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B.Arch. Degree IV Semester Examination May 2017

**AR 1402 BUILDING MATERIALS AND CONSTRUCTION III
(2014 Scheme)**

Time : 4 Hours

Maximum Marks : 100

(One drawing sheet to be supplied. Illustrate answers with sketches wherever necessary)

PART A

(8 × 5 = 40)

I. Write short notes on:

- (a) Relevance of carbon content in steel.
- (b) Different standard rolled steel sections.
- (c) Space frames.
- (d) Role of steel in foundation.
- (e) Different alloys of Aluminium.
- (f) Properties of Brass used as a building material.
- (g) Different kinds of Aluminium ventilators.
- (h) Aluminium sections used in sliding Aluminium door.

(2 × 10 = 20)

II. Make a comparison between cast iron, wrought iron and steel with respect to its properties and application.

OR

III. Explain different type of steel roof trusses.

IV. Evaluate Aluminium as a structural building material with respect to its properties.

OR

V. Explain with a neat sketch the details of Aluminium false ceiling and the fasteners used.

(P.T.O.)

PART B

(2 × 20 = 40)

VI. Draw to a suitable scale, plan and section of a steel spiral staircase to be fixed to connect a mezzanine floor at a height of 240 cms, diameter of the staircase is 120 cms. Mark the parts with necessary dimensions. Assume any other data required.

OR

VII. Draw to a suitable scale, plan, elevation and section of a steel door for a masonry opening of size, 100 cm × 210 cm. Use standard steel sections. Mark the parts with necessary dimensions. Assume any other data required.

VIII. Draw to a suitable scale, plan, elevation and section of an aluminium door to be fixed in a masonry opening of size 120 cm × 240 cm. Use standard aluminium sections. Draw the jamb fixing detail to a blown up scale. Assume any other data required.

OR

IX. Draw to a suitable, plan, elevation and section of an aluminium sliding window to be fixed in a masonry opening of size 180 cm × 150 cm to get a maximum opening of 120 cms. Use standard aluminium sections. Assume any other data required.

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B. Arch. Degree IV Semester Examination May 2017**AR 1403 HISTORY OF ARCHITECTURE III***(2014 Scheme)*

Time: 3 Hours

Maximum Marks: 100

*(Support your answers with neat sketches)***PART A**(Answer **ALL** questions)**(8 × 5 = 40)**

I. Write short notes on the following:

- (a) Old St. Peters, Rome.
- (b) Hagia Sophia.
- (c) Flying Buttress.
- (d) Basilica at Ottubeuren, Germany.
- (e) Mayan Temples.
- (f) Muqarnas.
- (g) Torri.
- (h) Architecture of Shinto Shrines.

PART B**(4 × 15 = 60)**

II. Portray the planning principles and characteristics of Romanesque Church Architecture through Pisa Cathedral.

OR

III. Compare and contrast Early Christian and Byzantine Architecture in terms of planning and construction technology.

IV. Write in detail and with relevant sketches the contribution done by Palladio to the architecture in Europe.

OR

V. Compare and contrast British and French Gothic styles of Architecture through examples.

VI. 'Moorish architecture reached its peak with the construction of the magnificent Alhambra complex at Granada'. Justify the statement.

OR

VII. Explain the architectural characteristics of the Great Mosque at Cordoba.

VIII. 'The Forbidden City Palace complex exemplifies traditional Chinese palatial architecture'. Substantiate this statement.

OR

IX. Outline the planning concepts of Temple of Angkor Wat, Cambodia and describe its architectural characteristics.

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B.Arch. Degree IV Semester Examination May 2017

AR 1404 LANDSCAPE ARCHITECTURE (2014 Scheme)

Time: 4 Hours

Maximum Marks: 100

(One drawing sheet to be supplied. All answers to be supported with relevant sketches)

PART A

(Answer ALL questions)

(8 × 5 = 40)

I. Write short notes on:

- (a) Significance of time in Landscape design.
- (b) Park movements in America.
- (c) Tangible and intangible elements.
- (d) The importance of Scale and Proportion in Landscape design.
- (e) Types of Paving used for Driveways.
- (f) Irrigation system suitable for planting bed.
- (g) Shrubs and ground covers with examples.
- (h) Plant materials for indoor landscaping.

PART B

(4 × 10 = 40)

- II. With the help of sketches compare and discuss the features of Chinese gardens and Japanese gardens.

OR

- III. Explain the approach and work of the three great Master William Kent, Capability Brown and Humphry Repton towards English Landscape Garden.

- IV. Elaborate in detail the natural and manmade elements of landscape.

OR

- V. Explain with sketches the characteristics of visual and non-visual senses and how they are incorporated in landscape design.

- VI. Sketch the construction detail of:

- (i) Steps (ii) Retaining wall (iii) Swimming Pool (iv) Decks

OR

- VII. What is the importance of riparian zone and discuss the issues in constructions in this zone.

- VIII. Describe plant selection criteria for a design with sketches where necessary.

OR

- IX. Explain planting and transplanting techniques in Horticulture.

(P.T.O.)

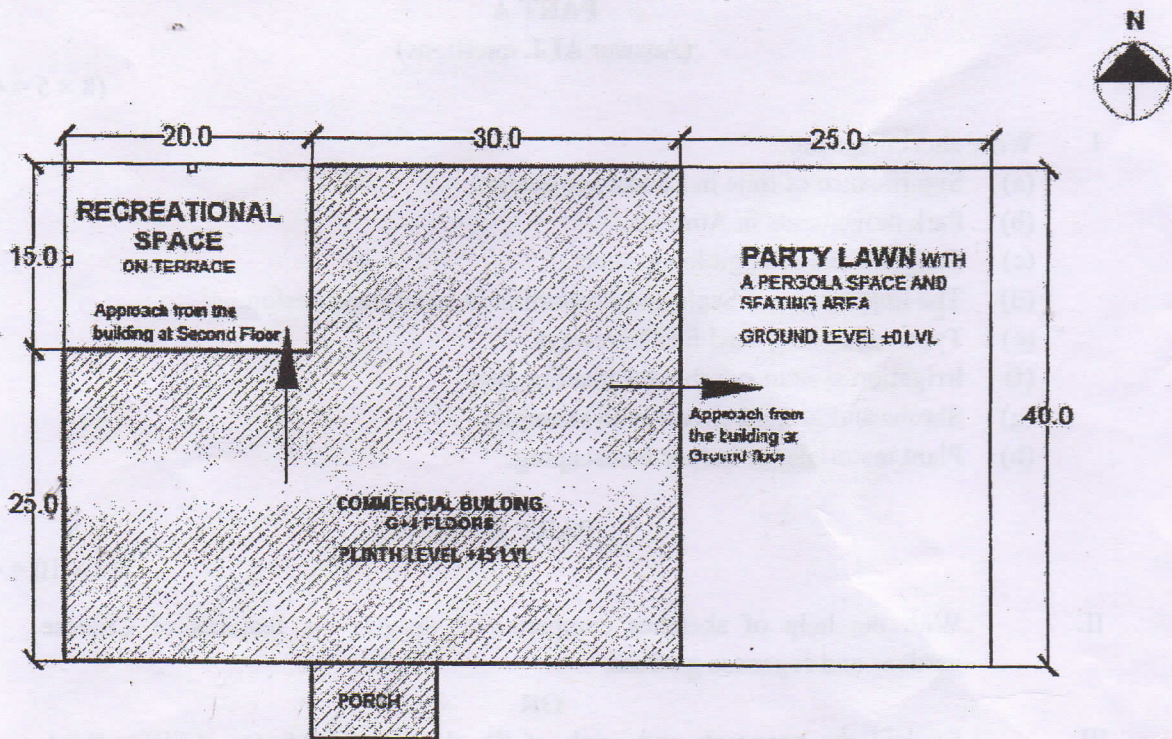
PART C
(Drawing)

(1 × 20 = 20)

- X. Prepare a schematic landscape layout for a Recreation space on second floor terrace for the commercial building shown below. The terrace is covered on top and has got a clear height of 8m and a slab drop of 30cm. Provide a plan and section in 1:50 scale. Explain your design.

OR

- XI. Prepare a schematic landscape layout of a Party Lawn for the commercial building shown below. Draw the planting plan along with a tabular column showing the name, type, symbol of plant and number of similar plants used. Provide plan and section in 1:100 scale.



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B.Arch. Degree IV Semester Examination May 2017

AR 1405 ARCHITECTURAL ACOUSTICS (2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A (Answer *ALL* questions)

(8 × 5 = 40)

I. Write short notes on the following.

- (a) Units for measuring sound.
- (b) Threshold of audibility and pain.
- (c) Noise reduction coefficient.
- (d) Flutter Echo.
- (e) Sound Transmission Class.
- (f) Barriers for outdoor noise control.
- (g) Variable absorbers.
- (h) Acoustical plaster.

PART B

(4 × 15 = 60)

II. Briefly explain the various properties of sound.

OR

III. Sketch the hearing mechanism of human ear and explain the functions of various parts. Also explain the audible range of human ear.

IV. Explain the behavior of sound within enclosed spaces and the factors that can modify this behavior.

OR

V. Define Reverberation Time. Explain how Reverberation Time is calculated, indicating its significance in the design of various spaces.

VI. Differentiate between airborne and structure borne noise. State the requirements of noise control in Industrial buildings.

OR

VII. Explain the basic principles of Noise control. Explain sound transmission through floors and the method of controlling it.

VIII. Describe the acoustical problems associated with a recording studio design. List out the solutions in terms of planning, design and detailing of the project.

OR

IX. Briefly explain the different types of sound absorbing materials and their application. Also explain the various methods of mounting.

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B.Arch. Degree IV Semester Examination May 2017**AR 1406 ESTIMATION AND SPECIFICATION**
(2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A
(Answer *ALL* questions)

(8 × 5 = 40)

- I. Write short notes on:
- Purpose of general specification.
 - Importance of detailed specification.
 - Standard practice in estimating quantity of reinforcement for RCC.
 - Classification of soil for the purpose of estimation of cost.
 - Method of estimating plinth area of a building.
 - Center line method of estimating quantity of walls from plan.
 - Application of computers for estimation.
 - PWD schedule of rates.

PART B

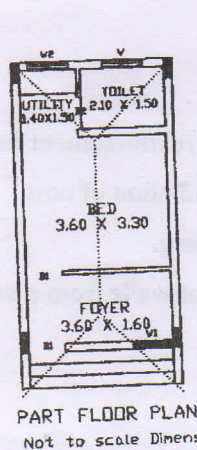
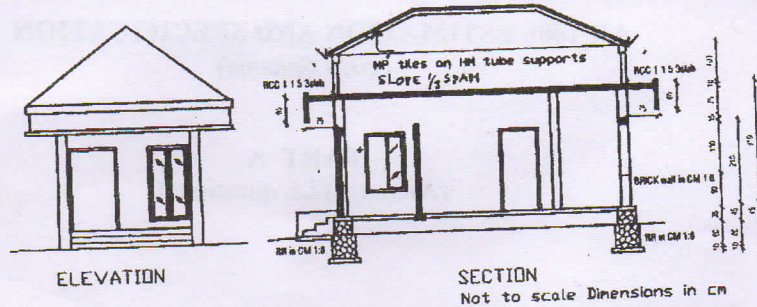
(4 × 15 = 60)

- II. Write detailed specification for sand to be used for RCC roof slab.
OR
- III. Write detailed specification for country burnt bricks to be used for load bearing walls.
- IV. Write detailed specification for cement concrete 1:4:8.
OR
- V. Write detailed specification for random rubble stone masonry for foundation and basement.
- VI. Prepare an estimate of quantities in standard units for the items shown below based on the attached drawing. Assume any appropriate data, if found necessary
- Brick partition wall 10 cm thick masonry 2.2 m high, in CM 1:6 with 10 cm × 10 cm lintel at 210 cm from floor level.
 - RCC 1:1.5:3 for columns in the ground floor above plinth level.
 - Plastering with cement mortar 1:4 for the interior walls.
 - Quantity of wood for door D₁.

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

VII. Prepare an estimate of quantities in standard units for the items shown below based on the attached drawing. Assume any appropriate data, if found necessary

- (i) Vitrified tiling area excluding skirting for bed room and toilet.
- (ii) Area of MP tile for extra roof with slope $1/3$ span.
- (iii) Area for painting for one glazed window of size 120 cm \times 100 cm with wooden frames.
- (iv) 7.5 cm thick floor concrete, assume width of plinth 45 cm.



SPECIFICATIONS
RCC FRAMED STRUCTURE,
20cm thick BRICK MASONRY WALL IN CM 1:6
FLOORING WITH CC 1:4:8, FINISHING WITH
VITRIFIED TILES.

SCHEDULE OF DOORS & WINDOWS
D1 Door 110cm \times 210cm with Panelled Single shutter,
W1 Window 120cm \times 180 cm Glazed wooden shutters
W2 Glazed Window 120cm \times 100cm with wooden frame
V Glazed ventilator 60cm \times 45 cm with top hung shutter

VIII. Calculate unit rate for brick work for walls in cement mortar 1:4. Assume any appropriate data, if found necessary.

Bricks 19 cm \times 19 cm \times 9 cm	- 500 Nos.
Cement	- 72 kg/m ³
Dry sand	- 0.20 m ³ /m ³
Mason	- 0.70/m ³
Man	- 0.35/m ³
Woman	- 0.70/m ³

Approximate rates may be assumed.

OR

IX. Calculate unit rate for cement mortar 1:6 for plastering walls, 12 mm thick. Assume any appropriate data, if found necessary.

Cement	- 43 kg/10 m ²
Sand	- 0.15 m ³ /10 m ²
Mason	- 1.00/10 m ²
Man	- 0.50/10m ²
Woman	- 0.50/10 m ²

Assume approximate rates.

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B.Arch. Degree IV Semester Examination May 2017

AR 1407 BUILDING SERVICES I (WATER SUPPLY AND SANITATION) (2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer ALL questions)

(8 × 5 = 40)

- I. (a) What is meant by domestic water demand?
(b) Explain any three types of valves.
(c) Compare the water carriage system and old conservancy system.
(d) Briefly explain the different materials used for sewer construction.
(e) What is an imhoff tank?
(f) What are the different methods of ventilation of sewer?
(g) Explain general principles governing the design of sanitary plumbing system.
(h) Explain rain water harvesting.

PART B

(4 × 15 = 60)

- II. Explain the various surface and subsurface sources of water.

OR

- III. Explain the various plumbing systems used. Also explain the layout of distribution network.

- IV. With a neat sketch, explain the construction details of septic tank. Also design a septic tank for a small colony of 250 persons provided with an assured water supply from municipal head work at the rate of 110 litres / person / day. Assume any data needed,

OR

- V. Explain the various systems of sewage disposal.

- VI. Explain the process of laying of sewer and its testing.

OR

- VII. Explain the various sewer appurtenances used in a sewer system with neat sketches.

- VIII. Explain the mandatory requirements to be considered for the protection of building.

OR

- IX. What is a trap? Where is it used? With neat sketches, explain gully trap, interceptin trap and floor trap.

B. Arch. Degree IV Semester Examination May 2017

AR 1408 STRUCTURAL ANALYSIS II
(2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A
(Answer ALL questions)

(8 × 5 = 40)

- I. (a) Write Clapeyron's three moment equation and explain its terms.
- (b) Differentiate between statically determinate and indeterminate structure with examples.
- (c) Write short notes on slope deflection method for the analysis of structure.
- (d) Write short notes on force method of analysis.
- (e) Write short notes on moment distribution method for portal frame.
- (f) List the steps involved in Kani's method for the analysis of continuous beam.
- (g) Write short notes on moment distribution method of continuous beams with fixed ends.
- (h) Write short notes on analysis of continuous beam with sinking support using moment distribution method.

PART B

(4 × 15 = 60)

- II. A propped cantilever beam AB is subjected to a concentrated load of 60 kN at 3 m from end A as shown in fig. 1. Draw the bending moment and shear force diagrams by the force method. Assume that the flexural rigidity of the beam, EI to be constant throughout.

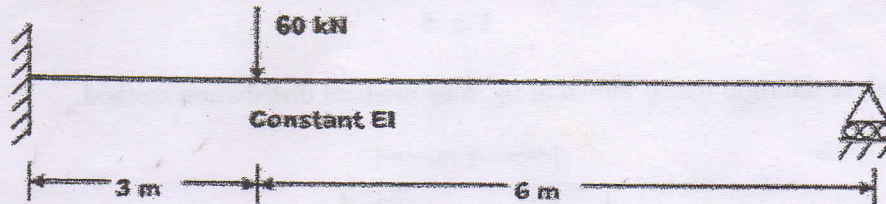


Fig.1

OR

- III. A cantilever beam of span 6 m is supported at free end to the level of fixed end. It carries a concentrated load of 60 kN at the centre of the span. Calculate the reaction at the prop and draw the shear force and bending moment diagram.

- IV. Analyse the beam ABC shown in fig. 2 by the theorem of three moment and draw the shear force and bending moment diagram.

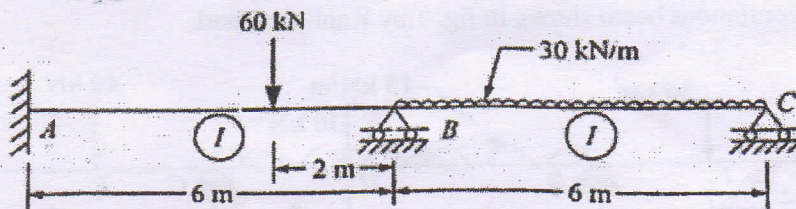


Fig.2

OR

(P.T.O.)

- V. Analyse the continuous beam ABCDE shown in fig. 3 and draw the bending moment diagram using slope deflection method. Flexural rigidity is constant throughout the beam.

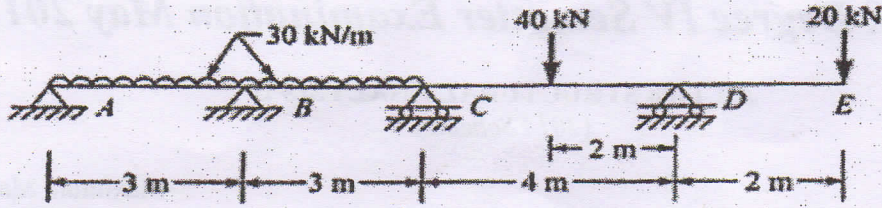


Fig.3

- VI. Analyse the continuous beam shown in fig.4 by moment distribution method and draw its bending moment diagram.

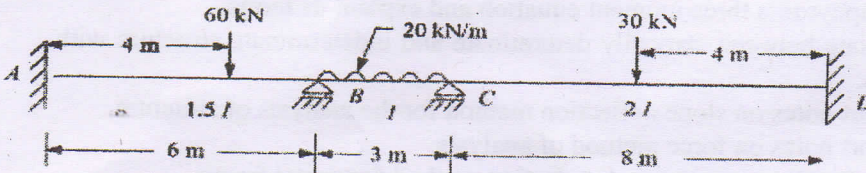


Fig.4

OR

- VII. Analyse the continuous beam shown in fig.5 by moment distribution method and draw its bending moment diagram. Flexural rigidity is constant throughout the beam.

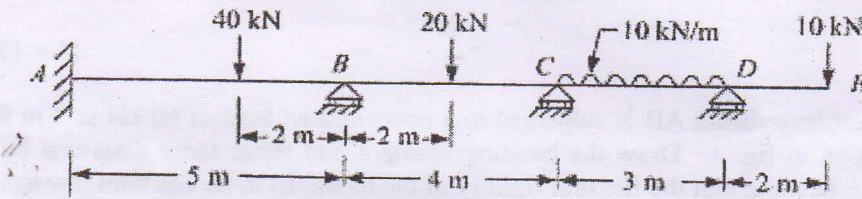


Fig. 5

- VIII. Analyse the rigid frame shown in fig. 6 by moment distribution method.

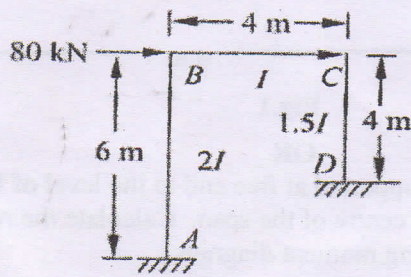


Fig.6

OR

- IX. Analyse continuous beam shown in fig. 7 by Kani's method.

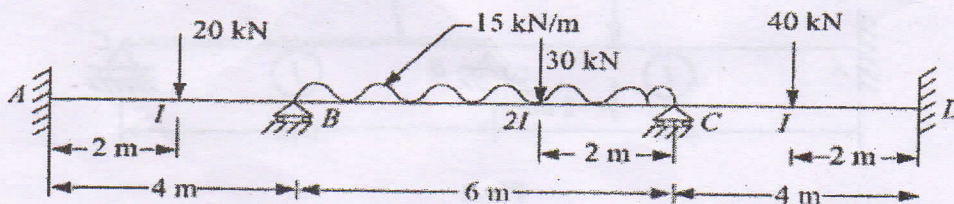


Fig. 7