B.Arch–III–12.16–1555 Reg. No. | | | | | | | | |

D

B. Arch. Degree III Semester Examination December 2016

AR 1302 BUILDING MATERIALS AND CONSTRUCTION II

(*2014 Scheme*)

Time: 4 Hours Maximum Marks: 100

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

PART A

(8 × 5 = 40)

I. (Answer ***ALL*** questions)

Write short notes on the following.

(a) Standard Penetration Test.
(b) Bulking of sand.
(c) Admixture.
(d) Water cement ratio.
(e) Portal frame.
(f) Deep foundation.
(g) Tread and riser.
(h) Waist slab.

(2 × 10 = 20)

II. Define bearing capacity of soils. Explain briefly methods of improving bearing capacity of different types of soil. (10)

OR

III. Explain the various tests to be conducted for cement to conform to the requirements of standards. (10)

IV. Explain briefly the mix proportioning and batching of concrete. (10)

OR

V. Explain the major functions of a foundation and describe the different types of shallow foundation generally used for construction. (10)

PART B

(2 × 20 = 40)

VI. Draw to a suitable scale, plan and section of a combined column footing for a column of size 30 cm × 30 cm at a c/c spacing of 300 cm. Assume any other data required. (20)

OR

VII. Draw to suitable scale, the plan and section of one way RCC slab with reinforcement details to be casted for a room or size 400 cm × 300 cm. Assume any other data required. (20)

VIII. Design and draw a staircase to be constructed in a double-heighted hall of size 4 m × 8 m (Plan and section in a suitable scale is required). Assume any other data required. (20)

OR

IX. Draw to a suitable scale the plan and section of an RCC cantilevered stair to negotiate a height of 210 cm cantilevering from a masonry wall of 23 cm thick. Assume any other data required. (20)

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B

B.Arch. Degree III Semester Examination December 2016

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) Orissan temples.
(b) Kailasanatha temple, Ellora.
(c) Characteristic features of Islamic architecture in India.
(d) Development of squinches.
(e) Golgumbaz.
(f) Well retreats/step-wells.
(g) Mughal gardens.
(h) Humayun's tomb.

PART B

(4 × 15 = 60)

II. Explain characteristics of Pandya period with the development of form and arrangement of Meenakshi temple as an example.

OR

III. Discuss the architectural achievement of Cholas with detailed analysis of Brihadeshwara temple, Tanjore.

IV. The architectural character of Khirki Masjid differs from the tomb prototype of a century and a half earlier. Substantiate the statement with the contributions of the dynasty.

OR

V. Illustrate with sketches and explain the contributions of Khilji dynasty to the Qutb complex.

VI. Discuss the Bengal provincial style of Islamic architecture and illustrate its salient features.

OR

VII. Explain the architectural characteristics of Jaipur provincial style with suitable examples.

VIII. Explain the architectural characteristics of Akbar's era with examples.

OR

IX. Elaborate the decline of Mughal architecture from Aurangazeb onwards.

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C

B.Arch. Degree III Semester Examination December 2016

AR 1304 BUILDING CLIMATOLOGY

(2014 Scheme)

Time : 3 Hours Maximum Marks : 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

Write short notes on the following.

I. (a) Tilt of earth's axis and its effect on solar radiation.
(b) Urban climate.
(c) Olgay's Bioclimatic chart.
(d) Stack effect.
(e) Tropical climate.
(f) Carioles force.
(g) Time lag and decrement factor.
(h) Passive controls for radiation in tropical climate.

PART B

(4 × 15 = 60)

II. Explain what is solar constant, atmospheric depletions and thermal balance of earth.

OR

III. Draw a neat and accurate Sun Path diagram showing the PATH of sun for one year at 8°CS. latitude. Label all parts. Find the value of Azimuth and Altitude of sun at 10 am March 23rd .

IV. What are the types of classifications of climates? Explain the climatic features of composite climate.

OR

V. What are the elements of climate? Specify the units and the tool with which they are measured.

VI. What do you mean by "thermal comfort". Define it. Explain ET and CET as units of comfort.

OR

VII. What are the considerations you should take while building in dry tropics covering the areas of selection of material, colors and finish, construction and planning?

VIII. Discuss how the climatic problems are handled efficiently in vernacular Kerala Architecture as you consider each climatic elements like radiation, relative humidity, air temp, driving rain, wind and glare.

OR

IX. What are the features of buildings in hot and dry climate? What are the passive conventional methods used by earlier builders in deserts, solving climatic problems. Sketch plans and views of some buildings.

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B

B.Arch. Degree III Semester Examination December 2016

AR 1305 ARCHITECTURAL GRAPHICS II

(2014 Scheme)

Time : 4 Hours Maximum Marks : 100

(Single A1 drawing sheet is to be supplied)

PART A

(Answer ***ALL*** questions)

(4 × 5 = 20)

I. Write short notes on the following.

(a) Differentiate between Brochure and Poster.

(b) Explain Logo with examples.

(c) Describe colour modes.

(d) Concept of layers.

PART B

(2× 40 = 80)

II. Sketch and illustrate a two point perspective of a street with a vegetable market and a bus stand.

OR

III. Make a one point perspective composition of a landscape with trees and houses.

IV. Design a multi coloured poster for the theme 'STRAY DOG MENANCE' and give details of the significant characteristics incorporated in the design.

OR

V. Design a logo for 'SWACHH BHARAT MISSION'

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C

B. Arch. Degree III Semester Examination December 2016

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) Society.
(b) Institution.
(c) Unity and diversity in India.
(d) Man, environment and society relationships.
(e) Social change.
(f) Caste stratification in Indian society.
(g) Cultural anthropology.
(h) Social structure.

PART B

(4 × 15 = 60)

II. Describe the concept of family and community in sociology. How could you relate these concepts in architecture?

OR

III. What is group in sociology? Explain different groups.

IV. Explain the characteristics of rural society and how it is different from village community.

OR

V. Describe the unique settlement pattern and architecture of Kerala.

VI. Explain the major safety and security issues of large urban centers.

OR

VII. Explain what is urbanism and urbanization. Describe the changes in architecture due to these factors in the contemporary era.

VIII. What is a slum? Explain the physical and social problems of slums.

OR

IX. What is culture? Explain. Describe how culture influences architecture.

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A

B.Arch. Degree III Semester Examination December 2016

AR 1308 STRUCTURAL ANALYSIS I

(2014 Scheme)

Time : 3 Hours Maximum Marks : 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

I. (a) Derive section modulus of rectangular, circular, hollow rectangular and hollow circular sections.

(b) Explain bending equation and equation for shear stress.

(c) A cantilever of length 2m fails when a load of 2 KN is applied at the free end. If the section of the beam is 40 mm × 60 mm, find the stress at failure.

(d) Explain the terms flitched beam and conjugate beam.

(e) A circular beam of 100 mm diameter is subjected to a shear force of 5 KN. Calculate the Avg and Max shear stress and shear stress at 40 mm from N.A.

(f) Using Mohr's theorem, derive expressions for slope and deflection of simply supported beam carrying UDL throughout its span.

(g) Explain Rankine's formulae. Derive an expression for Crippling Load by Rankine's Formulae in terms of slenderness ratio.

(h) What are the assumptions made in Eulers column theory?

PART B

(4 × 15 = 60)

II. A water main 500 mm internal diameter and 20 mm thick is running full. The water main is of cast iron and is supported at two points 10 m apart. Find the maximum stress in the metal. The cast iron and water weigh 72000 N/m^3 and 10000 N/m^3 respectively.

OR

III. A composite beam consists of a wooden joist 150 mm wide and 300 mm deep strengthened by steel plates 20 mm thick and 250 mm deep one on either side of the joist arranged symmetrically. If the max stress on timber is 6 N/mm^2, find the max stress in steel. Find also the moment of resistance of the section. Take Es=20 Ew.

IV. An I section 350 mm x 150 mm has a web thickness 10 mm and flange thickness 20 mm. If the shear force acting on a section of the beam is 40 KN, calculate the shear stress at various sections and draw the shear stress distribution diagram.

OR

V. A hollow shaft, having an inside diameter 60% of its outside diameter, is to replace a solid shaft transmitting the same power at the same speed. Calculate the percentage saving in material, if the material to be used is also the same.

(P.T.O.)

VI. A beam of length 8 m is simply supported at the ends. It carries a UDL of 40 KN/m for a length of 4 m starting at 1 m from the left end. Determine deflection of beam at mid span and also the position and value of maximum deflection. Given $E = 2\times10^5\ N/mm^2$ *and* $I = 4.3\times10^8\ mm^4$.

OR

VII. A beam ABC of length 9 m has one support on the left end and other at 6 m from the left end. It carries a point load of 10KN at the right end. Find the slopes over each support and under the load. Also find the maximum deflection.
Given $E = 2\times10^5\ N/mm^2$ *and* $I = 85\times10^6\ mm^4$.

VIII. Determine the ratio of buckling strengths of two columns one hollow and other solid. Both are made of same material and have the same length, cross sectional area and end conditions. The internal diameter of the hollow column is half the external diameter.

OR

IX. A hollow cylindrical cast iron column is 4 m long with both ends fixed. Determine the minimum diameter of the column if it has to carry a safe load of 250 KN with a factor of safety 5. Take internal dia as 0.8 external dia $\left(a = (1/1600)\ \&\ \sigma_c = 550\ N/mm^2\right)$

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