B.Arch-V(R/S)-11.22-2152 Reg. No. | | | | | | | | |

A

# *B.Arch. Degree V Semester Regular/Supplementary Examination November 2022*

## AR 1502 BUILDING MATERIALS AND CONSTRUCTION IV

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

### PART A

(8 × 5 = 40)

I. Write short notes on the following:
   (a) Cement based paints
   (b) Fire retardant paint.
   (c) Epoxy flooring.
   (d) Ceramic tiles.
   (e) North light truss.
   (f) Glass fibre reinforced plastic sheets.
   (g) Dumb waiters.
   (h) Belt conveyors.

(2 × 10 = 20)

II. Discuss in detail Varnishes, Shellac and Polish.

**OR**

III. Discuss in detail any three types of natural floor finish.

IV. Describe with sketches any two types of roofing tiles with fixings details.

**OR**

V. Describe with sketches Electric and Hydraulic elevators.

### PART B

(2 × 20 = 40)

VI. Draw and label King post steel truss with gutter and fixing details to a suitable scale. Assume necessary details required for drawing.

**OR**

VII. Draw and label Queen post steel truss with gutter and fixing details to a suitable scale. Assume necessary details required for drawing.

VIII. Draw the plan, section and details of an elevator system for a 6 storied hospital building.

**OR**

IX. Draw the plan, section and details of an escalator for a commercial building. Assume any other data required.

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C

# *B.Arch. Degree V Semester Regular/Supplementary Examination November 2022*

**AR 1503 HISTORY OF ARCHITECTURE-IV**
(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

**PART A**
(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes along with sketches
- (a) New Architectural features contributed by Portuguese on Churches.
- (b) Characteristics of Bom Jesus Cathedral.
- (c) Lutyens Delhi.
- (d) Architectural Features of Secretariat Building, New Delhi.
- (e) New techniques and building materials during Industrial Revolution.
- (f) Traveller's club building.
- (g) Form follows function.
- (h) Organic Architecture.

**PART B**

(4 × 15 = 60)

II. Explain the influence of Portuguese on the religious architecture of Goa, with one example.

**OR**

III. Differentiate the architectural and planning techniques between the Catholic and the Hindu settlements of Fountainahs with sketches.

IV. Explain the British Colonial Architecture in India, with examples.

**OR**

V. Indo-sarcenic Architecture is often refereed as a hybrid style. Explain.

VI. Describe the material, social and cultural impact of Industrial revolution in the field of Architecture.

**OR**

VII. How was Crystal Palace unique at the time of its construction?

VIII. Explain the Architecture of Louis Sullivan with examples.

**OR**

IX. Explain the works of Antonio Gaudi with minimum two examples along with sketches.

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C

# *B.Arch. Degree V Semester Regular/Supplementary Examination November 2022*

## 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 the following:

(a) Ecosystem and Environment
(b) Community and Population
(c) Habitats and niches
(d) Population regulation
(e) Ten percent law of energy transfer
(f) Feedback and control mechanisms
(g) Wetland ecosystem
(h) Sedimentary cycles

### PART B

(4 × 15 = 60)

II. Define Ecology. Explain in detail and its relation to Ecosystem.

**OR**

III. Describe the different components of the environment and various roles fulfilled by each component.

IV. Explain how r and k selection affect population growth. Describe the process of ecological succession with an example.

**OR**

V. Define Population fluctuation and Population dynamics. Explain how these two are relevant to examining its impact on the environment.

VI. What are the different types of ecological pyramids? How do they represent the term 'ecological efficiency'?

**OR**

VII. Explain grazing and detritus food chains, supported by examples. How do these mechanisms support the food web?

VIII. Explain the phosphorous cycle with the help of a diagram. How the human activities in ecosystems had affected the phosphorous cycle?

**OR**

IX. Explain the classification of ecosystems. How does Grass land ecosystem differ from Desert ecosystem?

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B

# *B.Arch. Degree V Semester Regular/Supplementary Examination November 2022*

## 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) Write note on stand-by power supply system.

(b) Draw the layout of a panel board.

(c) Explain the constructional details of transformers with relevant diagrams.

(d) Write short notes on laying of cables.

(e) Explain the following:

(i) Luminous Flux

(ii) Illumination

(iii) Luminous Intensity

(f) What are the different types of lighting arrangements (with diagrams)?

(g) Define IBMS system.

(h) What do you mean by earthing in electrical installations?

### PART B

(4 × 15 = 60)

II. Prove the relation between line voltage and phase voltage in star connected system.

**OR**

III. The 3 arms of a 3- phase load each comprise of resistance 25 Ω, inductance 0.15 H in series with a 120 μF capacitor. The supply is 415V, 50 $H_Z$. Calculate the line current and power in:

(i) Star

(ii) Delta.

IV. What is a substation? Also draw the single line diagram of a sub-station and explain the various components in a substation.

**OR**

V. With neat sketch, explain the working of ELCB.

VI. Explain the concept of rising mains with suitable diagrams.

**OR**

VII. Explain the design considerations of a good lighting scheme.

VIII. What is the necessity of earthing? Explain pipe earthing with neat sketch as per Indian Standards.

**OR**

IX. Explain the safety regulations in domestic, commercial and high rise buildings.

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A

# *B.Arch. Degree V Semester Regular/Supplementary Examination November 2022*

## AR 1506 ARCHITECTURAL DETAILING

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

### PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. Write short notes of the following:

(a) Details to be shown in the Floor Plan.

(b) Relevance of centre line drawing.

(c) Role of working drawings in construction.

(d) Check list of details to be shown in working drawing.

(e) Format for schedule of Doors, Windows and Ventilators.

(f) Sketch and explain about dimensioning for Architectural projects.

(g) Reflected ceiling plan.

(h) Cross Referencing.

### 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.

Foundation and Basement – Random Rubble

| | | |
|---|---|---|
| Wall | - | 20cm thick brick work in cement mortar |
| Roof Slab | - | RCC 1:1, 5:3, 12cm thick |
| Plastering | - | Cement mortar 1:4 |
| Window | - | Wooden |

**OR**

III. Draw Central Line Setting out drawing to Scale of 1:50 for the building given in Figure 1.

IV. Prepare schedule of doors and windows for the given residence. Illustrate joinery details for a kitchen door in an appropriate scale

**OR**

V. Prepare the detailed drawing of a Door, Window and a Ventilator with Plan, Section, Elevation and required details.

VI. Prepare the electrical layout plan for figure 1. Legends should be shown in tabular form to indicate the height of various fixtures from finished floor level (Scale 1:50).

**OR**

**(P.T.O.)**

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VII. Prepare a neatly drafted detailed plumbing layout plan for the building (Figure 1) sizes of connection line and its slope, inspection chamber, gully traps, septic tank, soak pits should be shown in the layout (scale 1: 50).

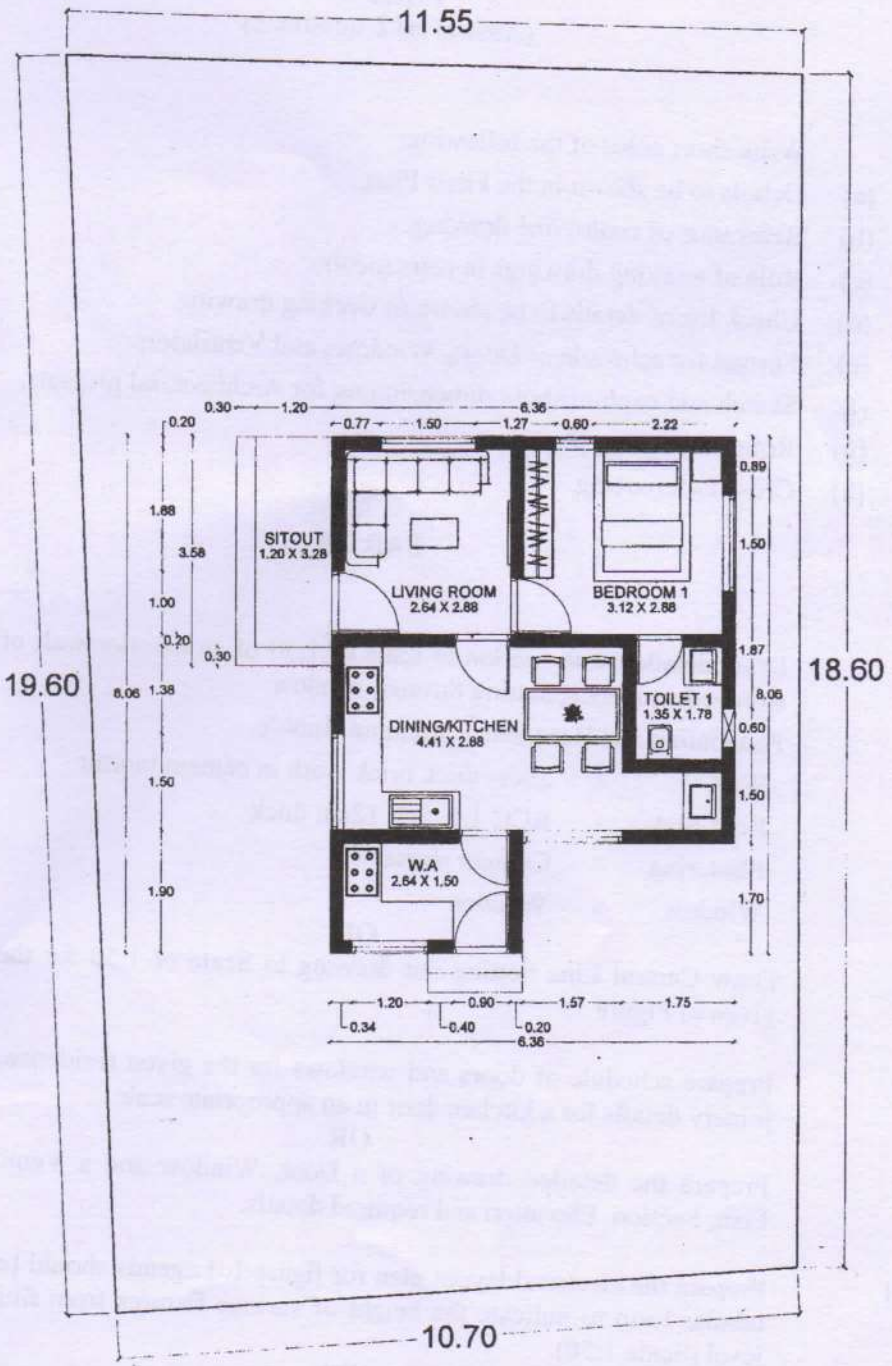


Figure 1

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A

# *B.Arch. Degree V Semester Regular/Supplementary Examination November 2022*

**AR 1507 STRUCTURAL ANALYSIS III**

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

**PART A**

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. (a) Distinguish between two hinged and three hinged arches.

(b) A three hinged parabolic arch carries audl of 30 kN/m acting over the entire span 4 m. Find the vertical reactions at the support.

(c) Write a short note on different types of cable supports.

(d) Explain force method of analysis and stiffness method of analysis.

(e) List out the steps involved in the analysis of a continuous beam using force method.

(f) Differentiate static and kinematic indeterminacy of a structure.

(g) List out the steps involved in frames using stiffness method of analysis of a structure.

(h) Explain the effect of settlement and temperature stress on structures.

**PART B**

(3 × 20 = 60)

II. A three hinged circular arch hinged at the springing and crown points has a span of 40 m and a central rise of uniformly distributed load 20 kN/m over the left half of the span together with a concentrated load of 100 kN at the right quarter span point. Find the reactions at the supports, normal thrust and shear at a distance 10 m from the left support.

**OR**

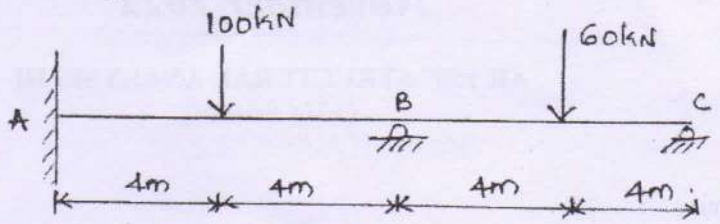
III. A three hinged parabolic arch hinged at the supports and at the crown has a span of 24 m and a central rise of 4 m. It carries a concentrated load of 50 KN at 18m from the left support and a uniformly distributed load of 30 kN/m over the left half portion. Determine the moment, thrust and radial shear at a section 6 m from the left support.

IV. A cable of span 120 m and dip 10m carries a load of 6 kN/m of horizontal span. Find the maximum tension in the cable and the inclination of the cable at the support. Find the forces transmitted to the supporting pier if the cable passes over smooth pulleys on top of the pier. The anchor cable is at 30° at the horizontal. Determine the maximum bending moment for the pier if the height of the pier is 15 m.

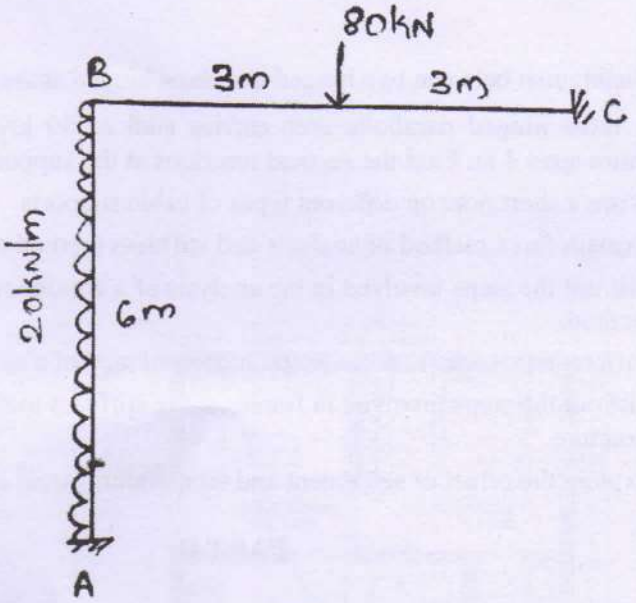
**OR**

**(P.T.O.)**

V. Analyse the continuous bean as shown in figure using force method and draw the bending moment diagram.

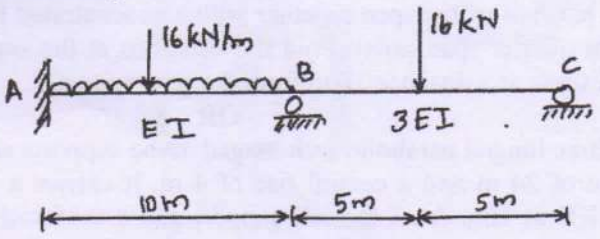



VI. Analyse the frame using displacement method and draw the bending moment diagram.




**OR**

VII. Analyse the continuous beam using displacement method and draw the bending moment diagram.

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