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B.Arch. Degree V Semester Examination December 2016

AR 1502 BUILDING MATERIALS AND CONSTRUCTION IV (2014 Scheme)

Time : 4 Hours

Maximum Marks : 100

PART A

(8 × 5 = 40)

I. (Answer *ALL* questions)

Write short notes on the following.

- (a) Bases in oil based paints.
- (b) Types of varnishes.
- (c) Cement finishes.
- (d) Vinyl flooring.
- (e) Space frames.
- (f) Properties of Roofing Tiles.
- (g) Capsule lift.
- (h) Criss cross escalators.

(2 × 10 = 20)

- II. What are the factors to be considered while applying paint on cement plastered surfaces? (10)

OR

- III. What are the differences in the requirements of floor tiles and wall tiles? In what places. Would you consider tiling the walls? (10)

- IV. Enumerate various light weight roofing materials available in the market. (10)

OR

- V. What are the design considerations for an elevator in a commercial building? (10)

PART B

(2 × 20 = 40)

- VI. Draw a suitable steel truss for a room with outer span of 1250 cm. The slope of the roof is 30 degree. The roof cover is corrugated aluminum sheet of standard size. Assume the sizes of members and other necessary data. Show the details of two important joints. (20)

OR

- VII. Draw in suitable scale a King post steel roof truss of 8 m span. Draw details of any three connection details. (20)

- VIII. Draw the plan, section and details of an elevator system for a hospital building. (20)

OR

- IX. Draw the plan, elevation and section of an escalator for a commercial building. (20)

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B.Arch. Degree V Semester Examination December 2016

AR 1503 HISTORY OF ARCHITECTURE IV (2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

- I. (a) Explain the Portuguese influences on the Cathedral of Bom Jesus at Goa.
- (b) Describe the characteristics of Fountainahs.
- (c) Explain Indo Saracenic style of Architecture with examples.
- (d) Describe the influences of Colonial architecture in the work of Edwin Lutyens's, New Delhi.
- (e) What are the characteristic features of Post Renaissance architecture in Europe?
- (f) Explain the use of Glass in buildings during the Post Renaissance period.
- (g) What are the main characteristic features of Organic Architecture?
- (h) Explain why Eiffel tower is regarded as advancement in Engineering.

PART B

(4 × 15 = 60)

- II. Discuss the influence of Portuguese on the residential and religious architecture of Goa with examples.
- OR**
- III. Explain the evolution of styles and trends of architecture brought by Portuguese to India.
- OR**
- IV. Explain the impact of British Colonial architecture in Bombay, Calcutta and Madras.
- OR**
- V. Explain the evolution of styles and trends of architecture brought by British to India.
- OR**
- VI. Discuss the causes, consequence and impact of Industrial Revolution in Architecture with relevant examples.
- OR**
- VII. Explain with examples the influences of Industrial Revolution in building technology and materials.
- OR**
- VIII. Explain the philosophy of Antonio Gaudi and Loius Sullivan through any two works of each.
- OR**
- IX. Discuss the influences of Art Nouveau and Art and Crafts movement in architecture.

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A

B.Arch. Degree V Semester Examination December 2016

AR 1504 ECOLOGY AND ENVIRONMENTAL STUDIES

(2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A
(Answer *ALL* questions)

(8 × 5 = 40)

- I. Write short notes on:
- Environment & Ecosystem.
 - Relevance of Environmental Science.
 - R &K selection.
 - Ecotypes & Ecophenes.
 - Grazing and Detritus Food chain.
 - Ecological pyramid.
 - Nutrient cycle.
 - Sedimentary Cycles.

PART B

(4 × 15 = 60)

- II. What is meant by Ecology? Explain in detail and its relation to Ecosystem.
- OR
- III. Explain, with relevance to the State of Kerala, the type of natural environment present in the state and the various Ecosystems.
- IV. What is meant by Population Dynamics & Population Fluctuation? Explain how these are relevant to examining its impact on the environment.
- OR
- V. What is the current population density in the state of Kerala? How has population dispersion and negative population affected the state of Kerala with regard to the Environment?
- VI. Explain in detail what is meant by Energy flow through Ecosystem.
- OR
- VII. What will happen when the Food Chain cycle is affected by manmade intrusions? What impact will it have on the Ecosystem? Explain with examples.
- VIII. Explain in detail Nutrient Cycle in Ecosystems. What is the impact of man on the nutrient cycle?
- OR
- IX. What are the major ecosystems of the world? Explain about desert, wetlands and freshwater ecosystems.

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AR 1505 BUILDING SERVICES II-ELECTRICAL DESIGN AND ILLUMINATION (2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer **ALL** questions)

(8 × 5 = 40)

- I. (a) What is the principle of lighting in buildings?
 (b) Write notes on emergency power supply system.
 (c) Draw the layout of a panel board.
 (d) Write notes on plate earthing.
 (e) What is substation and draw the single line diagram of a substation.
 (f) Explain the difference between AC and DC systems.
 (g) What are the different types of luminaries?
 (h) Explain the following (i) luminous flux (ii) illumination (iii) Luminous intensity.

PART B

(4 × 15 = 60)

- II. Prove that line voltage = $\sqrt{3}$ times of phase voltage in a star connected three phase system.

OR

- III. A star connected three phase load consists of three identical impedances. When the load is connected to a three phase, 400 V supply, the line current is 23.09A and power factor is 0.8 lagging. Calculate the total power taken by the load. If the load were reconnected in delta and supplied from the same three phase supply, calculate the current flowing in each line and the total power.

- IV. Explain the working of the following with neat sketch.
 (i) ELCB (ii) MCB.

OR

- V. What are the general aspects of the design of electrical installations in domestic buildings?

- VI. Design the illumination scheme in an auditorium with a seating capacity of 200 with estimation.

OR

- VII. What are the safety factors to be considered for the design of a high rise building?

- VIII. Explain the different lightning protection schemes for building. Also explain the safety regulations in commercial and domestic buildings.

OR

- IX. What is the necessity of earthing? Explain pipe earthing with neat sketch.

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B.Arch. Degree V Semester Examination December 2016

AR 1506 ARCHITECTURAL DETAILING (2014 Scheme)

Time : 4 Hours

Maximum Marks : 100

Instructions:

- (i) Drawing sheet will be supplied.
- (ii) Answer all questions from Part A and 3 full questions from Part B.
- (iii) Assume further data, if found necessary.
- (iv) Credit will be given for following standard architectural drafting and detailing conventions.

PART A(Answer *ALL* questions)

(8 × 5 = 40)

- I. Write short answers with illustrative sketches on the following as applicable to architectural working drawing set.
 - (a) Graphical cross referencing system for referring a large scale detail from a small scale drawing.
 - (b) Three line dimensioning system and style for architectural plans.
 - (c) Check list of dimensions and details to be shown in working drawing cross sections.
 - (d) Structural framing plan.
 - (e) Format for schedule of finishes.
 - (f) Format for schedule of doors, windows and ventilators.
 - (g) Check list of details to be shown in working drawing elevation.
 - (h) Data to be provided in roof plan.

PART B

(3 × 20 = 60)

- II. Draw detailed wall section to scale of 1:50 of an exterior wall of a single storeyed residence, cutting through window. (20)
Foundation and basement – Random rubble.

Wall	-	20 cm thick brick work in cement mortar.
Roof slab	-	RCC 1:1.5:3, 12 cm thick.
Plastering	-	Cement mortar 1:4
Window	-	wooden

 Show DPC, sill concrete, joinery detail between roof slab and brick wall.

OR

- III. Draw central line drawing with foundation excavation plan for a room of size 500 cm × 400 cm with 30 cm × 40 cm size RCC columns and 20 cm thick brick wall. (20)
- IV. Draw interior elevation of a toilet of size 210 cm × 180 cm in 1:50 scale, for a residence, showing location of fixtures etc. Brick wall 20 cm thick, floor finish – ceramic tile, wall finish – ceramic tile. (20)

OR

(P.T.O.)

V. Draw Jamb joinery details for a sliding glazed Aluminium window the 20 cm concrete block wall. (20)

VI. (i) Draw Schematic water supply and plumbing layout of a toilet in a student's hostel in 1:50 scale, size of toilet 210 cm × 150 cm. Assume position of fixtures, size of doors, etc. (20)

(ii) Draw sectional detail of fixing floor trap in a bath room at first floor level with tiled floor.

OR

VII. (i) Draw schematic electrical layout for a hotel room of size 500 cm × 550 cm, in 1:50 scale, showing calling bell, general lighting fixtures, TV., AC., table lamp, electrical sockets, switches etc. (20)

(ii) Draw detailed drawing for fixing of a concealed electrical lighting fixture in gypsum board false ceiling.

B.Arch. Degree V Semester Examination December 2016

AR 1507 STRUCTURAL ANALYSIS III (2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A (Answer ALL questions)

(8 × 5 = 40)

- I. (a) Classify arches based on materials, shapes and structural systems.
 (b) Enumerate the advantages and disadvantages of fixed arch compared to three hinged arch.
 (c) A symmetrical three hinged semicircular arch carries a point load of 100 kN at the crown hinge. The radius of the arch is 4m. Find the horizontal reaction at the supports.
 (d) Derive the necessary equation for the length of a cable hanging from supports at same level.
 (e) Discuss the effect of settlement of supports on internal forces in structures.
 (f) Explain the force method of analysis of continuous beams.
 (g) Derive stiffness matrix for beam element.
 (h) Compare displacement method and force method of analysis.

PART B

(3 × 20 = 60)

- II. A three hinged parabolic arch hinged at supports and at the crown have a span of 24 m and a central rise of 4 m. It carries a concentrated load of 75 kN at 18 m from the left support and uniformly distributed load of 45kN/m over the left half of the span. Determine bending moment, normal thrust and radial shear at a section 6 m from the left support.

OR

- III. A symmetrical three hinged circular arch rib of 24 m span with a central rise of 4.8 m carries a point load of 100 kN at 6 m from the left support. Calculate the horizontal thrust and reactions at the support.

- IV. Determine the reaction at supports A and E tension in the cable and sag y_b and y_d for the cable loaded as shown in (Fig.1). Neglect the self weight of the cable.

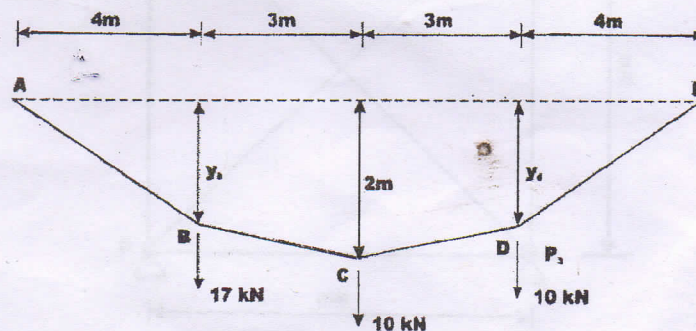


Fig. 1

OR

(P.T.O.)

V. A continuous beam ABC is carrying a uniformly distributed load 1kN/m in addition to a concentrated load of 10kN (Fig.2). Analyse the beam by force method of analysis. Assume EI constant for all members.

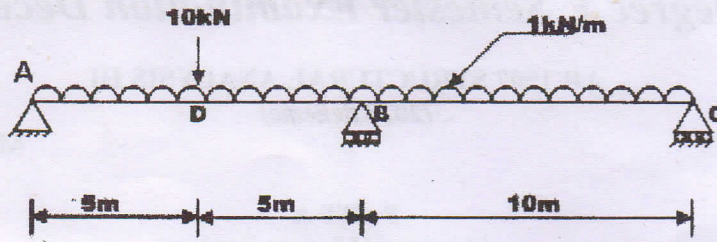


Fig.2

VI. Analyze the given frame (Fig.3) using displacement method of analysis and draw bending moment diagram.

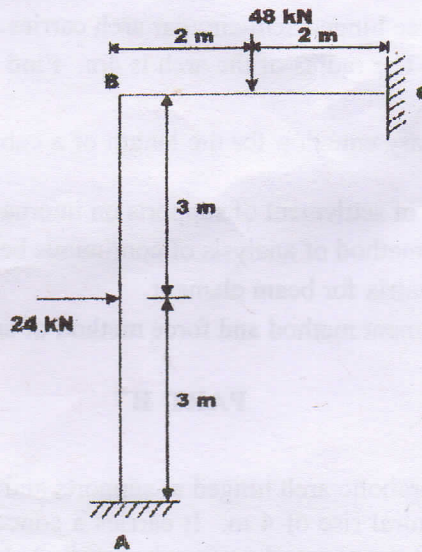


Fig. 3

OR

VII. Analyse the truss by direct stiffness method (Fig.4)

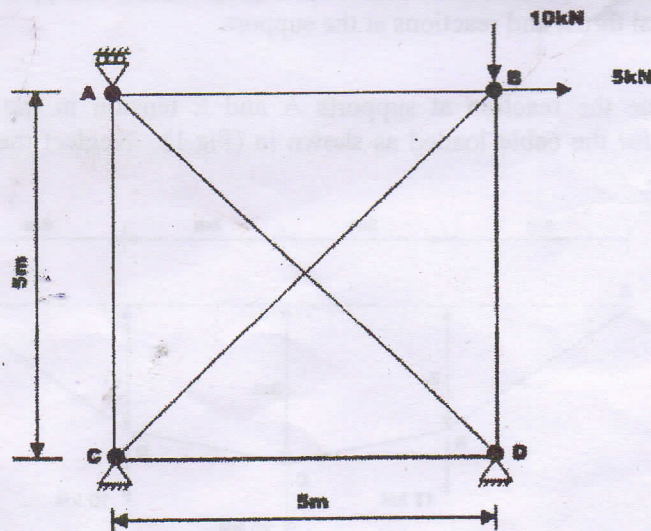


Fig. 4
