

MAY 2016

B.Arch-IV -05.16.0578

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UNIT

D

B.Arch. Degree IV Semester Examination May 2016

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

(Answer **ALL** questions)

(8 × 5 = 40)

I. Write short notes on the following.

- (a) Composition & properties of steel.
- (b) Uses of cold rolled light gauge steel sections.
- (c) Materials for roof coverings commonly used in Kerala.
- (d) Considerations for design of steel furniture for physically challenged.
- (e) Uses of aluminium foil in buildings.
- (f) Advantages of copper as a building material.
- (g) Aluminium profiles for false ceiling.
- (h) Aluminium handrails/balustrades.

(2 × 10 = 20)

II. Explain the methods of protecting steel components in buildings from corrosion.

OR

III. Explain with sketches various types of steel roof trusses. Indicate their structural limitations.

IV. Describe various standard profiles of aluminium for doors and windows. Indicate available sizes for various applications.

OR

V. What are the advantages and disadvantages of curtain walling? Sketch the detail of fixing curtain walls to RCC structural members.

(P.T.O.)

PART B

(2 × 20 = 40)

- VI. Draw to a suitable scale, plan and section of a steel fire escape staircase to be fixed to exterior of an RCC framed multistoried building. Width of staircase 120 cm, tread 25 cm, No. of risers 19, floor height 330 cm. Give a blown up detail of the joint between stringer and floor. Brief description and full dimensions of parts to be given in the drawing. Draw only the ground floor details. Assume other details, if found necessary.

OR

- VII. Draw to a suitable scale, plan, elevation and section of a steel window for masonry opening size 150 cm × 140 cm to be fixed to concrete block masonry. Use standard steel products profiles. Brief description and full dimensions of parts have to be given in the drawing. Assume necessary details required for drawing.

- VIII. Draw to a suitable scale, plan, elevation and section of a sliding anodized aluminium door of masonry opening size 180 cm × 210 cm for an apartment. Use standard profiles. Detail the jamb fixing method to a blown up scale. Brief description and full dimensions of parts have to be given in the drawing. Assume necessary details required for drawing.

OR

- IX. Draw to a suitable scale, plan, elevation and section of an anodized aluminium casement window of masonry opening size 120 cm × 180 cm including size of top hung ventilator for a class room. Use standard profiles. Brief description and full dimensions of parts have to be given in the drawing. Assume necessary details required for drawing.

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B

B.Arch. Degree IV Semester Examination May 2016

AR 1403 HISTORY OF ARCHITECTURE III
(2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A
(Answer *ALL* questions)

- I. Write short notes on the following. (8 × 5 = 40)
- Transepts in church Planning.
 - Greek Cross Vs Latin Cross church plans.
 - Palladian window.
 - St. Peters Basilica, Rome.
 - Alhambra complex.
 - Mayan vault.
 - Characteristics of Chinese architecture.
 - Summer palace, Beijing.

PART B

- II. Explain salient features of Early Christian architecture. Elaborate the answer with a detailed sketch of an Early Christian church. (4 × 15 = 60)
- OR**
- III. Explain the techniques adopted to construct domes during the Byzantine Empire quoting Hagia Sophia as an example.
- IV. Notre Dame is often reputed to be one of the most prominent examples of Gothic architecture in both France and in Europe as a whole. Substantiate by enumerating its Gothic features.
- OR**
- V. Explain the following:
- Characteristics of Renaissance architecture.
 - Features of Rococco architecture.
 - The works of Bernini.
- VI. What are the key generators and factors influencing the development of Mayan architecture?

OR

(P.T.O.)

VII. Explain the evolution of Cordoba Mosque. How were the Christian and Islamic practices of worship reflected in its architecture?

VIII. 'Shinto Shrines are, more than any other architecture, the crystallization of the Japanese homage to tradition'. Justify the statement.

OR

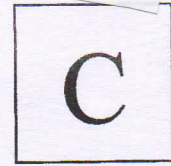
IX. Describe in detail the following.

(i) Forbidden City.

(ii) Torri.

(iii) Temple of Angkor Wat.

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B.Arch. Degree IV Semester Examination May 2016

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) Landscape design Vs Architecture design.
- (b) Characteristics of renaissance garden.
- (c) How can perception be varied using landform?
- (d) Role of texture in landscape design.
- (e) Issues in riverbank constructions.
- (f) Importance of analyzing topography and hydrology.
- (g) Preparation and maintenance of lawn.
- (h) Hydroponics and its advantage.

PART B

(4 × 10 = 40)

II. Describe the influence of Persian gardens in Mughal landscape. Elaborate with neat sketches.

OR

III. Explain the concept of 'Picturesque' and briefly explain the characteristics of English gardens.

IV. Elaborate in detail the elements of landscape which are natural and tangible.

OR

V. How can we achieve unity in landscape design with the help of principles of landscape design?

VI. Draw the construction detail of:

- (i) Retaining wall (ii) Pergola (iii) Pools (iv) Fountain.

OR

VII. What are the services offered by Landscape Architect? Explain surface water drainage and irrigation systems.

(P.T.O.)

VIII. What are the requirements for an indoor landscape? What are the things to be considered while raising indoor plants?

OR

IX. Explain the physical characteristics and habit of plant materials such as trees, shrubs, ground covers and climbers with minimum two examples for each with common name and botanical name.

PART C
(Drawing)

(1 × 20 = 20)

X. Design a terrace garden for a commercial building of size 8m×6m. Assume the terrace is located in one corner of a building, open on two sides with roof supported by a pillar at the corner of the terrace. The terrace has got a clear height of 8 m and a slab drop of 30 cm. Assume North. Provide a plan and section in 1:20 scale. Explain your design.

OR

XI. Design an outdoor parking lot for 20 cars. Arrange 4 rows of cars in parallel manner (5 cars in each row). Draw neatly grading plan and section showing curb, indicating slope, marking all levels and green strips between parking bays in 1:50 scale.

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AR 1405 ARCHITECTURAL ACOUSTICS (2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

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

PART A

(Answer ALL questions)

(8 × 5 = 40)

- I. Write short notes on the following:
- Sound pressure levels.
 - Decibel.
 - Reverberation.
 - Transmission Loss.
 - Sound absorption coefficient.
 - Sound perfuming.
 - Noise criteria curves.
 - Membrane absorbers.

PART B

(4 × 15 = 60)

- II. Explain in detail the process of propagation of sound in different medium.
- OR**
- III. Explain the human ear and hearing characteristics.
- IV. Explain the Sabine's formula for calculating the reverberation time. Tabulate the optimum reverberation time required for major five activity spaces.
- OR**
- V. Tabulate the possible acoustic defects associated with an auditorium. Explain the reasons for the defects.
- VI. What is meant by sound absorption coefficient of materials? Explain any one method to find out the sound absorption coefficient.
- OR**
- VII. What are the sources of noise in an open air auditorium? Explain how the noise can be controlled.
- VIII. Explain the various sound absorbers used for acoustical treatment of walls.
- OR**
- IX. What is the acoustic requirement for designing lecture halls? Explain the design criteria in detail.

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B.Arch. Degree IV Semester Examination May 2016

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:
- Role of specification in a construction project.
 - Principles of specification writing.
 - General specification for painting steel windows.
 - General specification for stone masonry (Random Rubble)
 - Methods of estimating quantities.
 - SI units of measurements to be used in estimation.
 - Bill of quantities and Abstract of estimate.
 - Types of estimates.

PART B

(4 × 15 = 60)

- II. Write detailed specification for cement to be used for RCC roof slab.
OR
- III. Write detailed specification for coarse aggregate for flooring concrete.
- IV. Write detailed specification for earthwork excavation for foundation
OR
- V. Write detailed specification for painted wooden doors of an office building.
- VI. Prepare an estimate of quantities for the items shown below based on the attached drawing. Assume any appropriate data, if found necessary.
- RR masonry for 45 cm × 45 cm plinth.
 - DPC course above plinth 45 cm wide.
 - Brick work in cement mortar 1:6 for 300 cm high walls excluding work area and toilet with lean-to tile roof.
 - Plastering with cement mortar 1:4 for the interior and exterior of walls.

OR

(P.T.O.)

VII.

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

- (i) RCC roof slab with 75 cm projection around the external walls.
- (ii) Tile floor finish and skirting for hall.
- (iii) Wood work for one (D1 type) wooden door frame and wooden shutter.
- (iv) Quantity of lean to tile roof for the work area and toilet.

VIII.

Calculate unit rate for brickwork in cement mortar 1:6. Assume any appropriate data, if found necessary.

Data:

Bricks 19 cm × 19 cm × 9 cm	=	500 Nos.
Cement	=	430 kg/m ³
Sand	=	0.24 m ³ /m ³
Mason	=	0.73/m ³
Man	=	0.35/m ³
Woman	=	0.70/m ³
Rates		
Brick	=	INR 7000/1000Nos.
Sand	=	INR 1200/m ³
Mason	=	INR 800/person
Man	=	500/person
Woman	=	500/person

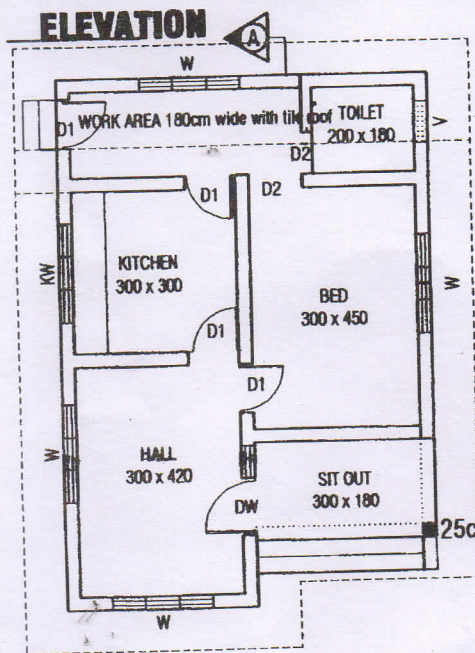
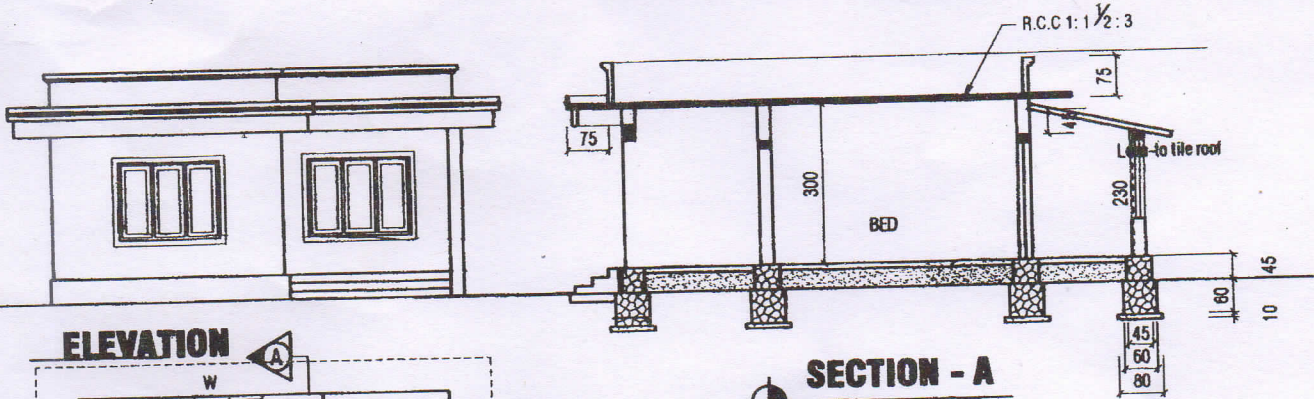
OR

IX.

Calculate unit rate for concrete 1:4:8 flooring. Assume any appropriate data, if found necessary.

Data:

40 mm broken stone	=	0.95 m ³
Cement	=	171 kg/m ³
Sand	=	0.48 m ³ /m ³
Mason	=	0.10/m ³
Man	=	1/m ³
Woman	=	1.40/m ³
Rates		
Broken stone	=	INR 600/m ³
Sand	=	INR 1200/m ³
Mason	=	INR 800/person
Man	=	500/person
Woman	=	500/person



GROUND FLOOR PLAN

NTS

SCHEDULE OF OPENINGS

ITEM		SIZE	SPECIFICATIONS
Door	DW	165 x 210/180	Panelled door
	DW1	225 x 210/180	Panelled door
	D1	90 x 210	Panelled door
	D2	75 x 210	P.V.C door
Window	W	180 x 140	Glazed openable window
	KW	180 x 100	Glazed openable window
	KW1	100 x 100	Glazed openable window
Ventilator	V	75 x 50	Openable glass ventilator

Figure for Qn. Nos. VI and VII

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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 are the factors affecting per capita demand?
(b) Explain the terms (i) pressure release valve (ii) check valve.
(c) Differentiate separate system and combined system of sewage flow.
(d) What are the factors affecting the design of sewers?
(e) Write a short note on storm overflow regulator.
(f) Explain the phenomenon of self purification of rivers.
(g) Write a short note on rain water harvesting.
(h) What are the design considerations in the drainage scheme of a kitchen in a residential building?

PART B

(4 × 15 = 60)

- II. Describe the various water piping systems in a building. Also discuss the advantages and disadvantages of each system.
OR
- III. What are the various water distributions networks? Explain each one with a neat sketch.
- IV. Explain the constructional details of a septic tank.
OR
- V. Explain in detail the different types of materials, bends and pipe joints used in sewer systems.
- VI. What are the various sewer appurtenances? Describe in detail the functioning of each type with a neat sketch.
OR
- VII. What are the various methods used for (i) testing of sewers (ii) ventilation in sewers.
- VIII. Prepare a plan of a sewerage system of bathrooms, lavatory blocks and kitchen in a single storied residential building with design considerations.
OR
- IX. Discuss in detail about the plumbing house drainage system and sanitary appliances.

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B.Arch. Degree IV Semester Examination May 2016

AR 1408 STRUCTURAL ANALYSIS II (2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer ALL questions)

(8 × 5 = 40)

- I. (a) Differentiate statically determinate and indeterminate structures.
 (b) Write short note on Kani's method of analysis.
 (c) State and explain Clapeyrons theorem of three moments.
 (d) Mention any three assumptions in slope deflection method.
 (e) Write short notes on stiffness, distribution factor and carry over moment.
 (f) Write short note on principle of superposition.
 (g) Briefly explain the steps involved in the analysis of a rigid frame in moment distribution method.
 (h) Write short note on sway analysis in frames.

PART B

(4 × 15 = 60)

- II. Determine the reaction components in the beam shown in figure 1. EI is constant throughout.

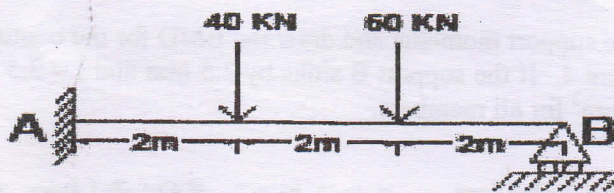


Fig.1

OR

- III. A cantilever beam of span 4m is supported at free end to the level of fixed end. It carries a concentrated load of 40 kN at the centre of the span. Calculate the reaction at the prop and draw the shear force and bending moment diagram.

(P.T.O.)

IV. A continuous beam ABC fixed at A and C and simply supported at B consist of spans AB and BC of length 4m and 6m respectively. The span AB carries a UDL of 20 kN/m and BC carries a UDL of 12 kN/m. Find the support reactions and moments. Also draw the bending moment and shear force diagram.

OR

V. Analyse the continuous beam shown in figure 2 and determine the moment at all supports.

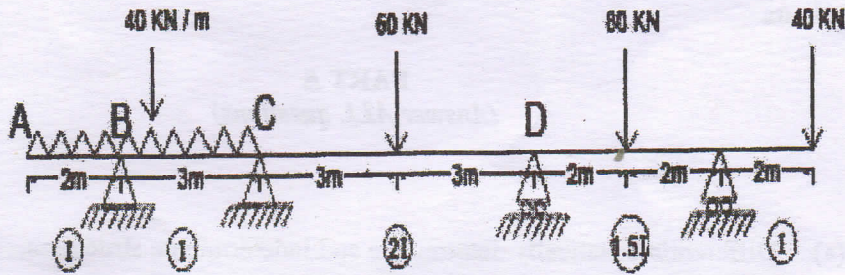


Fig.2

VI. Determine the support moments and draw the BMD for the continuous beam shown in figure 3.

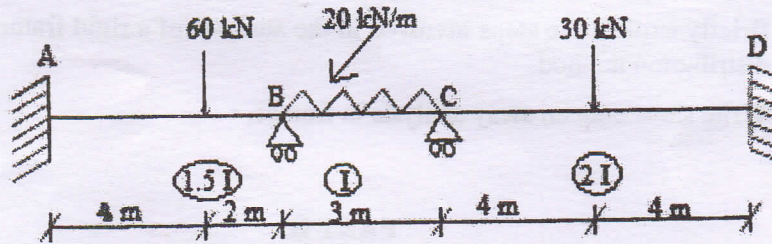


Fig.3

OR

VII. Determine the support moments and draw the BMD for the continuous beam shown in figure 4. If the support B sinks by 2.5 mm and $I = 3.5 \times 10^7 \text{ mm}^4$, $E = 200 \text{ kN/mm}^2$ for all members.

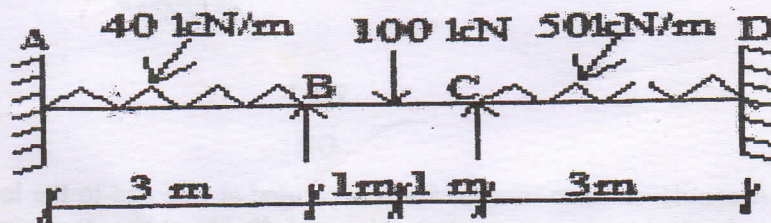


Fig.4

(Contd.....3)

VIII. Analyse the rigid frame shown in figure 5 and draw the bending moment diagram.

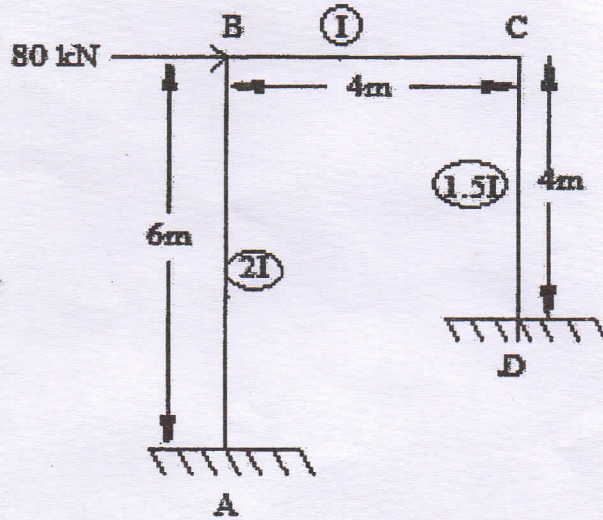


Fig.5

OR

IX. Analyse the portal frame shown in figure 6 and draw the bending moment diagram.

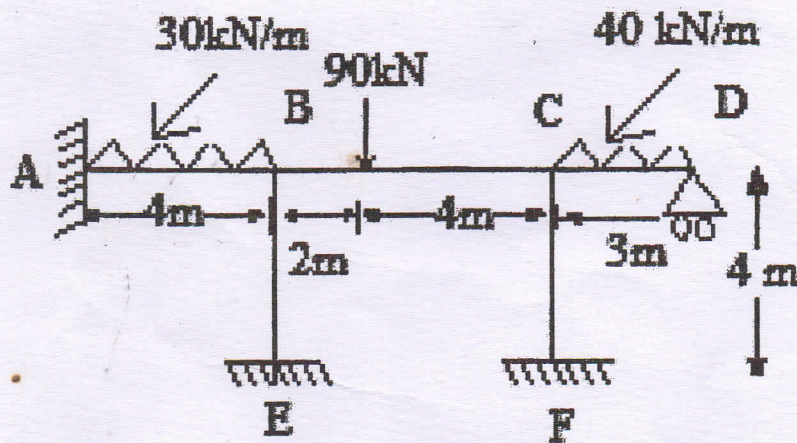


Fig.6
