression.
 - How do you select the depth of a footing? What critical section in a footing do you check for safety against shear?

PART B

(4 × 15 = 60)

- II. Design a RC rectangular beam with an effective span of 4.8 m and carries a UDL of 14 kN/m (inclusive of self-weight) throughout its span. Take width of beam as 230 mm. Use M20 grade concrete and Fe415 HYSD bars.

OR

- III. Design a reinforced concrete beam of span 8 m which is being subjected to a live load of 30 kN/m. Overall depth of the beam is limited to 650 mm. Use M20 concrete and Fe 415 steel.

- IV. A T-Beam slab floor has 125 mm thick slab forming part of T-beams which are of 8 m clear span. The end bearing are 450 mm thick. Spacing of T-beams is 3.5 m. The live load of the floor is 3 kN/m². Design one of the intermediate beams. Use M20 concrete and Fe415 steel.

OR

- V. Design a slab for a room 3 m × 7 m clear in size. Use M20 concrete and Fe415 steel. The live load is 2 kN/m². Shear and deflection check is required. Draw its reinforcement details.

(P.T.O.)

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- VI. Design a two-way RCC slab for a room of size 4 m × 6 m with continuous edges all round at supports. Assume a live load 4kN/ m² concrete of M20 grade and Fe415 HYSD bars are available for use. Sketch the details of reinforcements in the slab.

OR

- VII. Design a short circular column of effective length 3.3 m to carry an axial load of 1200 kN. Provide helical reinforcement as transverse reinforcement. Use M25 concrete and Fe415 steel.

- VIII. Design the reinforcements required for a column which is restrained against sway using the following data:

Size of columns	=	450 mm × 530 mm.
Effective Length	=	6.6 m
Unsupported Length	=	7.7 m
Factored Load	=	1600 kN
Factored moment about major axis	=	50 kNm at top and 30 kNm at bottom
Factored moment about minor axis	=	40 kNm at top and 20 kNm at bottom
Concrete grade	=	M25
Steel grade	=	Fe500

Column is bent in double curvature and reinforcement is distributed equally on all four faces.

OR

- IX. Design and detail an isolated footing for a square column 400 mm × 400 mm carrying a load of 2100 kN. The SBC of the soil is 280 kN/m². Use M20 concrete and Fe415 HYSD bars.
