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## ***B.Arch. Degree VI Semester Examination April 2021***

### **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) Roofing systems.
  - (b) Properties of ferrocement.
  - (c) Types of Glass.
  - (d) Thermosetting and thermoplastics.
  - (e) Plaster of Paris.
  - (f) Wall paneling.
  - (g) Shear wall.
  - (h) Diagonal Framing.
- II. Explain the use of plastics for door and windows, also give a brief description about its advantages and disadvantages. (2 × 10 = 20)  
(10)
- OR**
- III. Describe any innovative technique for cost reduction of walls for building construction by building research institute in India. (10)
- IV. Describe false ceiling and different material used for it. (10)
- OR**
- V. Explain the architectural details of earthquake resistant buildings. (10)

#### **PART B**

- (2 × 20 = 40)
- VI. Draw to an appropriate scale detailed plan, section and elevation of wooden wall panelling for walls of a hotel lobby. Assume other necessary details, if required for drawing. (20)
- OR**
- VII. Draw and label the details of fixing concealed lighting and air conditioning fixtures. Assume necessary details required for drawing. (20)
- VIII. Draw the details of vertical steel bars in brick masonry for an earthquake resistant structures. (20)
- OR**
- IX. Draw to suitable scale plan and sectional elevation of a room of size 400 cm × 300 cm with 20 cm thick brick wall Height of a room 300 cm, 10 cm thick RCC roof slab, in an earthquake prone area and show reinforcement details of vertical steel bars in masonry provided for earthquake resistance and label parts. Assume the necessary details like position and size of openings. (20)



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## ***B.Arch. Degree VI Semester Examination April 2021***

### **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) 'Falling Water' residence
  - (b) Bauhaus School
  - (c) Neo plasticism
  - (d) Geoffrey Bawa
  - (e) Archigram
  - (f) Robert Venturi
  - (g) Planning of Chandigarh
  - (h) Laurie Baker

#### **PART B**

(Explain with neat sketches)

(4 × 15 = 60)

- II. Discuss the principles of Modern Architecture using works of Le Corbusier.
- OR**
- III. "Form follows Function"- Elaborate on the quote demonstrating examples from Chicago School of Architecture.
- IV. Explain various art movements of 20<sup>th</sup> century and their influence in the modern architecture with examples.
- OR**
- V. Discuss the work and philosophy of the following architects :  
(i) Kenzo Tange (ii) Philip Johnson (iii) Hassan Fathy
- VI. "Less is Bore"- Explain the quote based on the works and theories of Post-modernism.
- OR**
- VII. Elaborate on the following architectural styles with neat sketches:  
(i) Deconstructivism (ii) High-tech Architecture
- VIII. Discuss in detail the planning principles of Lutyen's Delhi and Le Cobusier's Chandigarh with neat sketches.
- OR**
- IX. Identify the contextual response in the works of Indian modern architects- Charles Correa, B.V Doshi and Raj Rewal with neat illustrations.

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## ***B.Arch. Degree VI Semester Examination April 2021***

### **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) Town planning in Ancient Mesopotamia.
  - (b) Industrial revolution and its impacts.
  - (c) Impact of urbanization on cities.
  - (d) Urban fringe area.
  - (e) Floor area ratio.
  - (f) Development plan.
  - (g) JNNURM.
  - (h) 74<sup>th</sup> Constitutional Amendment Act.

#### **PART B**

(4 × 15 = 60)

- II. Greek civilisation was based on philosophies while Roman was strong in engineering. Establish this statement with respect to the Town planning of each civilisation.
- OR**
- III. Describe the characteristics of town planning during Renaissance period quoting examples.
- IV. Describe various urban environmental problems faced in town planning.
- OR**
- V. Explain the contributions of Clarence Stein in Town Planning.
- VI. What is a Master plan? Describe the contents of a Masterplan document and the process of preparing it.
- OR**
- VII. List down various land development techniques in town planning and briefly describe each technique.
- VIII. Describe the salient features of Coastal Regulation Zone (CRZ) act.
- OR**
- IX. Describe the salient features of Land Acquisition Act (LAA) and its amendments.

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## B.Arch. Degree VI Semester Examination April 2021

### 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 the three modes of heat transfer. Which is the slowest of the three?  
 (b) Write short note on thermal conductivity and heat transfer coefficient.  
 (c) What do you understand by a heat pump and a refrigerator?  
 (d) What are the desirable properties for a refrigerant?  
 (e) Differentiate between comfort and industrial air conditioning.  
 (f) Mention methods used to control noise in air conditioning.  
 (g) How does a fire lift differ from a normal lift?  
 (h) What are the measures to be taken for controlling fire spread?

#### PART B

(4 × 15 = 60)

- II. A furnace wall consists of 200 mm layer of refractory bricks, 0.6 mm layer of steel plate and a 100 mm layer of insulating bricks, on the furnace side maximum temp is 1150°C and minimum temperature is 40°C on the outer side of the wall. The heat loss from the wall is 400 w/m<sup>2</sup>. There is thin layer of air between the refractory brick and steel plate. Thermal conductivity for the three layers are 1.5, 45 and 0.138 w/m°C respectively. Find:  
 (i) To how many mm of insulating brick is the air layer equivalent?  
 (ii) What is the temperature of the outer surface of the plate?  
**OR**
- III. Explain the concept of critical radius of insulation. Bring out the practical applications. (15)
- IV. (a) Derive expression for COP for a refrigerator and a heat pump. (5)  
 (b) With the aid of a neat sketch, explain the working of a simple vapour absorption system. (10)
- OR**
- V. (a) Explain the principle of fire protection for various cases of fires. (7)  
 (b) What is meant by a cooling tower? Explain the working of any one type of cooling tower. (8)

(P.T.O.)

VI. Bring out the concept of effective temperature and describe comfort chart. (15)

OR

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

(b) Describe any two air distribution systems with neat sketches. (8)

VIII. Describe various fire extinguishing techniques. (15)

OR

IX. Describe the working of a gas pressure actuated water type fire extinguisher. (15)

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## ***B.Arch. Degree VI Semester Examination April 2021***

### **AR 1606 STRUCTURAL DESIGN (2014 Scheme)**

Time : 3 Hours

Maximum Marks : 100

#### **PART A**

(Answer **ALL** questions)

(8 × 5 = 40)

- I.
- (a) Define one way slab and two way slab, under what circumstances is it used?
  - (b) Define the terms characteristic load and partial safety factor.
  - (c) Explain the function of longitudinal and transverse steel in RC column.
  - (d) What is limit state? Discuss the different limit states to be considered in RC design.
  - (e) Differentiate between short columns and long columns.
  - (f) Explain the shear considerations applied in footings.
  - (g) Define the structural behavior of slabs when the corners are held down and not held down.
  - (h) Explain the types of footing with figures.

#### **PART B**

(4 × 15 = 60)

- II. Design a reinforced concrete rectangular beam. It is to be provided over a clear span of 10 m, 300 mm wide and 600 mm deep is carrying a UDL of 13 kN/m and live load of 30 kN/m. Also check for shear stress. Use M 20 and Fe 415 steel.
- OR**
- III. Design a simply supported rectangular beam supported on two walls of 230 mm thickness with 5 m clear span. Superimposed load is 50 kN/m. Check shear also. Use M 20 mix and mild steel.
- IV. Design a RCC 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<sup>2</sup>. Assume the floor finish load. Use M 20 grade and Fe 415 steel.
- OR**
- V. A concrete beam has a 350 mm breadth and 700 mm effective depth. Design the beam if it is subjected to a superimposed bending moment of 400 kNm. Use M 20 concrete and Fe 415 steel.
- VI. Find the moment of resistance of a T beam with the following data. Width of flange = 700 mm, Width of rib = 250 mm, Thickness of flange = 90 mm, Effective depth = 550 mm. Provide 5 numbers of 20 mm bars in tension side. Use M 20 concrete and Fe 415 steel.
- OR**
- VII. Design a slab with a clear span of 5 m simply supported on 250 mm thick walls and subjected to a live load of 3 kN/m<sup>2</sup> and a surface finish load of 1 kN/m<sup>2</sup>. Use M 15 concrete and mild steel.
- VIII. Design a square column to carry an axial load of 2000 kN. Use M 20 concrete and Fe 250 grade steel. Sketch the reinforcement details.
- OR**
- IX. Design an isolated footing for a column of size 500 mm × 500 mm carrying an axial load of 1800 kN. The safe bearing capacity of soil is 180 kN/m<sup>2</sup>. Use M 20 concrete and Fe 415 steel.