B.Arch-III(S)-11-23-3085 Reg. No. | | | | | | | | |

B

B.Arch. Degree III Semester Supplementary Examination November 2023

AR 1302 BUILDING MATERIALS AND CONSTRUCTION - II

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

Instructions: *i. Illustrate answers with sketches wherever necessary.*
ii. 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) Bulking of sand.
(b) General purpose Portland cement.
(c) Water-cement ratio.
(d) Joints in concrete.
(e) Concrete floor.
(f) Design of shallow foundation.
(g) Factors involved in staircase design.
(h) Turning stairs.

(2 × 10 = 20)

II. What is the soil's bearing capacity? Describe the procedures for determining it.

OR

III. Describe the procedures for determining concrete workability.

IV. Explain with sketches the types of pile foundation used in construction of a framed structure.

OR

V. Outline the criteria involved in creating and specifying the access for physically challenged.

PART B

(2 × 20 = 40)

VI. Draw a comprehensive design and section of a lintel and sunshade for a residential structure at a reasonable scale. Assume all essential drawing information.

OR

VII. Draw a comprehensive plan and section of integrated footing for columns in a RCC-framed structure to an acceptable scale. Just draw up to the plinth level. Assume all essential drawing information.

VIII. Draw a comprehensive plan and section of a dog-legged RCC staircase for a three-story commercial structure to a reasonable scale. Draw up to the first floor level and assume the essential elements. 375 cm is the height of the floor.

OR

IX. Draw a comprehensive design and section of a curved RCC staircase for a residential structure at a reasonable scale. 330 cm is the height of the floor. Assume all essential drawing information.

***

B.Arch-III(S)-11.23-3086 Reg. No. | | | | | | | | |

A

B.Arch. Degree III Semester Supplementary Examination November 2023

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) Dravidian Architecture.
(b) Indo-Aryan Architecture.
(c) Architectural elements of Islamic Architecture.
(d) Qutab Minar.
(e) Imperial Style.
(f) Stepped wells of Gujarat.
(g) Golgumbaz.
(h) Tomb of Humayun.

PART B

(4 × 15 = 60)

II. Discuss on Dravidian Architecture and features of Temple Town with suitable example.

OR

III. Explain Indo- Aryan Temple Architecture with any two examples.

IV. Elaborate on Islamic Architecture in India, its elements, structural systems and construction techniques with an example.

OR

V. Describe in detail the buildings during Tughlaq Dynasty with any two examples.

VI. Explain on Bengal provincial style with sufficient details and examples.

OR

VII. Discuss on Malwa Provincial style with suitable examples.

VIII. Briefly explain the evolution of Mughal style and the different eras of rule.

OR

IX. Explain the architectural characteristics during Akbar's era with examples.

***

B.Arch-III(S)-11-23-3087 Reg. No. | | | | | | | | |

B

B.Arch. Degree III Semester Supplementary Examination November 2023

AR 1304 BUILDING CLIMATOLOGY
(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A
(Answer **ALL** questions)

(8 × 5 = 40)

I. Write short notes on the following:
(a) Weather and climate, Tilt of earth's axis.
(b) Micro climate and macro climate.
(c) Stereographic chart.
(d) Elements in determining the thermal comfort.
(e) Sol air temperature and solar gain factor.
(f) ET and CET monograms.
(g) Stack effect in buildings.
(h) Factors that reduce the solar heat gain through windows.

PART B

(4 × 15 = 60)

II. What are the major type of climate? How does the "range of values" of these types of climate affects architecture and human comfort?

OR

III. What are the causes of global wind pattern? Explain the major wind patterns/ systems and belts.

IV. Briefly explain the climate of Kerala and establish the role of monsoon.

OR

V. What are the major climatic zones? Explain the characteristics of warm humid climate.

VI. Briefly explain the thermal comfort indices and its uses in climatic design.

OR

VII. What is meant by thermal comfort? Explain how thermal comfort can be achieved in an architectural prespective.

VIII. Explain the general guidelines that a built form appropriate to warm humid region with heavy rainfall.

OR

IX. Explain how the planning, construction and material selection varies with change in climatic region, state examples.

***

B.Arch-III(S)-11.23-3089 Reg. No. | | | | | | | | |

B

B.Arch. Degree III Semester Supplementary Examination November 2023

AR 1306 HUMANITIES
(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

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

(8 × 5 = 40)

I. Write short notes on the following:
- (a) Sociology and society.
- (b) Group and Community.
- (c) Plurality of Indian Society.
- (d) Village Community.
- (e) Urbanization.
- (f) Caste Stratification in Indian Society.
- (g) Cultural Anthropology.
- (h) Social Structure.

PART B

(4 × 15 = 60)

II. Explain the primary concepts of sociology with examples.

OR

III. Discuss family as an institution in industrial society and the impact of technology on the same.

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

OR

V. Discuss unique settlement pattern and architecture in Kerala.

VI. Differentiate urbanism and urbanization and discuss the causes for urbanization.

OR

VII. Discuss social problems and social change in Indian context.

VIII. Discuss the relationship between spatial structure and social structure.

OR

IX. Discuss the social problems associated with urban slums.

***

B.Arch-III(S)-11-23-3090 Reg. No. | | | | | | | | | |

C

B.Arch. Degree III Semester Supplementary Examination November 2023

AR 1308 STRUCTURAL ANALYSIS - I

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer **ALL** questions)

(8 × 5 = 40)

I. (a) Explain the theory of simple bending. Write down the equation for theory of simple bending with explanation of notations.

(b) Write note on Flitched Beams.

(c) Draw the shear stress distribution for

(i) Diamond Section

(ii) Symmetrical I Section.

(d) What are the assumptions used in Torsion?

(e) Derive the basic differential equation of the elastic curve.

(f) State and explain Moment area theorem.

(g) Write Euler's crippling load of column for various end conditions in terms of its actual length.

(h) What is slenderness ratio? State its significance.

PART B

(4 × 15 = 60)

II. A T section beam having flange 2 cm × 10 cm and web 10 cm × 2 cm is simply supported over a span of 6 m. It carries a udl of 3 kN/m run including its own weight over its span, together with a load of 2.5 kN at a mid span. Find the maximum tensile and compressive stresses occurring in the beam section.

OR

III. A composite beam consist of two timber joists 100 mm wide and 300 mm deep with a steel plate 200 mm deep and 15 mm thick placed symmetrically in between and clamped to them. Calculate the total moment of resistance of the section if the allowable stress in the joist is 9 N/mm^2. Assume Es = 20 Ew.

IV. A T-section beam has a top flange of 120 mm × 20 mm and the web of 20 mm × 100 mm. The overall depth is 120 mm. It is subjected to a shear force of 60 kN. Calculate the Shear stress in various section and draw the shear stress distribution diagram.

OR

V. (a) Write down the equation for Torsion with explanation of notations.

(b) A hollow shaft of external and internal diameters as 100 mm and 40 mm is transmitting power at 120 rpm. Find the power the shaft can transmit, if the shearing stress is not to exceed 50 MPa.

(P.T.O.)

VI. A Simply supported beam of span 6 m carries UDL 5 kN/m over a length of 3 m extending from left end. Calculate deflection at mid span. Take $E = 2 \times 10^5$ N/ mm^2 and $I = 6.2 \times 10^6$ mm^4.

OR

VII. A steel girder 4 m long is simply supported at the ends, it carries two concentrated loads of 90 kN and 60 kN at 3 m and 4.5 m from the two ends respectively. Calculate:

(i) The deflection of the girder at the points under the two loads

(ii) The maximum deflection. Take $I = 64 \times 10^{-4}$ m^4 and $E = 210 \times 10^6$ kN/m^2.

VIII. (a) Derive an expression for Euler's buckling load for a column fixed at both end.

(b) A steel rod 5 m long and of 40 mm diameter is used as a column, with one end fixed and the other end free. Determine the crippling load by Euler's formula. Take E = 200 GPa.

OR

IX. Find the buckling load given by Rankine's formula for a tubular strut hinged at both ends, 6 m long having outer diameter 15 cm and thickness 2 cm. Given, $E = 2 \times 10^5$ N/mm^2, $\sigma_c = 567$ N/mm^2 and Rankine's constant, $a = 1/1600$. For what length of the column does the Euler's formula cease to apply?

***