SIXTH SEMESTER B.ARCH. DEGREE (2017 SCHEME) EXAMINATION APRIL 2020

AR 17 67—TOWN PLANNING

Time : Three Hours   Maximum : 100 Marks

Support your answers with neat sketches, wherever necessary.

Part A

Answer **all** *questions.*
Each question carries 5 marks.

1. Write short notes on the origin and evolution of Human settlements.

2. Explain the town planning aspects during industrial and post-industrial age.

3. Discuss the need for studying Town Planning.

4. Elucidate urban land use.

5. What is urban development planning ?

6. Explain development plan.

7. Highlight the need for town planning legislation.

8. State the relevance of coastal regulations zones.

(8 × 5 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 15 marks.

9. A) Discuss the planning and salient features of Chandigarh.

Or

B) With examples state the modern town planning concepts of C.A. Doxiadis.

10. A) Describe the setting of suburbs and how it functions in the context of town planning.

Or

B) Elucidate on overcrowding slums and their impact on town planning.

Turn over

11. A) Describe the planning components.

Or

B) Elucidate floor area ratio. Demonstrate its variations with suitable examples.

12. A) Describe the measures taken for land use control.

Or

B) Elucidate on the plot reconstitution.

(4 × 15 = 60 marks)

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SIXTH SEMESTER B.ARCH. DEGREE (2017 SCHEME) EXAMINATION APRIL 2020

AR 17 66—HISTORY OF ARCHITECTURE—V

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Support your answers with neat sketches, wherever necessary.

Part A

Answer all questions.

Each question carries 5 marks.

1. State any *five* architecture works of colonial India.

2. Explicate Victoria Memorial.

3. Define the features of Modernism.

4. What is revivalism ?

5. Sate the influences of post-independence Architects in India.

6. Discourse on Achyut Kanvinde's IIT, Kanpur.

7. Name the architect of Karunashraya.

8. Write short notes on Brinda Somaya.

(8 × 5 = 40 marks)

Part B

Answer all questions.

Each question carries 15 marks.

9. (a) Explain the architecture of Ripon Building.

Or

(b) Explicate the involvement of Herbert Baker in proposing New Delhi.

10. (a) Bring out the ways of integrating the new and the old architecture with any *three* examples.

Or

(b) Profound your thoughts on architecture of public buildings in Chandigarh and Ahmedabad.

Turn over

11. (a) State the principles of B. V. Doshi through his works of Sangath Office at Ahmedabad.

Or

(b) Discuss the design philosophies of Uttam Jain through his Jodhpur University project.

12. (a) Describe the Tata Dhan Academy at Madurai.

Or

(b) Describe any *three* works of Jaisim.

(4 × 15 = 60 marks)

SIXTH SEMESTER B.ARCH. DEGREE (2017 SCHEME) EXAMINATION APRIL 2020

AR 17 65—DESIGN OF STRUCTURES–II

Time : Three Hours   Maximum : 100 Marks

Assume suitable data wherever necessary.
Use of IS 800:2007 and IS 883:1994 permitted.

Part A

I. Answer *all* questions :

     1   What are the merits and demerits of welded connection ?

     2   What are the assumptions made for designing riveted joint ?

     3   Draw any two typical cross-sections of tension member using angle sections.

     4   How does the code account for imperfections in a compression member ?

     5   List the various factors affecting the lateral-tensional buckling strength.

     6   Write the special features of limit state design method.

     7   Explain the structural analysis requirements for timber and wood-based structures.

     8   What are the advantages of using timber as a structural material ?

                                       (8 × 5 = 40 marks)

Part B

II. Answer *all* questions :

    1) (A)   A 18 mm thick plate is joint to a 16 mm plate by 200 mm long [effective] butt weld. Determine the strength of the joint, if

         (i)   A double 'V' butt joint is provided.

         (ii)   A single 'V' butt joint is provided.

    Assume the grade Fe 410 for the plates and for the welds which are Shop welded.

Or

    (B)   A single riveted lap joint is used to connect plate 10 mm thick. If 20 mm diameter rivets are used at 55 mm pitch, determine the strength of joint and its efficiency. Working stress in shear in rivets = 80 N/mm² (MPa). Working stress in bearing in rivets = 250 N/mm² (MPa). Working stress in axial tension in plates = 156 N/mm².

Turn over

2) (A) Determine the design tensile strength of the plate (200 × 10 mm) with the holes as shown below, if the yield strength and the ultimate strength of the steel used are 250 MPa and 420 MPa and 20 mm diameter bolts are used, f_y = 250 MPa, f_u = 420 MPa.

Or

(B) In a truss a strut 3m long consists of two angles ISA 100 × 100, 6 mm. Find the factored strength of the member if the angles are connected on both sides of 12 mm gusset plate by

    i) One bolt.

    ii) Two bolt.

3) (A) A simply supported beam has an effective span of 7m and carries a uniformly distributed load of 50 kN/m (i.e., DL = 25 kN/m and LL = 25 kN/m). Taking f_y = 250 N/mm^2 and E = 2 × 10^5 N/mm^2, design the beam, if it is laterally supported.

Or

(B) Explain in detail on the design of Laced Columns and Batten column.

4) (A) Check the adequacy of 5.0 m long of timber column for long term loading if a column section of 150 mm × 150 mm (dressed size) is subjected to an axial load of 80 kN (including selfweight of column). The timber used is in SG4 (standard, wet) and the column is not restrained about both axes but restrained at both ends in position.

Or

(B) A Figure 1 shows main beams of 3250 mm length span over an opening 3000 mm wide and support a flooring system that exerts a long-duration loading of 3.9 kN/m including its own self-weight over it span. The beam is supported by 125 mm wide side-walls on either side and have underside notched as in Figure 2.(on page 3.) Carry out design checks to show that a 75 mm × 225 mm (named size) full swan SG2 (select, wet) timber is suitable to carry the load.
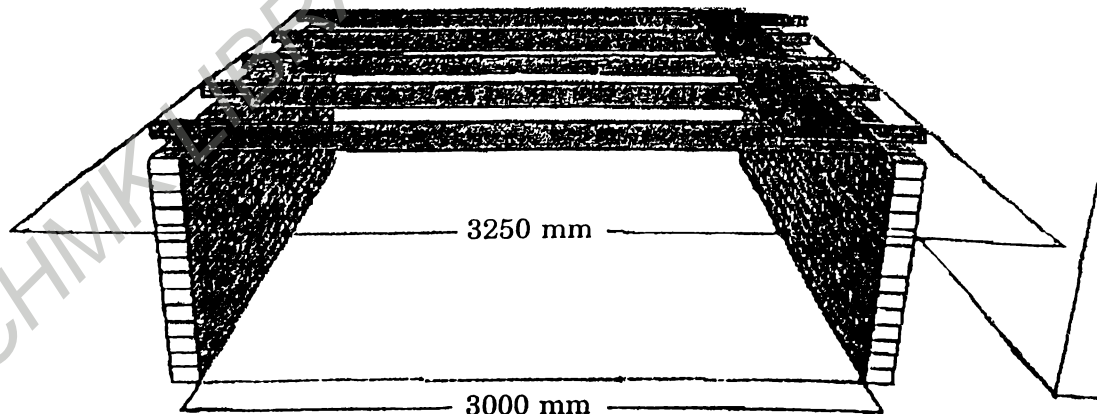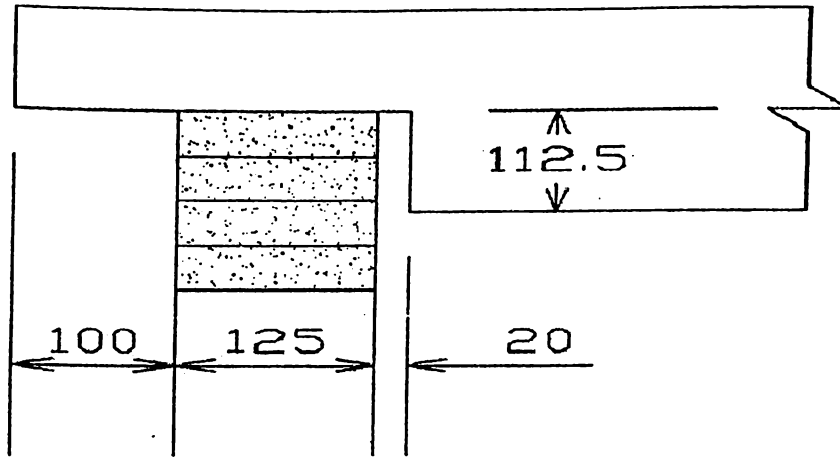

Figure 1: Timber beams supported by side walls

Figure 2: Underside notch at beam support

(4 × 15 = 60 marks)

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SIXTH SEMESTER B.ARCH. DEGREE (2017 SCHEME) EXAMINATION
APRIL 2020

AR 17 64—BUILDING SERVICES—III (HVAC AND MECHANICAL SERVICES)

Time : Three Hours

Maximum : 100 Marks

Support your answers with neat sketches where possible.

Part A

*Answer **all** questions.*
Each question carries 5 marks.

I. (a) What is thermal absorptivity of a material ? What is its unit of measurement ?

(b) What is the mechanism of heat radiation ?

(c) Using a Pressure-Volume diagram, describe Carnot cycle.

(d) How are efficiencies of two air conditioners compared for a particular application ?

(e) What is dehumidification ? What are the applications of this process ?

(f) What is the effect of wind speed variation on human comfort at room temperature ?

(g) Explain the working of an AHU with a labelled schematic sketch.

(h) How does the controller unit of a room air conditioner function ?

(8 × 5 = 40 marks)

Part B

*Answer **all** questions.*
Each question carries 15 marks.

II. (a) Explain the three mechanisms of heat transfer with detailed schematic drawings and explain their measurement.

Or

(b) Compare thermal properties of five common materials.

III. (a) Explain the cooling mechanism in typical AC condenser along with schematic drawings.

Or

(b) Explain the laws of thermodynamics in a detailed essay.

Turn over

IV. (a) What are the factors of human comfort ? Explain in detail.

Or

(b) Elaborate on the factors governing Effective Temperature.

V. (a) Explain the heat dissipation mechanism in a typical AC condenser with schematic drawings.

Or

(b) Explain the system and working of a central air conditioning unit for any multi-storey public building.

(4 × 15 = 60 marks)

SIXTH SEMESTER B.ARCH. DEGREE (2017 SCHEME) EXAMINATION APRIL 2020

AR 17 63—BUILDING MATERIALS AND CONSTRUCTION—V

Time : Three Hours   Maximum : 100 Marks

*Answer **all** questions.*
Support your answers with neat sketches.
Assume suitable data if necessary.
Drawing Sheets to be provided.

Part A

*Answer **all** questions.*
Each question carries 5 marks.

I. (a) What are the components of polymer concrete ? Give its applications.

   (b) What are the differences between accelerators and hardeners used in special concrete ?

   (c) Explain the components parts of cable structure with sketches.

   (d) Explain mobile structures with sketches and examples.

   (e) What are the disadvantages of prefabrication ?

   (f) What is modular co-ordination ?

   (g) What is the mechanism of water leakage and dampness in roofs ?

   (h) What are the causes of dampness in foundations and walls ?

(8 × 5 = 40 marks)

Part B

*Answer **all** questions.*
Each question carries 15 marks.

II. (a) Explain the composition, features and applications of any *five* types of special concrete.

Or

   (b) Explain the construction of building shells with special concretes which are more advantageous than conventional RCC.

III. (a) Contrast the features and differences between a flat slab and a waffle slab.

Or

   (b) Discuss in detail, advanced structural concepts using concrete and without it.

Turn over

IV. (a) Explain the variety of prefabrication options available for different building types and different components.

Or

(b) Explain the concepts in modular construction.

V. (a) With detailed drawings explain expansion joints in detail.

Or

(b) With detailed sketches, explain the process of damp proofing of a one brick thick masonry wall.

(4 × 15 = 60 marks)

SIXTH SEMESTER B.ARCH. DEGREE (2017 SCHEME) EXAMINATION APRIL 2020

AR 17 62—INTERIOR DESIGN

Time : Three Hours   Maximum : 100 Marks

Support your answers with neat sketches, wherever necessary.

Part A

Answer all questions.
Each question carries 5 marks.

1. What is interior design all about ?

2. Explain the role of Contemporary art in interiors.

3. Discuss the principles of good interior design.

4. Elaborate on the principles of enclosures.

5. Discuss the importance of interior lighting.

6. Discuss the impacts of natural ventilation.

7. What is meant by interior landscaping ?

8. Briefly explain the maintenance of interior landscape.

(8 × 5 = 40 marks)

Part B

Answer all questions.
Each question carries 15 marks.

9. A) Explain the characteristics and ways to bring about the nostalgia of Victorian interiors.

Or

    B) What are the applications of anthropometrics in commercial interiors ?

10. A) Define the role of colour in interior design.

Or

    B) How do you emphasize a space through levels ?

Turn over

11. A) Elucidate the importance of furnishing in interior spaces.

Or

B) Elaborate on the drapery and upholstery for openings.

12. A) Illustrate the incorporation of an exhibit / sculpture in interiors.

Or ·

B) Enumerate the importance of material estimation and presentation in the field of interior designing.

(4 × 15 = 60 marks)