B.Arch-V(R/S)-11.25-4385 Reg. No. | | | | | | | | |

A

B.Arch. Degree V Semester Regular/Supplementary Examination November 2025

AR 1502 BUILDING MATERIALS AND CONSTRUCTION - V

(*2021 Scheme*)

Instructions:

(i) One drawing sheet to be supplied.
(ii) Assume suitable details and dimensions wherever necessary.
(iii) Illustrations in answer carry due mark.
(iv) Credit will be given for following standard architectural drafting and detailing conventions.

Time: 4 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes on:

(a) Importance of protective coatings.
(b) Whitewashing and distempering.
(c) Hydraulic elevators.
(d) Dumb waiter and its uses.
(e) Steel grillage foundation.
(f) Flat slab.
(g) Rebound hammer test.
(h) Jacketing.

PART B

(4 × 10 = 40)

II. Explain the process of plastering. Discuss types of plaster and defects in plastering.

OR

III. Describe in detail the preparation of surfaces and the process of painting.

IV. Describe the safety devices and control systems used in modern elevator installations.

OR

V. Define the escalator and list out the types. Discuss in detail the layout, and working of criss-cross arrangements – escalators.

VI. Explain the types and design principles of pile foundations.

OR

VII. Elaborate on the lift slab method of construction.

VIII. List out the various defects commonly found in buildings. Discuss any two defects their causes, effects and remedies with neat sketches.

OR

IX. Describe the methods of structural strengthening such as Grouting and Jacketing.

(P.T.O.)

PART C

$(1 \times 20 = 20)$

X. Draw the plan, sectional elevation and elevation of a passenger lift shaft in a multi-storeyed building, showing guide rails, counterweight, platform, machine room.

OR

XI. Draw details of a raft foundation with plan, sectional elevation and reinforcement layout.

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A

B.Arch. Degree V Semester Regular/Supplementary Examination November 2025

AR1503 HISTORY OF ARCHITECTURE V-EARLY MODERN

(2021 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. Write short notes on the following

(a) Factory Towns of the Industrial Revolution.

(b) Industrial Revolution and Railway Architecture.

(c) Fluidity and Plasticity in Design.

(d) Casa Milà (Antoni Gaudí).

(e) Fontainhas, Goa.

(f) Mercantile Capitalism and its Architectural Impact.

(g) Victoria Memorial, Kolkata.

(h) Municipal Corporation Building, Mumbai.

PART B

(4 × 15 = 60)

II. Discuss the contribution of Ebenezer Howard and the Garden City Movement as a social and urban response to industrialization. Explain how Howard's ideas sought to combine the advantages of town and country to overcome the problems of the industrial city.

OR

III. Compare the Crystal Palace and the Eiffel Tower as architectural icons of industrial modernity. How did they redefine architectural aesthetics through the use of iron, glass and engineering precision?

IV. Discuss the stylistic features of Art Nouveau architecture, including flowing lines, asymmetry, floral motifs, iron and glass construction, and integration of art and structure. Support your answer with examples from Victor Horta or Hector Guimard.

OR

V. Explain Antoni Gaudí's architectural philosophy. Analyse the architectural and structural innovations of Gaudí's design in the Sagrada Família.

(P.T.O.)

VI. "Colonial architecture was both an instrument of domination and a medium of cultural exchange". Discuss this statement with examples from colonial India.

OR

VII. Describe the historical background and patronage of the Basilica of Bom Jesus, Goa. Explain its materials of construction, architectural style, façade design and the functional as well as symbolic aspects of its architecture and planning.

VIII. Explain the principal architectural styles and trends introduced by the British in India—such as Neoclassical, Gothic Revival, Indo-Saracenic, and Imperial Classicism—illustrating your answer with relevant building examples and sketches.

OR

IX. Explain the planning and architectural characteristics of Sir Edwin Lutyens' New Delhi. What were the main objectives behind its design, the urban planning principles adopted and the key architectural landmarks created under his direction?

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B

B.Arch. Degree V Semester Regular/Supplementary Examination November 2025

AR 1504 THEORY OF STRUCTURES IV- RCC STRUCTURES

(2021 Scheme)

Time: 3 Hours Maximum Marks: 100

Instructions: Codes IS456, SP16 charts, IS883 and calculators are permitted.

PART A

(Answer **ALL** questions)

(8 × 5 = 40)

I. (a) Explain the serviceability criteria for the design of beams.
(b) Briefly explain under reinforced, balanced and over reinforced sections. Also comment on most suitable section.
(c) Differentiate between one way slab and two way slab.
(d) List out the situations that demands a two way slab.
(e) Explain the types of footings with neat sketches.
(f) What is the purpose of providing lateral ties in columns?
(g) Classify timber on any two basis.
(h) Write short note on flitched timber beam.

PART B

(4 × 15 = 60)

II. Design a singly reinforced concrete beam having a clear span of 3 m having support width 230 mm carrying 6 kN/m live load. Assume M25 grade concrete and Fe 415 grade steel.

OR

III. Design a reinforced concrete beam having width 300 mm and overall depth restricted to 600 mm. The effective span of beam is 8 m and carries a live load of 25 kN/m. Consider M25 grade concrete and Fe 415 grade steel.

IV. Design a reinforced concrete slab for a floor having clear dimensions 4.5 m × 10 m with 230 mm support walls all around. Assume simply supported condition for the slab. Adopt M25 grade concrete and Fe 415 grade steel.

OR

V. Design a slab for an office floor of size 4 m × 5 m with discontinuous and simply supported edges on all the sides with corners prevented from lifting to support a live load of 4 kN/m^2. Adopt M20 grade concrete and Fe 415 grade steel.

VI. Design the longitudinal and lateral reinforcement in a rectangular reinforced column of size 250 mm × 350 mm subjected to a design load of 1000 kN and a moment of 200 kNm with respect to major axis. Adopt M20 grade concrete and Fe 415 grade steel.

OR

(P.T.O.)

VII. A reinforced concrete column 400 mm supports an axial service load of 1000 kN. The safe bearing capacity of soil at site is 200 kN/m^2. Adopting M20 grade concrete and Fe 415 bars design a suitable footing for the column and sketch the details of reinforcements.

VIII. The roof of a room having clear dimensions 4.2 m × 11.7 m is supported on two timber beams equally spaced. Wall thickness is 30 cm. Roof coverings weighs 2.5 kN/m^2 and live load is 1.5 kN/m^2. Use Sal wood. Design the timber beam.

OR

IX. A flitched beam consist of a wooden joist 10 cm wide and 20 cm deep strengthened by two steel plates 10 mm thick and 20 cm deep. If the maximum stress in wooden joist is 7 N/mm^2. Find the corresponding maximum stress attained in steel. Also find the moment of resistance of the composite section. Take E for steel = 2×10^5 N/mm^2 and for wood = 1×10^4 N/mm^2.

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A

B.Arch. Degree V Semester Regular/Supplementary Examination November 2025

AR 1506 BUILDING SERVICES-II ELECTRICAL DESIGN AND ILLUMINATION
(*2021 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A
(Answer **ALL** questions)

(8 × 5 = 40)

I. (a) Differentiate between HT and LT lines.
(b) Explain emergency power supply system (EPSS) with suitable diagram.
(c) What are circuit breakers? Explain their functions in protecting the house wiring?
(d) Explain the working principle of transformer with suitable diagram.
(e) Explain the three different lighting uses.
(f) Explain the different types of lighting arrangements with diagrams.
(g) Explain the need of earthing in electrical installations.
(h) Write notes on pipe earthing.

PART B

(4 × 15 = 60)

II. Differentiate between star and delta connected system. Also derive the relation between phase and line current in a delta connected system.

OR

III. A balanced three phase load consists of three coils, each of resistance 6 Ω and inductive reactance of 8 Ω. Determine the line current and true power when the coils are star connected across 400 V, three phase supply.

IV. Draw the single line diagram of a substation and explain each component.

OR

V. Design the illumination scheme in an Auditorium with a seating capacity of 100 with estimation.

VI. Describe the following terms.
(i) Luminous Intensity
(ii) Luminous Flux
(iii) Illuminance
(iv) Co-efficient of Utilization (COF)
(v) Maintenance Factor (MF).

OR

VII. Explain Integrated Building Management System. Also describe how it helps in improving the efficiency, safety and sustainability of modern buildings?

VIII. Explain the working of Solar Photovoltaic Technology. Also list the applications of solar energy in buildings.

OR

IX. Describe the construction and working of Lightning Protection System with diagram. Also explain Lightning Conductor with Meshed Cage (Faraday Cage) with diagram.

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A

B.Arch. Degree V Semester Regular/Supplementary Examination November 2025

AR 1507 ARCHITECTURAL ACOUSTICS

(*2021 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes on the following

(a) Properties of sound

(b) Audibility

(c) Sound absorption

(d) Acoustical defects in enclosed spaces

(e) Air borne and structure borne sound

(f) Noise criteria

(g) Requirements of good sound absorbent

(h) Membrane absorbers

PART B

(4 × 15 = 60)

II. Discuss the propagation of sound in different media and the various factors affecting sound propagation.

OR

III. Explain with neat sketches the human ear and hearing characteristics.

IV. Discuss the behaviour of sound in room and enclosures.

OR

V. A lecture hall 18 m × 10 m × 5 m has sound absorption coefficients 0.04 for ceiling, 0.3 for walls and 0.1 for floors.

(i) Find the reverberation time of the hall with no occupants and no sound absorbing treatment.

(ii) Find the reverberation time when 50% of the wall is replaced with acoustical boards of absorption coefficient 0.7.

VI. What are the major sources of noise in urban and building environments? Discuss the effects of noise pollution on human health and behavior.

OR

VII. Explain the various methods of noise control in buildings. Discuss how these methods can be specifically applied in the design of lecture halls.

VIII. Explain the different types of sound-absorbing materials. Discuss their absorptive characteristics and how they are used in the acoustical treatment of enclosed spaces.

OR

IX. Discuss the acoustical treatment of an auditorium, including the selection and placement of absorptive materials to achieve optimal sound quality.

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