B.Arch-IV(S)-07-24-3303 Reg. No. | | | | | | | | |

A

B.Arch. Degree IV Semester Supplementary Examination July 2024

AR 1408 STRUCTURAL ANALYSIS II
(*2014 Scheme*)

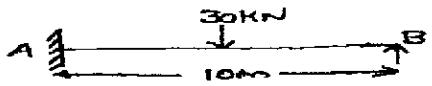
Time: 3 Hours Maximum Marks: 100

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

(8 × 5 = 40)

I. (a) Explain the two basic methods of analyzing statically indeterminate structures.

(b) Determine prop reaction in the beam shown below.



(c) Write down the steps in slope deflection method and also mention the assumptions in slope deflection method.

(d) Explain Clapeyrons theorem of three moment.

(e) Differentiate between determinate and indeterminate structures.

(f) Write short note on carryover moment.

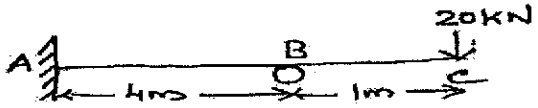
(g) Write short note on static indeterminacy and Kinematic indeterminacy.

(h) What are the advantages of Kani's method?

PART B

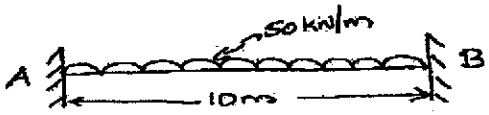
(4 × 15 = 60)

II. Analyse the given beam using consistent deformation method and draw SFD and BMD.



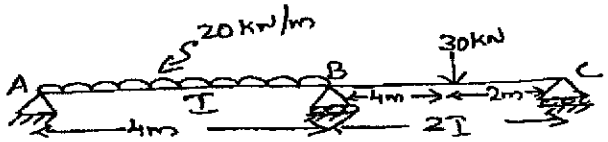
OR

III. Analyse the given beam and draw SFD and BMD using Consistent Deformation method.



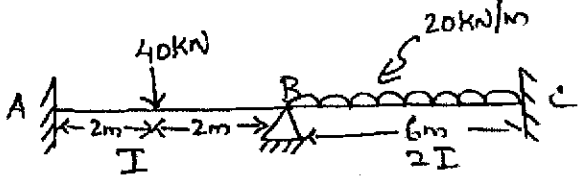
(P.T.O.)

IV. Analyse the continuous beam shown in figure using Three-moment theorem.



OR

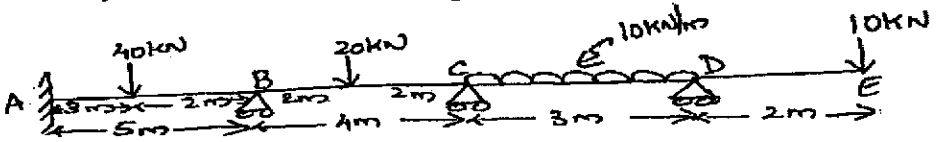
V. Analyse the beam using slope deflection equation method.



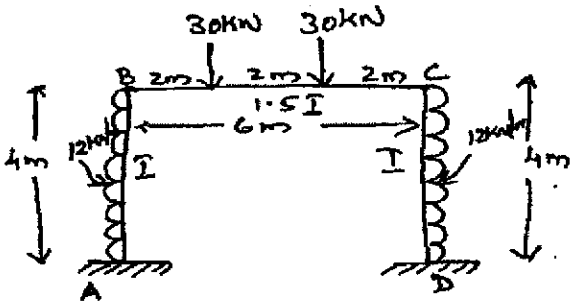
VI. Analyse the given continuous beam ABC by moment distribution method. The support A is fixed, B and C are simply supported. Span AB is 7 m and moment of inertia is I and it carries a point load of 30 kN at a distance of 5 m from A. Span BC is 5 m, its moment of inertia is 2I and carries a UDL of 10 kN/m. Draw SFD and BMD.

OR

VII. Analyse the continuous beam using moment distribution method.

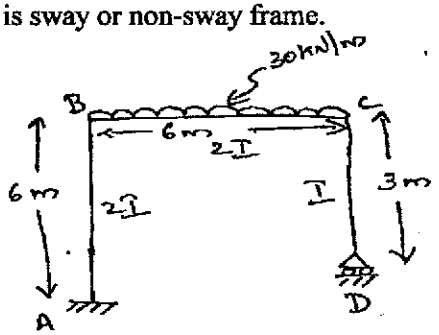


VIII. Analyse the frame by moment distribution method and draw SFD and BMD.



OR

IX. Analyse the frame shown in figure using moment distribution and find whether the frame is sway or non-sway frame.



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B.Arch-IV(S)-07-24-3302 Reg. No.

B

B.Arch. Degree IV Semester Supplementary Examination July 2024

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. Write short notes on the following:

(a) Valves and its applications.

(b) Anti-siphonage pipe.

(c) Sewage disposal.

(d) Effluent disposal systems.

(e) Mannings formulae and its application.

(f) Partial flow diagram.

(g) Sanitary appliances.

(h) Rain water harvesting and its standards.

PART B

(4 × 15 = 60)

II. Explain briefly various types of domestic sewage piping systems.

OR

III. Enumerate different types of water distribution networks, with legible sketches.

IV. Write in detail the methods of estimating maximum rate of storm run-off.

OR

V. Determine the dimensions of a septic tank for a population of 250 people whose water demand is 120 l/h/d. Also design a soak pit for the tank if the percolation rate is $1250\ l/m^3/d$.

VI. Enumerate various sewage treatment systems.

OR

VII. Sketch and explain various sewer appurtenances for maintenance, efficiency, ventilations.

VIII. Elaborate on the Indian standards of fire protection requirements of buildings.

OR

IX. Explain various types of traps and their applications.

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A

B.Arch. Degree IV Semester Supplementary Examination July 2024

AR1406 ESTIMATION AND SPECIFICATION

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. (a) Differentiate between BIS and PWD specification formats.
(b) Write short notes on general specification and detailed specification.
(c) Write detailed specification for cement concrete work.
(d) Write detailed specification for earth work in excavation.
(e) Explain different types of estimate in detail.
(f) Differentiate between centre line method and long wall-short wall method with example.
(g) What is the purpose of CPWD data book and its relevance?
(h) Enumerate on BOQ.

PART B

(4 × 15 = 60)

II. Write the General specification for
i. Brick.
ii. Cement.
iii. Coarse aggregate.

OR

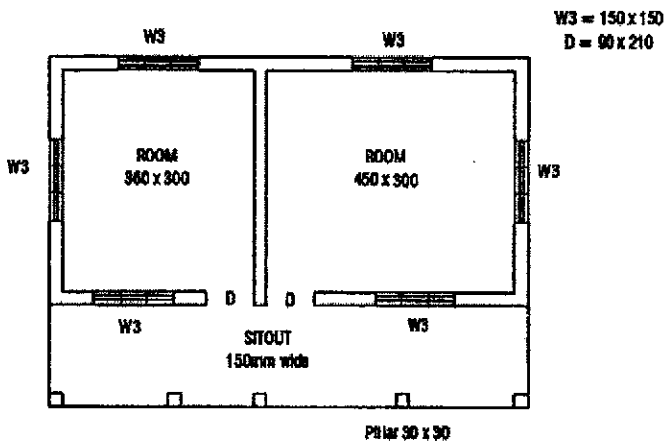
III. Write general specification of DPC, Brickwork.

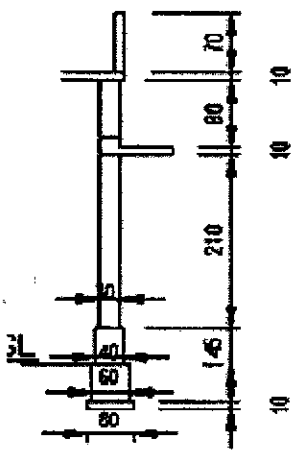
IV. Write detailed specification for RCC for Slab work.

OR

V. Write in detail specification for wooden doors and windows.

VI. Calculate the quantities in detail for the following figure.
(i) Earth work in excavation
(ii) Lime concrete in foundation
(iii) Brick work in footing and plinth
(iv) 2.5 cm DPC.





OR

(P.T.O.)

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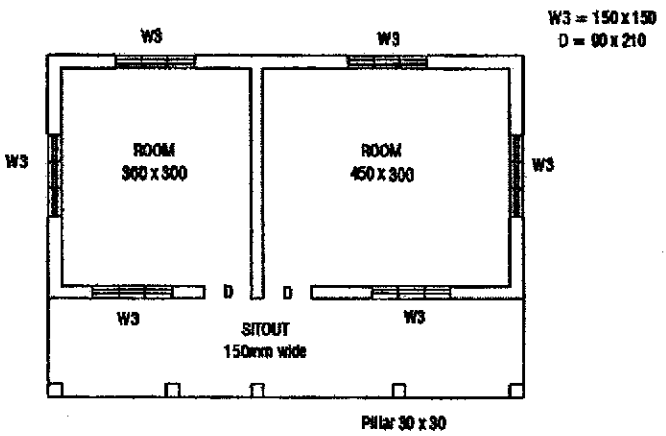
VII. Calculate the quantities in detail for the following figure.

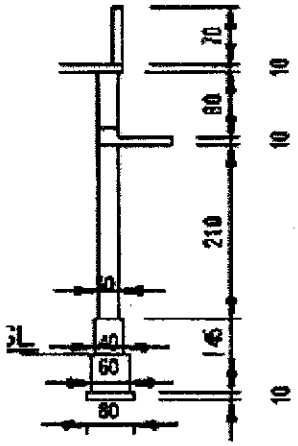
(i) Brick work in super structure

(ii) RCC work for roof slab

(iii) Ceiling plastering in CM 1:4

(iv) Wall plastering internal walls.





VIII. Calculate the unit rate for RR masonry in CM 1:6. Assume any appropriate data if necessary

Data:

Material and Labour	Rates	Conveyance
Blasted Rubble = 1 m^3	Blasted Rubble = ₹1500/m^3	Blasted Rubble = ₹424/m^3
Dry Sand = 0.3 m^3/ m^3	Dry Sand = ₹1200/ m^3	Dry Sand = ₹424/ m^3
Cement = 86 kg/m^3	Cement = ₹7000/ton	Cement = ₹323/ton
Rubble Man = 0.7/m^3	Rubble Man = ₹900/Person	
Man = 0.35/m^3	Man = ₹500/Person	
Woman = 0.7/m^3	Woman = ₹500/Person	

OR

IX. Calculate the unit rate for Plastering in CM 1:4 (100m^2 area). Assume any appropriate data if necessary data:

Data:

Material and Labour(10m^2)	Rates	Conveyance
Dry Sand = 0.15 m^3/ 10 m^2	Dry Sand = ₹1200/ m^3	Dry Sand = ₹ 424/ m^3
Cement = 54 kg/10 m^2	Cement = ₹7000/ton	Cement = ₹323/ton
Mason = 0.9/10 m^2	Mason = ₹800/Person	
Man = 0.55/10 m^2	Man = ₹ 500/Person	
Woman = 1.10/10 m^2	Woman = ₹500/Person	

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C

B.Arch. Degree IV Semester Supplementary Examination July 2024

AR 1405 ARCHITECTURAL ACOUSTICS

(*2014 Scheme*)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ***ALL*** questions)

(8 × 5 = 40)

I. (a) Define Acoustics and its application in the field of Architecture.

(b) Explain Velocity, Sound Pressure and Sound Intensity.

(c) Explain the concept of Sound Diffusion and Sound Diffraction.

(d) Calculate the Reverberation Time of a Room of 15 m × 20 m with ceiling height of 4 m. Consider,

Absorption for Wall - 0.6
Ceiling - 0.4
Floor - 0.2

(e) What is noise transmission and explain its types?

(f) Explain transmission loss and how can it be prevented in a room.

(g) List any four sound absorbing and reflective materials.

(h) What is the acoustic requirement for designing lecture halls?

PART B

(4 × 15 = 60)

II. Discuss on various sources of noise and types of noise in detail.

OR

III. Classify the acoustical defects occurring in a building and explain them in detail.

IV. Explain in detail the steps involved in acoustical design of an auditorium with relevant sketches.

OR

V. Explain in detail about the airborne sound transmission in a building with sketches.

VI. Explain behavior of sound in enclosed space.

OR

VII. Illustrate the constructional details of acoustical treatment on walls and partitions with sound absorption materials.

VIII. List different types of sound absorption materials and explain their characteristics of details.

OR

IX. Explain in detail of nature and propagation of sound.

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A

B.Arch. Degree IV Semester Supplementary Examination July 2024

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 the following:

(a) The significance of time in landscape design.

(b) Charbagh planning.

(c) Major and minor elements of landscape architecture.

(d) Angle of vision and approach in landscape designing.

(e) Microclimate and landscaping elements.

(f) Coastal constructions.

(g) Hydroponics.

(h) Indoor plants and their propagation.

PART B

(Answer ***ALL*** questions)

(4 × 10 = 40)

II. Compare and contrast the gardens of Babylon and Greece in terms of design, purpose and cultural significance. How did each civilization approach landscape development and what were the key features and elements that characterized their gardens? Discuss the influence of geography, climate and cultural values on the design and symbolism of these ancient gardens.

OR

III. Explore the Mughal landscape architecture in India during the reign of Emperor Akbar and Emperor Shah Jahan. Discuss the key features, design principles and cultural influences that shaped the Mughal gardens and their significance in Mughal architecture. Analyze specific examples such as the Taj Mahal, Humayun's Tomb and the Shalimar Gardens.

IV. Enumerate the elements of landscape, both major and minor, natural and manmade. Explain their application through effective explanation and neat illustrations.

OR

V. Discuss the fundamental principles of landscape design, including balance, unity, proportion, rhythm and focalization. Explain how these principles can be applied in creating harmonious and visually appealing outdoor spaces.

(P.T.O.)

VI. Enumerate the principles of site analysis and assessment in landscape architecture. Explore how factors such as topography, climate, soil conditions, vegetation and site context influence the site planning process. Explain how a thorough understanding of these site-specific characteristics helps inform the design decisions and ensure the creation of functional and sustainable landscapes.

OR

VII. What are the social and psychological benefits of landscape services in enhancing human well-being? Discuss how well-designed landscapes incorporating Garden lighting, Avenue lighting, Terrace gardens, Terrace pools, Rock gardens etc in landscape designs.

VIII. Discuss the role of indoor landscaping in sustainable building design. Explain how indoor plants can contribute to energy efficiency, acoustic control and the reduction of indoor pollutants. Discuss the integration of green walls, living roofs and vertical gardens in indoor spaces and their impact on the overall sustainability and livability of buildings.

OR

IX. Briefly discuss the functional considerations in plant selection for landscape design. Explain how different plants can be chosen based on their specific functions, such as providing shade, privacy, erosion control or noise reduction.

PART C

$(1 \times 20 = 20)$

X. Design a patio incorporating soft and hard landscapes for a palatial residence. The size is 10 m × 8 m. Assume that the patio is enclosed on two sides and have vertical pergolas on the North and East side. The clear height is 6 m. Provide a design (explained as a plan with required sections), mentioning the hard and soft landscape elements used citing their specifications.

OR

XI. Design a roof top terrace garden for a five star hotel near its terrace pool. The size you got to design is 12 m × 10 m excluding the pool area. Assume that the garden area is open to sky and have handrails on all three sides and pool on the other. Provide a design (explained as a plan with required sections), mentioning the hard and soft landscape elements used citing their specifications.

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C

B.Arch. Degree IV Semester Supplementary Examination July 2024

AR 1403 HISTORY OF ARCHITECTURE III

(2014 Scheme)

Time: 3 Hours Maximum Marks: 100

PART A

(Answer ALL questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Differentiate between Greek cross and Latin cross plan.
(b) Hagia Sophia.
(c) Elements of Gothic Architecture.
(d) Rotunda.
(e) Elements of Moorish Architecture.
(f) Brief on Mayan Architecture.
(g) Pre-colonial Architecture.
(h) Summer Palace, Beijing.

PART B

(4 × 15 = 60)

II. Brief on Early Christian Architecture and Church form with example of Old St. Peters, Rome.

OR

III. Explain Byzantine Architecture, its construction techniques and elements used with a brief of any important building under Byzantine Architecture.

IV. Explain in brief the architectural and design elements used in church construction under Gothic Architecture with suitable example.

OR

V. Describe elaborately on Rococo Architecture with suitable example.

VI. Explain in detail on characteristics and planning principles of Moorish Architecture.

OR

VII. Describe Great Mosque of Cordova in detail.

VIII. Brief on Japan-Shinto Architecture.

OR

IX. Explain on South-East Asia-Temple of Angkor Wat, Cambodia.

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A

B.Arch. Degree IV Semester Supplementary Examination July 2024

AR 1402 BUILDING MATERIALS AND CONSTRUCTION - III

(2014 Scheme)

Time: 4 Hours Maximum Marks: 100

(Use illustrations wherever required. Illustrations carry due marks)

PART A

(Answer **ALL** questions)

(8 × 5 = 40)

I. Write short notes on the following:

(a) Properties and use of stainless steel.
(b) Manufacturing of cast iron.
(c) Type of connections in steel.
(d) Materials for roof covering in Kerala.
(e) Use of space frames in buildings.
(f) Advantages of titanium and its properties.
(g) Properties of Aluminium alloys.
(h) Steel staircases.

(2 × 10 = 20)

II. Explain the properties and uses of steel as building materials with the help of sketches.

OR

III. Explain with sketches the structural details of any two types of steel roof trusses.

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

OR

V. Sketch and explain the working details of openable,sliding ,collapsible and rolling shutters.

PART B

(2 × 20 = 40)

VI. Draw to a suitable scale, plan and section of a steel fire escape staircase of width 120 cm, tread 25 cm, number of risers 20, floor height of 400 cm. Draw a blown up detail of floor and stringer .Draw only ground floor details. Assume other details, if necessary.

OR

VII. Draw to a suitable scale, plan, elevation and section of a steel window for masonry opening of 100 cm × 100 cm to be fixed on a concrete wall. Use standard steel products profiles. Brief description and full dimensions of parts have to be given in the drawing. Assume necessary details.

(P.T.O.)

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

OR

IX. Draw to a suitable scale, plan, elevation and section of a sliding aluminium casement window of masonry opening 120 cm × 200 cm including size of top hung ventilator for a class room. Use standard profiles. Detail the jamb fixing method in blown up scale. Brief description and full dimensions of parts have to be given in the drawing. Assume necessary details.

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