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B

B.Arch. Degree VI Semester Regular/Supplementary Examination April 2023

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) F.L Wright

(b) Contribution of Walter Gropius

(c) Tropical Modernism

(d) Kenzo Tange

(e) Neo classic and New classic architecture

(f) Zaha Hadid

(g) IIM Ahmedabad

(h) B.V Doshi

PART B

(4 × 15 = 60)

II. Discuss the principles of Modern Architecture using works of Le Corbusier.

OR

III. "Chicago is the Birthplace of Modernism"- Elaborate on the statement.

IV. Explain Metabolism architecture, its origin and impact in Japanese Modernism.

OR

V. Briefly discuss the following art movements and their influence in Modern Architecture: (i)Expressionism (ii) Cubism (iii) Neo plasticism.

VI. "Less is Bore"- Justify the aphorism based on the architectural principles of Post-modernism.

OR

VII. Discuss on the following architects,their philosophy and one of their building:

(i) Renzo Piano (ii) Santiago Calatrava (iii) Norman Foster

VIII. Discuss in detail the city planning principles of Lutyen's Delhi and Le Cobusier's Chandigarh.

OR

IX. Identify the Critical regionalism in the works of following Indian modern architects- Joseph Allen Stein, A. P Kanvinde and Charles Correa.

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A

B.Arch. Degree VI Semester Regular/Supplementary Examination April 2023

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) Cost effective construction methodology of a building – CBRI.
(b) Material used in Ferro cement.
(c) Structural glazing and its types.
(d) Compare thermoplastics and thermo-setting plastics.
(e) False ceiling and its procedure for application.
(f) Explain partition walls and its advantages.
(g) Importance of Shear wall on earthquake resistant structure.
(h) Difference between intensity and magnitude of Earthquakes.

(2 × 10 = 20)

II. What is ferrocement? Explain the application of ferrocement with an example and sketches.

OR

III. Describe the different types of plastic manufacturing processes.

IV. Explain the essential elements of earthquake safe constructions in masonry buildings.

OR

V. Mention the list of materials in false ceiling and explain any two materials, its composition, characteristics and installation process with neat sketches.

PART B

(2 × 20 = 40)

VI. Draw to the scale, the detailed plan, section and elevation of wooden wall paneling over masonry walls with a height of 3 m in a restaurant. Assume the other necessary data required.

OR

VII. Draw to the appropriate scale the RCP layout, section and details of fixing 60 cm × 60 cm false ceiling with exposed aluminum frame suspended from concrete slab of a library room of size 10 m × 8 m. Assume the other necessary data required.

VIII. Draw to the suitable scale, plan and cross dsection of a lintel band RCC beam for a 20 cm thick brick wall, size of a room 400 cm × 320 cm, height of room is 300 cm, Roof slab RCC in a earthquake prone area. Show reinforcement details and label parts. Assume position and size of openings in walls.

OR

IX. Prepare an appropriate drawing to explain the earthquake resistant structure of vertical steel bars in Brick masonry.

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C

B.Arch. Degree VI Semester Regular/Supplementary Examination April 2023

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) Evolution of human settlements.
(b) Contribution of Patrick Geddes in Town Planning.
(c) CBD.
(d) Urban node.
(e) F.A.R.
(f) Development plan.
(g) Coastal Regulation Act.
(h) SEZ.

PART B

(4 × 15 = 60)

II. Greeks had philosophy and Romans had advanced technology. Explain how these influenced in planning of cities in Ancient Greece and Rome.

OR

III. Explain what is Renaissance? Describe the planning of towns and cities during Renaissance period in Europe with examples.

IV. What are the contributions of Ebenezer Howard towards modern city planning? Explain his works.

OR

V. Describe the different land uses in urban areas. Explain what is spatial structure?

VI. Differentiate between a Master plan and Development plan. Explain the methods of preparation of a Master plan.

OR

VII. What is Neighbourhood planning? How is it important in Land use planning?

VIII. Explain project implementation process by an Urban Development Authority. .

OR

IX. Describe the purpose of Coastal Regulation Zone Act (CRZ). Explain the difficulties to implement CRZ in the case of Kerala.

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C

B.Arch. Degree VI Semester Regular/Supplementary Examination April 2023

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. Write short notes on the following:

(a) Explain the principles of convective heat transfer.

(b) How is natural convection different from forced convection, give examples of each?

(c) Reversed carnot cycle.

(d) Solar energy for refrigeration.

(e) Explain:

(i) Humidity ratio

(ii) Relative humidity.

(f) Desirable properties of a refrigerant.

(g) Automatic sprinkler system.

(h) What are the design requirements of a fire lift?

PART B

(4 × 15 = 60)

II. (a) Explain Fourier's law of heat conduction. (4)

(b) An exterior wall of a house may be approximated by a 0.1 m layer of common (11) brick (k = 0.74W/mK) and 0.04 m layer of gypsum plaster (k = 0.1W/mK) on both sides of the brick. During a hot day at steady state, the temperature of outside plaster exposed to ambient air is 40°C and the temperature of inside plaster exposed to inside air is 26°C. Find: (11)

(i) the rate of heat flow through the wall per unit area.

(ii) the temperature of the inside surface of the brick.

OR

III. (a) Explain conduction through plane wall. (5)

(b) Elucidate on overall heat transfer coefficient. (10)

IV. Describe a simple vapour compression refrigeration system alongside sketches and diagrams. (15)

OR

V. What are the factors affecting human body comfort, describe comfort chart? (15)

(P.T.O.)

VI.	(a)	Define DBT, WBT, DPT and degree of saturation.	(5)
	(b)	Explain the working of chilled water air conditioning system.	(10)
		OR	
VII.		List out different air conditioning systems and explain a central air conditioned system.	(15)
VIII.	(a)	List out the various fire resisting materials.	(5)
	(b)	What are the different classes of fire and preferred methods of extinguishing each?	(10)
		OR	
IX.		Describe the various types of fire protection systems.	(15)

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B

B.Arch. Degree VI Semester Regular/Supplementary Examination April 2023

AR 1606 STRUCTURAL DESIGN

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

(Use of IS 456 and SP16 are permitted. Assume missing data, if any, suitably)

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. (a) Explain balanced, under reinforced and over reinforced sections in the context of Limit state design philosophy.

(b) State the different ways of providing shear reinforcement in a beam

(c) What is the advantage of providing a T beam instead of normal rectangular beam?

(d) Calculate the minimum percentage of steel for Fe 415 grade steel as per IS 456.

(e) Distinguish between one way slab and two way slab with respect to main reinforcement provision.

(f) Explain classification of columns based on slenderness ratio and type of loading.

(g) Why, some minimum cover to reinforcement is provided for RCC members based on IS456?

(h) Explain the shear considerations applied to the design of footings.

PART B

(4 × 15 = 60)

II. A simply supported rectangular beam, 250 mm wide and width to effective depth ratio 0.5, carries a uniformly distributed load of 35 kN/m including its own weight over an effective span of 6 m. Design Longitudinal and Shear reinforcement for the beam. Use mild steel and M20 Concrete.

OR

III. Design a simply supported rectangular beam section of effective span 6 m to resist a factored bending moment of 435 kNm. The size of the section is limited to 300 mm × 600 mm overall. Use M25 concrete and Fe 415 steel.

IV. Design a T-beam to carry an imposed load of 5 kN/m for the following data: Total depth = 750 mm, Breadth of beam or rib = 350 mm, Effective depth= 650 mm, Thickness of flange= 100 mm, Clear Cover = 90mm, Spacing of the beam = 4 m c/c. Use M25 concrete and Fe 415 steel.

OR

V. Design a one way slab with 3.5 m clear span supported on 230 mm thick walls on all four sides. The edges are simply supported. The live load on the slab is 2kN/m^2. Use M20 concrete and Fe 415 steel.

(P.T.O.)

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VI. Design a slab 3 m × 4 m clear in size supported on 300 mm thick walls on all four sides, and corners held down. The live load on slab 3 kN/m^2. Use M20 concrete and Fe 415 steel. Draw all the detailing required for the slab.

OR

VII. Design a RCC Circular column to carry an axial load of 1200 kN. The length of the column is 3.5 m. Use M25 concrete and Fe 415 steel.

VIII. Design a RCC rectangular column subjected to uniaxial bending to carry an axial load of 1200 kN and a moment of 70 kNm, The length of the column is 3.5 m. The one end is fixed and the other end is hinged. The width of the column is restricted to the wall thickness of 24 cm. Use M20 concrete and Fe 415 steel.

OR

IX. Design a square footing for an axial loaded column carrying 2100 kN load, Size of the column is 400 mm × 400 mm. Safe bearing capacity of soil is 280 kN/m^2. Use M25 Concrete and Fe 415 Steel. Sketch reinforcement details of footing in section and plan.

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