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B.Arch. Degree IV Semester Examination April 2019

AR 1402 BUILDING MATERIALS AND CONSTRUCTION III (2014 Scheme)

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

Time : 4 Hours

Maximum Marks : 100

PART A

(8 × 5 = 40)

I. Write short notes on the following :

- (a) Structural steel sections
- (b) Rolling Shutter
- (c) North light truss
- (d) Space Frame
- (e) Balusters
- (f) Aluminium alloys
- (g) Curtain wall
- (h) False ceiling

(2 × 10 = 20)

II. What are the properties of aluminium? Explain the various application of aluminium in building construction.

OR

III. Explain the various types of steel roof trusses.

IV. What do you understand by ferrous metals and non-ferrous metals? Explain the important properties of each.

OR

V. Explain in detail the process of steel anti-corrosive for building construction.

PART B

(2 × 20 = 40)

VI. Draw to a suitable scale, plan and section of a dog-legged steel staircase. Assume any other data required?

OR

VII. Draw to a suitable scale, plan, elevation and section of a steel handrail to be fixed in a balcony of a residence. Assume any other data required.

VIII. Draw in 1:10 scale the plan, elevation and section of an aluminium glazed door to be fixed in an opening of 120 cm × 210 cm. Assume any other data required.

OR

IX. Draw in 1:10 scale the plan, section and details of an aluminium glazed sling window to be fixed in an opening of 180 cm × 150 cm. Assume any other data required.

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B

B.Arch. Degree IV Semester Examination April 2019

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) Construction of domes
- (b) Old St. Peters Rome
- (c) Flying Buttress
- (d) Baroque Architecture
- (e) Mayan Pyramids
- (f) Muqarnas
- (g) Torri
- (h) Forbidden City

PART B

(4 × 15 = 60)

II. Explain the design and layout of Pisa Cathedral Complex.

OR

III. Compare and contrast Early Christian Church with Byzantine Church through examples.

IV. Compare and contrast British and French Gothic style of Architecture.

OR

V. What is Renaissance Architecture? Trace its evolution and characteristics with examples.

VI. 'Architecture is a practical expression of a culture's needs and view of life'. Substantiate with the development of Mayan Architecture.

OR

VII. Explain the characteristics and planning principles of Moorish Architecture.

VIII. Elaborate the features of Shinto Shrines and influence of Chinese Architecture.

OR

IX. 'Summer Palace at Beijing is a master piece of Chinese landscape and garden design'. Substantiate the statement.

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B.Arch. Degree IV Semester Examination April 2019

AR 1404 LANDSCAPE ARCHITECTURE

(2014 Scheme)

(Drawing sheets are to be supplied. All answers to be supported with relevant sketches.)

Time : 4 Hours

Maximum Marks : 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

- I. Write short notes on the following :
- Mughal gardens in India.
 - Contemporary movements in Landscape Architecture.
 - The importance of Non visual characteristics in Landscape.
 - Angle of vision and approach in Landscape design.
 - Landscape Site grading principles.
 - Different types of outdoor lights used in Landscape.
 - Ground covers and climbers with examples.
 - Techniques of plant propagation.

PART B

(4 × 10 = 40)

- II. With the help of an example, discuss the origin and evolution of Japanese gardens and their unique features.
- OR**
- III. With the help of sketches describe the features of Mughal gardens borrowed from the Persian garden.
- IV. Enlist and describe with sketches the elements of landscape design.
- OR**
- V. Explain the importance of angle of vision and approach in landscape design.
- VI. Sketch landscape construction details of the following (minimum three details for each).
- pavings
 - curbs
 - retaining walls
- OR**
- VII. Explain about the following landscape services:
- lighting
 - surface water drainage systems
 - irrigation systems
- VIII. Describe in detail about the preparation and maintenance of lawn with neat sketches.
- OR**
- IX. Explain the following details regarding indoor landscaping.
- Light, air and water requirement of indoor plants.
 - Plant materials used in indoor landscaping.
 - Raising of indoor plants.

(P.T.O.)

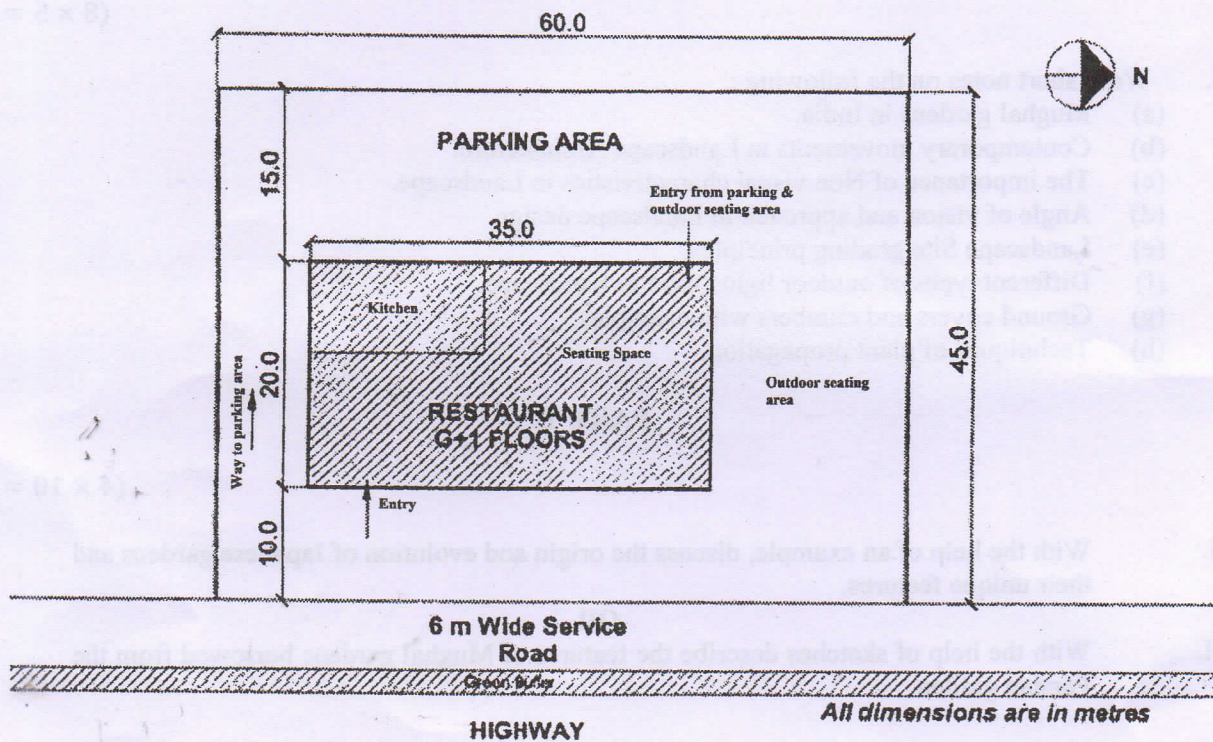
PART C
(Drawing)

(1 × 20 = 20)

- X. For the restaurant layout shown below:
- Prepare a schematic landscape layout for the restaurant in 1:100 scale and draw sections and views to explain design.
 - Prepare a detail grading plan and explain in the drawing how storm water is managed in the site.

OR

- XI. For the restaurant layout shown below:
- Prepare a schematic landscape layout for the restaurant in 1:100 scale and draw sections and views to explain design.
 - Draw Planting Plan in 1:100 scale along with a tabular column showing the name, type, symbol of plant and number of similar plants used.



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B.Arch. Degree IV Semester Examination April 2019

AR 1405 ARCHITECTURAL ACOUSTICS (2014 Scheme)

(Support your answers with sketches)

Time: 3 Hours

Maximum Marks: 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

- I. Write short notes on the following:
- (a) Threshold of audibility
 - (b) Logarithmic scale for acoustic measurements
 - (c) Sound absorption coefficient
 - (d) Reverberation time (RT)
 - (e) Effects of noise
 - (f) Transmission loss
 - (g) Variable absorbers
 - (h) Acoustical blankets

PART B

(4 × 15 = 60)

- II. Explain sound propagation. What are the various factors affecting sound propagation in open air?
- OR**
- III. Write short notes on:
(i) Sound pressure (ii) Sound intensity (iii) Loudness
- IV. List out the possible acoustical defects associated with enclosed spaces. Suggest remedial measures for each defect.
- OR**
- V. Explain the relevance of RT in acoustical space. How is it determined? How will you choose the reverberation time in room for speech and room for music?
- VI. A new office building 25 m high is to be erected close to urban motorway. Describe with appropriate sketches and details how noise levels in building from the following sources could be reduced.
(i) External noise from motorway (ii) Internal noise from mechanical services
(iii) Internal noise due to office
- OR**
- VII. (a) Differentiate between air borne sounds and structure borne sounds.
(b) Define the term sound insulation and give the method to be adopted for sound insulation when noise is structure-borne.
- VIII. (a) What are the basic criteria to be considered to design a general purpose auditorium?
(b) Give a short outline how to design the ceiling and sitting arrangement in an auditorium.
(c) Discuss with the help of a sketch that, balcony is an integral part of the auditorium.
- OR**
- IX. How will you enclosure the sound proofing of a recording studio? Sketch the details.

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B.Arch. Degree IV Semester Examination April 2019**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:
- Types of specification in construction industry.
 - Principles of specification writing.
 - General specification of earthwork excavation for foundation.
 - General specification for Random Rubble Masonry (RRM).
 - Methods of estimating quantities.
 - Revised estimate and supplementary estimate.
 - BOQ and SOR.
 - Any two estimation softwares used in construction industry.

PART B

(4 × 15 = 60)

- II. What is the importance of specification in a contract document?
OR
- III. Write the detailed specification for the following materials used in RCC work.
(i) Cement (ii) Sand (iii) Coarse aggregates
- IV. Write detailed specification for exterior plastering and painting on a newly constructed wall.
OR
- V. Write detailed specification of brick work for a compound wall.
- VI. Prepare an estimate of quantities for the items shown below based on the attached drawing (Figure 1). Assume any appropriate data, if found necessary.
(i) RR masonry for plinth and foundation
(ii) Brick work in cement mortar 1:6 for 300 cm high walls
(iii) Plastering with cement mortar 1:4 for interior and exterior walls
OR
- VII. Prepare an estimate of quantities for the items shown below based on the attached drawing (Figure 1). Assume any appropriate data, if found necessary.
(i) RCC roof slab with 10 cm projection around external walls
(ii) Flooring in cement concrete 1:4:8 for area excluding toilet
(iii) Wood work for doors and windows

(P.T.O.)

VIII.

Calculate the unit rate for random rubble in cement mortar 1:6, based on the following data and rate. Add 5% overhead charge. Assume any appropriate data, if found necessary.

Blasted rubble	: 1.0 m ³
Cement	: 72 kg/m ³
Manufactured sand	: 0.3 m ³ /m ³
Mason	: 0.70 Nos/m ³
Man	: 0.35 Nos/m ³
Woman	: 0.70 Nos/m ³

Material rate	
Blasted rubble	₹ 311/m ³
Broken stone	₹600/m ³
Manufactured sand	₹1200/m ³
Cement	₹5940/ton
LABOUR RATE	
Mason	₹800/person
Man	₹500/person
Woman	₹500/person
CONVEYANCE	
Blasted rubble	₹424/m ³
Broken stone	₹424/m ³
Manufactured sand	₹218/m ³
Cement	₹323/ton

OR

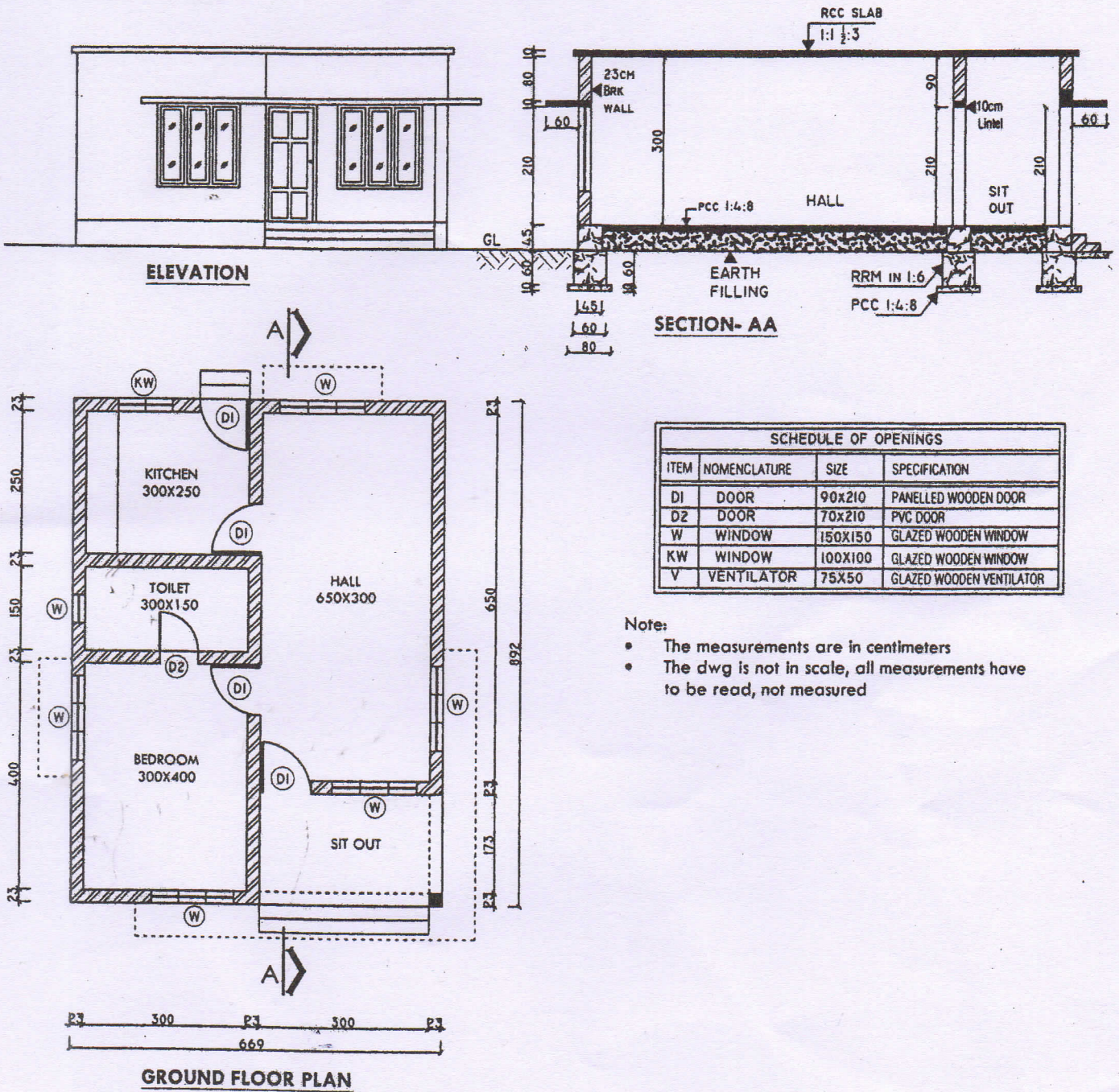
IX.

Calculate the unit rate for concrete 1:4:8 flooring; based on the following data and rate. Add 5% overhead charge. Assume any appropriate data, if found necessary.

40 mm broken stone	: 0.95 m ³
Cement	: 171 kg/m ³
Manufactured sand	: 0.48 m ³ /m ³
Mason	: 0.10 Nos/m ³
Man	: 1 No/m ³
Woman	: 1.40 Nos/m ³

Material rate	
Blasted rubble	₹ 311/m ³
Broken stone	₹600/m ³
Manufactured sand	₹1200/m ³
Cement	₹5940/ton
LABOUR RATE	
Mason	₹800/person
Man	₹500/person
Woman	₹500/person
CONVEYANCE	
Blasted rubble	₹424/m ³
Broken stone	₹424/m ³
Manufactured sand	₹218/m ³
Cement	₹323/ton

(Contd...3)



(Figure 1)

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B.Arch. Degree IV Semester Examination April 2019

AR 1407 BUILDING SERVICES 1 WATER SUPPLY AND SANITATION (2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A (Answer *ALL* questions)

(8 × 5 = 40)

- I. (a) Explain water quality standards.
- (b) Differentiate one pipe system and two pipe system of plumbing.
- (c) How do you calculate the capacity of a septic tank?
- (d) What are the different shapes of sewers?
- (e) Write a short note on intercepting chambers.
- (f) How does sewage get treated in a septic tank?
- (g) Explain plumbing requirements for fire protection of buildings.
- (h) Write short note on Indian standards for sanitary convenience.

PART B

(4 × 15 = 60)

- II. Discuss in detail the factors to be considered while designing for water distribution within a building.
- OR**
- III. Describe with sketches various plumbing fittings for buildings.
 - IV. Describe in detail various sewage disposal systems with their principles.
- OR**
- V. Explain in detail the factors affecting the design of sewers.
 - VI. Explain with sketch the constructional details of an imhoff tank.
- OR**
- VII. What are the factors to be considered while laying sewers? Discuss various sewer appurtenances and their need in the sewer system.
 - VIII. Discuss the design considerations in plumbing a house drainage scheme.
- OR**
- IX. Discuss in detail the mandatory requirements regarding water supply, sanitation, rain water harvesting and fire protection of buildings.

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B.Arch. Degree IV Semester Examination April 2019

AR 1408 STRUCTURAL ANALYSIS II (2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer ALL questions)

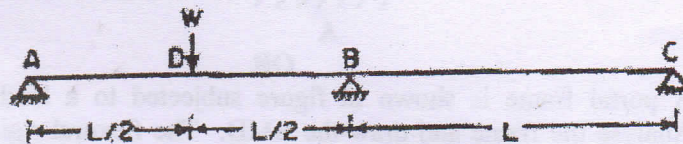
(8 × 5 = 40)

- I. (a) What is meant by the term 'prop'? What is its importance?
- (b) If a fixed beam carries a central load W , find out the value of maximum deflection.
- (c) Write short note on Kani's method of analysis.
- (d) State and explain the theorem of three moments.
- (e) State the assumptions made in the slope deflection method.
- (f) What do you understand by the term distribution factor? Discuss its importance in the moment distribution method.
- (g) Briefly explain the steps involved in the analysis of a fixed beam in moment distribution method.
- (h) Write short note on sway analysis in frames.

PART B

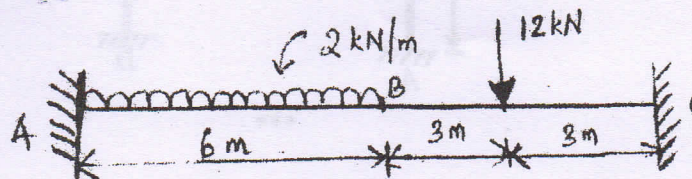
(4 × 15 = 60)

- II. Determine the reactions at support for the figure shown. EI is constant. Draw the SFD and BMD.



OR

- III. A cantilever beam of span 5 m is supported at the free end to the level of the fixed end. It carries a UDL of 5 kN/m from the left for half the span. Calculate the reaction at the prop and draw the shear force and bending moment diagram.
- IV. Evaluate the bending moment and shear force of the beam shown in figure. What are the reactions at the supports? Also draw SFD and BMD.

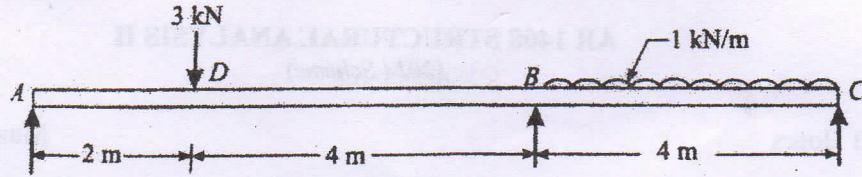


OR

- V. A continuous beam ABCD, 20 m long is supported at its ends and is propped at the same level at the points 5 m and 12 m from left end A. It carries two concentrated loads of 80 kN and 50 kN at 2 m and 9 m respectively from A and UDL of 10 kN/m run over the span CD. Find the BM and the reactions at the four supports. Also draw SFD and BMD.

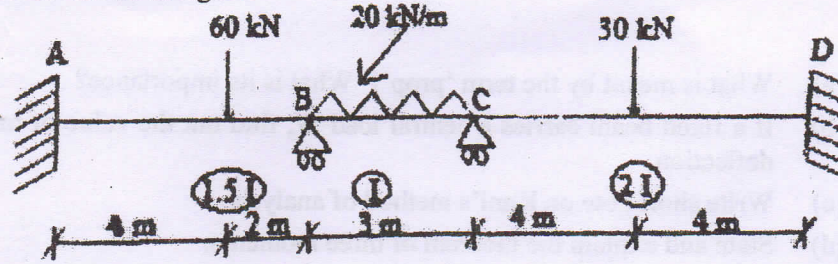
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- VI. A continuous beam ABC 10 m long rests on three supports A, B and C at the same level as shown in figure. Determine the moment over the beam and draw the BMD. Also calculate the reactions at the supports and draw the SFD.

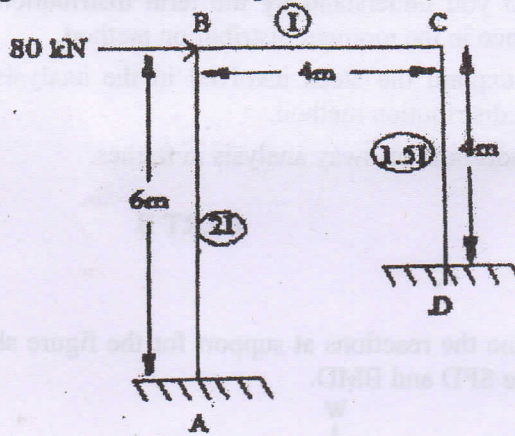


OR

- VII. Determine the support reaction and draw the BMD for the continuous beam shown in figure.



- VIII. Analyze the rigid frame shown in figure and draw the BMD.



OR

- IX. A portal frame is shown in figure subjected to a loading as shown. Analyse the frame and draw the BMD. The flexural rigidity for all the members is constant.

