B.Arch-VI(S)-07.24-3308 Reg. No. | | | | | | | | |

B

B.Arch. Degree VI Semester Supplementary Examination July 2024

AR 1602 BUILDING MATERIALS AND CONSTRUCTION - V

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Tempered glass characteristics and applications.
(b) Ferro cement and its applications.
(c) Any two types of glass applications.
(d) Structural plastics.
(e) Components for an artificial ceiling.
(f) Specifications for the stone covering on walls.
(g) Shear wall.
(h) Purposes of fire-resistant building.

(2 × 10 = 20)

II. Describe any unique method created by Indian building research organisations to lower the cost of walls for structures.

OR

III. Describe the pros and cons of using plastic for doors and windows.

IV. What factors are taken into account while choosing the materials and fitting details for a fake ceiling?

OR

V. Using drawings, explain how building form affects a building's ability to withstand earthquakes.

PART B

(2 × 20 = 40)

VI. Draw to scale the features of a perforated acoustic tile fake ceiling with concealed metal frame work supported from an auditorium's steel truss. Sections and a mirrored ceiling plan with concealed light fixtures may be drawn. Assume further information that may be required for the drawing.

OR

VII. Draw a comprehensive plan, section and elevation of wooden wall panelling for the walls of a hotel lobby to proper scale. Assume any further information needed for the drawing.

(P.T.O.)

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

OR

IX. Draw a plan and sectional elevation of a room with dimensions of 360 cm × 300 cm, a height of 300 cm, and a 10 cm thick RCC roof slab in an earthquake-prone area. Show the reinforcement details of the vertical steel bars in the masonry that were installed to provide earthquake resistance, and label the various components. Assume additional data, such as the location and size of apertures etc.

***

B.Arch-VI(S)-07.24-3309 Reg. No. | | | | | | | | |

A

B.Arch. Degree VI Semester Supplementary Examination July 2024

AR 1603 HISTORY OF ARCHITECTURE - V

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Chicago School of Architecture.
(b) American Prairie homes.
(c) The dualistic design of Alvaro Aalto's buildings.
(d) Frank O. Gehry's modern architecture's adherence to architectural principles.
(e) Hassan Fathy's use of sustainable design ideas in his work.
(f) Technology influence on Norman Foster's architectural designs.
(g) Planning of Chandigarh.
(h) Laurie Baker and his philosophy.

PART B

(4 × 15 = 60)

II. Describe how the Bauhaus School influenced the development of modern architecture ideas.

OR

III. What are the guiding principles of architecture that Mies Van De Rohe brought about, and how did it affect architecture across the world?

IV. Describe critical regionalism and how it relates to modern architecture.

OR

V. Compare the architectural teachings found in Frei Otto's and P.L. Nervi's works.

VI. What guiding ideas may be found in the works of Santiago Calatrava, Richard Rogers and Renzo Piano?

OR

VII. Describe the development of post-modern architecture using prevailing styles and examples.

VIII. Give three examples of modern Indian architects' works and discuss how the study of Indian traditional architecture and themes has affected their work.

OR

IX. What are the most important takeaways for modern India from the writings of Laurie Baker and Charles Correa?

***

B.Arch-VI(S)-07.24-3310 Reg. No. | | | | | | | | |

B

B.Arch. Degree VI Semester Supplementary Examination July 2024

AR 1604 TOWN PLANNING

(2014 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Hippodamus of Miletus.

(b) Palmanova city.

(c) Urbanization.

(d) Radburn planning.

(e) Zoning.

(f) FAR.

(g) Land Acquisition Act.

(h) Major function of ULB.

PART B

(4 × 15 = 60)

II. Human settlements are considered as an expression of civilization. Explain with an example.

OR

III. How did the Industrial revolution impact the planning and design of cities of that time?

IV. Explain with neat sketches how Le Corbusier designed the City of Chandigarh?

OR

V. Mention any two pioneers of Town planning and their contribution to the discipline.

VI. What is a masterplan? How is it different from a Development plan? Explain the process involved in preparation of a masterplan.

OR

VII. What is a neighborhood unit? Describe its social relevance.

VIII. What is an urban development authority and its functions? Explain with an example.

OR

IX. What is CRZ and its relevance? What are the different zones identified under the same and the regulations imposed under each zone?

***

B.Arch-VI(S)-07.24-3311 Reg. No. | | | | | | | | |

A

B.Arch. Degree VI Semester Supplementary Examination July 2024

AR 1605 BUILDING SERVICES - III (FIRE PROTECTION AND HVAC)

(2014 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. (a) Explain critical thickness of insulation.
(b) Explain Newtons Law of Cooling.
(c) Define tonne of refrigeration.
(d) List the similarities and differences between a heat pump and a refrigerator.
(e) Draw a psychrometric chart and represent any four processes.
(f) Define: Wet bulb Depression and Dew Point Depression.
(g) Write a short note on thermal detectors.
(h) What are the three aspects while planning for fire protection?

PART B

(4 × 15 = 60)

II. (a) Consider a 3 m high, 5 m wide and 0.3 m thick wall whose thermal conductivity is 0.9 W/mK. On a certain day, the temperatures of the inner and outer surfaces of the wall are measured to be 16°C and 2°C, respectively. Determine the rate of heat loss through the wall on that day. (10)
(b) State Fourier Law of Heat Conduction. (5)

OR

III. Consider a 0.8 m high and 1.5 m wide double-pane window consisting of two 4 mm thick layers of glass (k = 0.78W/mK), separated by a 10 mm wide stagnant air space (k = 0.026 W/mk). Determine the steady state rate of heat transfer through this double-pane window and the temperature of its inner surface for a day during which the room is maintained at 20°C, while the outdoor temperature is -10°C. Take convective heat transfer coefficients on the inner and outer surfaces of the window to be 10 W/m^2K and 40 W/m^2K respectively. (15)

IV. (a) Define COP. Find out the relation between the COP of refrigerator and heat pump. (5)
(b) Explain the working of a Vapour Absorption Refrigeration system with a neat, labelled diagram. (10)

OR

V. (a) Explain the working of an evaporative condenser with neat, labelled diagram. (10)
(b) Explain how solar energy can be used for refrigeration. (5)

VI. (a) Describe and compare loop perimeter and radial perimeter duct system with neat sketches. (10)
(b) Define Relative Humidity and Humidity Ratio. (5)

OR

VII. (a) Explain the split system of air conditioning. (10)
(b) Discuss the effects of bends in ducts. (5)

(P.T.O.)

VIII. (a) Compare foam system and water system used to extinguish fire. (8)
(b) Detail the classification of fires. (7)

OR

IX. (a) Explain in detail wet pipe system used in automatic sprinkling system. (9)
(b) Detail the working of photoelectric type – smoke detector. (6)

***

B.Arch-VI(S)-07-24-3312 Reg. No. | | | | | | | | |

B

B.Arch. Degree VI Semester Supplementary Examination July 2024

AR1606 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. (a) Explain with neat sketches balanced, under reinforced and over reinforced sections.

(b) Find the ratio of depth of the neutral axis to effective depth of a RCC section when mild steel bars are used.

(c) What are the assumptions made in the limit state method of design?

(d) Describe T – beams and L – beams with provision for finding their effective width of flange.

(e) Explain the necessity of corner reinforcement in a two way slab.

(f) What are the functions of transverse reinforcements in RCC columns?

(g) Explain structural behavior of short columns and slender columns.

(h) Explain the codal provisions for critical section in a footing.

PART B

(4 × 15 = 60)

II. A concrete beam has 300 mm breadth and 500 mm effective depth; effective cover 50 mm, reinforced with 3 nos. 16 mm diameter steel bars at tension side. M 20 concrete and Fe 415 grade steel are used. Determine the moment of resistance.

OR

III. Design a simply supported beam of span 6m subjected to a live load of 5 kN/m. Use M 20 concrete and Fe 415 steel.

IV. Design a RCC slab for a corridor room having size 3 m × 12 m subjected to a live load of 4 kN/m^2. Assume M 25 concrete and Fe 500 grade steel. Shear check **not required.**

OR

V. Design simply supported T beam supporting a slab of 120 mm thick. Spacing of the beams = 4,000 mm c/c, effective span = 10 m and imposed loads on slab = 3 kN/m^2. Use M 20 concrete and Fe 500 grade steel.

VI. Design a RCC slab for a room having size 4 m × 5 m subjected to a live load of 3 kN/m^2. Assume M20 concrete and Fe 415 grade steel. Assume corners **are not held down**. Shear check **not required.**

OR

VII. Design a column to carry an axial load of 1200 kN and have a height of 2.8 m. Use M 20 concrete and Fe 500 steel.

VIII. Design a rectangular column to carry an axial load of 1000 kN and a moment of 300 kNm about an axis parallel to the longer side. Use M 20 concrete and Fe 500 steel.

OR

IX. Design a footing to carry an axial load of 1500 kN. Use M 20 concrete and Fe 500 steel. Assume SBC of soil as 200 kN/m^2.

***