B.Arch-III(S)-11-22-2146 Reg. No. | | | | | | | | | |

B

B.Arch. Degree III Semester Supplementary Examination November 2022

AR 1302 BUILDING MATERIALS AND CONSTRUCTION-II

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

(*Illustrate answers with sketches wherever necessary*)
(*Candidates will be supplied with one drawing sheet of approximate A2 size*)

PART A

(Answer **ALL** questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Physical properties of soil.
(b) Standard penetration test.
(c) Admixtures.
(d) Concrete Slump test.
(e) Types of pile footing.
(f) Differentiate between cast in situ and precast concrete slab partitions walls.
(g) Cantilevered stair.
(h) Waist slab.

(2 × 10 = 20)

II. Discuss about the factors affecting bearing capacity of soil and methods of improving it.

OR

III. Enlist the types of joints in RCC construction. Explain each one in detail with sketches.

IV. Explain the major functions of a foundation and describe the different types of shallow foundation generally used for construction.

OR

V. Describe the various design aspects of a staircase with respect to building codes.

PART B

(2 × 20 = 40)

VI. Draw to suitable scale the plan and section of an RCC well foundation. Mark all the specifications. Assume any other data required.

OR

VII. Draw to appropriate scale, detailed plan and section of a raft footing for columns for an RCC framed building. Column size is 40 cm × 40 cm. Assume necessary details required for drawing.

VIII. Draw the plan and section of an RCC spiral stair with handrail to reach a height of 2.7 m. Step width is 90 cm. Provide a landing as the last step. Assume necessary details required for drawing.

OR

IX. Draw to appropriate scale, detailed plan and section of an RCC cantilever stair of height 3.6m to access between two intermediate floors of a building. Mark all the specifications. Assume any other data required.

***

B.Arch-III(S)-11.22-2147 Reg. No. | | | | | | | | |

C

B.Arch. Degree III Semester Supplementary Examination November 2022

AR 1303 HISTORY OF ARCHITECTURE-II
(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

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

(8 × 5 = 40)

I. Write short notes on the following:
(a) Golgumbaz.
(b) Tombs of Lodi Gardens.
(c) Well retreats of Ahmedabad.
(d) Khirki Masjid.
(e) Brihadeshwara Temple.
(f) Madhura Style.
(g) Kailasnatha Temple.
(h) Taj Mahal.

PART B

(4 × 15 = 60)

II. Explain with sketches the Indo Aryan Architectural features with reference to temples in Orissa.

OR

III. Explain the planning layout of Srirangam temple.

IV. Explain, giving examples and illustrations of Islamic Architecture with building types, elements and construction techniques of slave dynasty quoting Qutub complex or tomb of illtumish.

OR

V. Illustrate with sketches the architectural characteristics introduced by Tuglaq dynasty.

VI. Explain the architectural innovations during Malwa Provincial style, describe in detail with illustrations citing examples as Hindola mahal or Hawa mahal.

OR

VII. What are the salient features of Jaunpur style, explain with illustrations citing Atala masjid as example.

VIII. Discuss Akbar's Contribution to Evolution of Mughal architecture style with Fatehpur Sikri and its significance of planning.

OR

IX. Describe the contributions of Shah Jahan with Red Fort at Agra as example.

***

B.Arch-III(S)-11-22-2148 Reg. No. | | | | | | | | |

A

B.Arch. Degree III Semester Supplementary Examination November 2022

AR 1304 BUILDING CLIMATOLOGY

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer **ALL** questions)

(8 × 5 = 40)

I. (a) Explain the importance of climate in Architecture.

(b) Differentiate between weather and climate.

(c) Briefly explain any five elements of climate.

(d) Explain global climatic zones.

(e) Explain the subjective variables that affect the thermal preferences of people.

(f) What is thermal comfort? State some thermal comfort Indices.

(g) State some methods for passive solar control.

(h) Briefly explain active and passive construction strategies.

PART B

(4 × 15 = 60)

II. What causes Global wind patterns? Explain the major Pressure belts and wind patterns.

OR

III. Explain the tilt of Earth axis and how it affects the seasons on earth.

IV. Explain sun path diagram, elements, analysis and how to apply in architecture.

OR

V. Write a note on the climate of Kerala and the role of monsoons.

VI. Explain Thermal balance of human body. Briefly explain any five thermal comfort indices.

OR

VII. Differentiate between Effective temperature, and corrected effective temperature .With the help of a nomogram, explain how DBT and WBT helps to find ET and CET.

VIII. Explain five passive design and active design strategies, used each in gaining thermal comfort for tropical housing.

OR

IX. Explain how climatic building response strategies helps in human body comfort for different climatic zones.

***

B.Arch III(S)-11-22-2149 Reg. No. | | | | | | | | |

B

B.Arch. Degree III Semester Supplementary Examination November 2022

AR 1305 ARCHITECTURAL GRAPHICS-II

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

(One drawing sheet is to be supplied. Illustrate all answers with neat sketches)

PART A

(Answer **ALL** questions)

(4 × 5 = 20)

I. Write short notes on the following:

(a) RGB and CMYK colour modes.

(b) Leonardo's window.

(c) Sciography.

(d) Symbols and Signage.

PART B

(2 × 40 = 80)

II. What is perspective drawing? Explain different types of perspective projection, add suitable sketches explain the process of perspective projection of buildings and landscapes.

OR

III. Imagine you are sitting the rear inside of an auditorium watching a dance program. Sketch a view from your position.

IV. Design a poster for an event of 'World Environment Day' point out the salient features incorporated in this design.

OR

V. Draw a well- planned City using Two- point perspective in Birds eye view, showing appropriate light and shadow using with any medium.

***

B.Arch-III(S)-11-22-2150 Reg. No. | | | | | | | | |

C

B.Arch. Degree III Semester Supplementary Examination November 2022

AR 1306 HUMANITIES
(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A
(Answer **ALL** questions)

(8 × 5 = 40)

I. Write short notes on:
- (a) Differentiate Groups and Community
- (b) Society
- (c) Unity and Diversity in India
- (d) Characteristics of Village community in India
- (e) Urban Crimes
- (f) Impacts of Urbanization
- (g) Components and Characteristics of social structure.
- (h) Cultural anthropology

PART B

(4 × 15 = 60)

II. Describe the changes in Society from Pre-industrial revolution to Industrial revolution. Discuss family as an institution in industrial society and the impact of technology on the same.

OR

III. Discuss the relevance of sociology in Architectural curriculum.

IV. Discuss characteristics of rural society in India and the trends of changes seen in the same.

OR

V. Discuss the relationship between Man, Environment and Society.

VI. Differentiate between urbanism and urbanization. Discuss factors affecting safety of women and children in urban area and the role of Architecture.

OR

VII. Discuss types of social stratification and its existence in Indian context. Differentiate Caste and Class.

VIII. Discuss impact of culture on architecture stating examples.

OR

IX. What are slums? Describe the socio-economical and physical problems associated with slums.

***

B.Arch-III(S)-11-22-2151 Reg. No. | | | | | | | | |

B

B.Arch. Degree III Semester Supplementary Examination November 2022

AR 1308 STRUCTURAL ANALYSIS-I

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer **ALL** questions)

(8 × 5 = 40)

I. (a) What is section modulus? Find an expression for the section modulus for rectangular and circular section.

(b) A strip of steel 7.5 cm wide and 4 cm thick is bend round a circular drum of 4.96 m outer diameter. Calculate the maximum stress due to bending. Take $E = 2 \times 10^5$ N/mm^2.

(c) Prove that the maximum shear stress in a rectangular section is 1.5 times the average shear stress.

(d) Define: (i) Polar Modulus (ii) Torsional Rigidity.

(e) Explain Mohrs' Theorems.

(f) Explain Conjugate Beam Method.

(g) Find slope at the support of a simply supported beam having span 'ℓ' carrying a point load 'p' at centre.

(h) What are the classifications of column?

PART B

(4 × 15 = 60)

II. A rolled steel joist of I section has the following dimensions.

Flange width	= 250 mm	Flange Thickness	= 25 mm
Overall Depth	= 600 mm	Web Thickness	= 12 mm

Calculate the safe U.D L per meter length of the beam, if the effective span is 8 m and the maximum stress in steel is 103 N/mm^2.

OR

III. A flitched beam consist of timber joist 150 mm wide and 300 mm deep is strengthened by a steel section 20 mm thick and 300 mm deep at one side of the timber joist. Determine the moment of resistance of the beam if allowable stress in timber = 7 N/mm^2.

IV. At a given section of an I beam, the value of vertical shear force is 40 kN and the sectional dimensions are:

Flange width	= 200 mm	Flange Thickness	= 30 mm
Web Thickness	= 40 mm	Total Depth	= 300 mm

Draw the shear stress distribution diagram for the given section.

OR

V. A hollow shaft is of 120 mm external diameter and diameter ratio 0.6. If the maximum shear stress in the shaft is limited to 100 MPa and allowable twist is 1° per meter length, find the maximum power that can be transmitted to the shaft, if it is to rotate at 100 r.p.m. Take $C = 8 \times 10^4$ MPa.

(P.T.O.)

VI. A simply supported rectangular R C beam of length 3m and cross section 100 mm × 250 mm is subjected to a central point load of 15 kN. Find the maximum slope and deflection of the beam. Find the point load that can be placed centrally on the beam to cause a central deflection of 20 mm. Take $E = 2 \times 10^4$ N/mm^2.

OR

VII. A Simply supported beam AD carries 2 point loads of 40 kN each at B and C. If AB = 1 m, BC =1 m and CD = 1 m, find the maximum slope and deflection of the beam by Mohr's theorems. Take EI = 4000 kNm^2.

VIII. Compare the safe load for two circular columns of same length, same material and equal area of cross section. One of them being hollow with diameters ratio 2:1 and the other a solid one. In each case one end of the column is fixed and other end hinged. Factor of safety is also same.

OR

IX. (a) Derive the crippling load for a column with both ends hinged.

(b) A solid round bar with 80 mm diameter and 4 m length is used as a column. Find the safe compressive load for the column using Euler's formula. (i) One end fixed and other end hinged (ii) Both ends fixed. Take $E = 2 \times 10^5$ N/mm^2 and factor of safety = 3.

***