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B

B.Arch. Degree VI Semester Examination April 2018

AR 1602 BUILDING MATERIALS AND CONSTRUCTION V

(2014 Scheme)

Time: 4 Hours Maximum Marks: 100

PART A

(8 × 5 = 40)

I. Write short notes on the following:

(a) Floor wall.
(b) CBRI and SERC.
(c) Structural glazing.
(d) Structural plastics.
(e) Plaster of Paris.
(f) Acoustics boards.
(g) Earthquake resistant structures.
(h) Alternate building materials.

(2 × 10 = 20)

II. What do you mean by Ferro cement? Explain, in detail, its properties and application in building construction.

OR

III. Explain thermoplastics and thermosets. Discuss, in detail, about the properties and architectural uses of plastics.

IV. Discuss about false ceiling. What are the different materials used for false ceiling? Explain with neat sketches.

OR

V. Describe earthquake resistant structures. What are the principles used for making a building earthquake resistant? Give two examples with neat sketches.

PART B

(2 × 20 = 40)

VI. Draw and label the details of fixing concealed lighting and air conditioning fixtures. Assume necessary details required for drawing.

OR

VII. Draw the details of a wooden wall paneling with necessary details and label them.

VIII. Draw with detailed labeling the reinforcement detail in RC band of an earthquake resistant structure.

OR

IX. Draw the details of vertical steel bars in brick masonry for an earthquake resistant structure.

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C

B.Arch. Degree VI Semester Examination April 2018

AR 1603 HISTORY OF ARCHITECTURE V

(2014 Scheme)

Time : 3 Hours Maximum Marks : 100

PART A

(Answer ***ALL*** questions)

$(8 \times 5 = 40)$

I. Write short notes on :

(a) Five principles of modern architecture demonstrated by Villa Savoy.

(b) Prairie Houses in America.

(c) Dualism in the architecture of Alvaro Aalto.

(d) Principles of architecture in contemporary architecture of Frank O Gehry.

(e) Sustainable principles in architecture of Hassan Fathy.

(f) How has technology contributed to architecture in the works of Norman Foster?

(g) Joseph Allen Stein.

(h) A.P. Kanvinde.

PART B

$(4 \times 15 = 60)$

II. Explain the evolution of principles of Modern Architecture in Bauhaus School.

OR

III. What are the principles of architecture that evolved with Mies Van De Rohe and its impact on architecture all around the world?

IV. Explain the idea of Critical regionalism and its relevance to contemporary architecture.

OR

V. Compare the works of Frei Otto and P.L. Nervi and the lessons for architecture there in.

VI. Explain the evolution of the post-modern architecture in form of dominant trends and examples.

OR

VII. What are the common principles guiding the works of Renzo Piano, Richard Rogers and Santiago Calatrava?

VIII. Explain how the study of Indian traditional architecture and concepts has influenced the works of contemporary Indian architects with any three architects' works as examples.

OR

IX. What are the key lessons that are to be remembered from the works of Laurie Baker and Charles Correa for modern India?

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A

B.Arch. Degree VI Semester Examination April 2018

AR 1604 TOWN PLANNING

(*2014 Scheme*)

Time : 3 Hours Maximum Marks : 100

(*All answers to be supported with relevant sketches*)

PART A

(Answer ***ALL*** questions)

$(8 \times 5 = 40)$

I. Write short notes on:

(a) Temenos.

(b) Ekistics.

(c) CBD.

(d) Urban fringe.

(e) F.A.R.

(f) Neighbourhood planning concept.

(g) 74th Amendment Act.

(h) SEZ.

PART B

$(4 \times 15 = 60)$

II. Explain Town planning in ancient Mesopotamia and Greece.

OR

III. Explain town planning in post industrial period.

IV. Contribution of Le Corbusier in the field of Town planning.

OR

V. Contribution of Patric Geddes in the field of town planning.

VI. Explain the elements and process involved in preparation of a master plan.

OR

VII. Explain the need of surveys before planning, brief about different land development techniques.

VIII. Explain in detail the setup and functions of urban development authorities in India.

OR

IX. Explain in detail about '*JNNURM*'.

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B

B.Arch. Degree VI Semester Examination April 2018

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 answers on the following.

(a) List and explain the three modes by which heat can be transferred from one place to another. Which is the slowest of the three?

(b) If heat transfer by conduction through a medium occurs under steady state conditions, will the temperature at a particular instant vary with location in the medium? Will the temperature at a particular location vary with time? Give explanation for your answers.

(c) List the similarities and differences between a heat pump and a refrigerator.

(d) What are the desirable properties for a refrigerant?

(e) What are the factors affecting human comfort?

(f) Differentiate between comfort air conditioning and industrial air conditioning.

(g) How does a fire lift differ from a normal lift?

(h) List the main functions of fire protection engineering.

PART B

(4 × 15 = 60)

II. A cold storage room has walls made of 0.23 m brick on the outside, followed by 0.08 m foam and finally 15 mm of wood on the inside. The outside and inside air temperatures are 22°C and -2°C respectively. If the inside and outside heat transfer coefficients are respectively 29 W/m^2 K, 12W/m^2 K and the thermal conductivities of brick, foam and wood are 0.98 W/m K, 0.02 W/m K and 0.17 W/m K respectively, determine (i) the rate of heat removal by refrigeration if the total wall area is 90 m^2, and (ii) the temperature of the inside surface of the brick. (15)

OR

III. (a) What is meant by overall heat transfer coefficient? (4)

(b) Consider a 1.2m high and 2 m wide glass window whose thickness is 6 mm and thermal conductivity is 0.78 W/m.K. Determine the steady state heat transfer through this glass window and the temperature of its inner surface for a day during which the room is maintained at 24°C while the temperature of the outdoors is – 5°C. Take the convection heat transfer coefficients at the inner and outer surfaces of the window to be 10 W/m^{2}K and 25 W/m^{2}K respectively. Disregard any radiation heat transfer. (11)

(P.T.O)

IV. (a) During summer, an ideal refrigerating system works to keep room temperature at 24°C while the surrounding temperature is 40°C. Find the COP of the system and the refrigerating effect, if the power consumption by the system is 20 kW. (7)

(b) With the aid of a neat sketch, explain the working of a simple vapour absorption system. (8)

OR

V. (a) List the main components of a vapour compression system and explain their functions. Illustrate the cycle on a P-h diagram. (8)

(b) What is meant by a cooling tower? Explain the working of any one type of cooling tower. (7)

VI. (a) Define DBT, WBT, DPT and RH. (8)

(b) Explain the working of chilled water air conditioning system. (7)

OR

VII. (a) List the different types of air conditioning duct systems. Discuss the effect of bends in ducts. (8)

(b) Explain the sources of noise and noise control methods in an air conditioning system. (7)

VIII. (a) List the different classes of fire and the preferred method of extinguishing each. (7)

(b) Explain the fire resistance requirements of building elements. (8)

OR

IX. (a) List the different types of fire sprinklers and compare their advantages and disadvantages. (7)

(b) List the different types of detectors used for fire safety of buildings and explain the working of any one. (8)

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C

B.Arch. Degree VI Semester Examination April 2018

AR 1606 STRUCTURAL DESIGN

(2014 Scheme)

Time : 3 Hours Maximum Marks : 100

(Permitted to use IS-456 and SP-16 chart – Assume the suitable data wherever necessary)

PART A

(Answer *ALL* questions)

$(8 \times 5 = 40)$

I. (a) Explain the philosophy of limit state method.

(b) Explain where we provide the shear reinforcement in R.C beam.

(c) What is curtailment of rebar? Under what circumstance it is used?

(d) Explain the term yield point.

(e) Explain the typical stress strain curve for reinforced concrete.

(f) What are the assumptions in limit state of collapse in axial compression?

(g) Where we provide extra rebar? Under what circumstance it is used?

(h) Explain the term slenderness ratio.

PART B

$(4 \times 15 = 60)$

II. Design a reinforced concrete beam of rectangular section which has clear span of 4 m, width of support is 300 mm, working load 800 N/m and provide clear cover of 40 mm. Also check for shear stress and deflection. Use M20 and Fe-415 steel.

OR

III. Design a reinforced concrete rectangular beam. It is to be provided over a clear opening of 10 m, 230 mm wide and 400 mm deep is carrying a UDL of 13 kN/m and live load of 30 kN/m. Also check for shear stress. Use M20 and Fe-415 steel.

IV. A hall has dimensions 20 × 8 m to the faces of supporting walls. The floor consists of 4 beams spaced at 400 cm c/c and the slab thickness is 150 mm. The floor carries udl of 4 kN/m^2. Design intermediate beams using grade M 25 concrete and steel grade Fe-500.

OR

V. Design a R.C.C slab for room having outside dimensions 4.3 m × 7.6 m. The thickness of the supporting wall is 230 mm. The live load on the slab may be taken as 7 kN/m^2. Assume the floor finish load. Use M20 grade concrete and Fe-415 steel.

(P.T.O.)

VI. Design a R.C.C slab for a room measuring 3 m × 7 m size the slab is S.S on all the 4 edges, with corner held down and carries a super imposed load of 4000 N/M^2, inclusive of floor finish etc. Use M20 mix and Fe-415 steel. Use IS code method.

OR

VII. Design the reinforcement in a circular column of diameter 400 mm with helical reinforcement to support a factored load of 1300 kN. The column has an unsupported length of 3 m and is braced against side way. Adopt M20 and Fe-415 steel.

VIII. Design the longitudinal and lateral reinforcement in a rectangular reinforced column of size 350 mm × 450 mm subjected to design ultimate load of 1400 kN and ultimate moment of 300 kN with respect to the major axis. Adopt M20 and Fe-415 steel.

OR

IX. A reinforced concrete column 350 mm × 500 mm supports an axial load of 1250 kN. Design a suitable footing for the column. The safe bearing capacity of the soil at site is 150 kN/m^2. Adopt M-20 grade concrete Fe-415 grade steel.

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