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B.Arch. Degree IV Semester Examination April 2018

AR 1402 BUILDING MATERIALS AND CONSTRUCTION III (2014 Scheme)

Time : 4 Hours

Maximum Marks : 100

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

PART A

(8 × 5 = 40)

- I. Write short notes on the following.
- (a) Properties and uses of TMT steel bars.
 - (b) Anti-corrosive treatment for steel.
 - (c) Advantages of space frames for roofs.
 - (d) Methods of structural steel connections.
 - (e) Extruded aluminium profiles and their uses in building construction.
 - (f) Applications of aluminium foil in building construction.
 - (g) Aluminium/glass shop fronts.
 - (h) Materials for curtain walling.

(2 × 10 = 20)

- II. Briefly explain various structural market forms of steel and indicate their standard sizes and uses in buildings. (10)

OR

- III. Describe materials available for roof covering, indicate their standard sizes, merits and limitations. (10)

- IV. What are the advantages and disadvantages of using aluminium for building construction? (10)

OR

- V. What are the considerations in the selection of types and materials for doors? Indicate various types of operation of doors. (10)

PART B

(2 × 20 = 40)

- VI. Draw to a suitable scale, longitudinal section and an enlarged detail of a step showing surrounding connections – steel stringer beams on sides, tread, closed riser, railing, balusters etc. for a straight run steel staircase to mezzanine floor of a shop. Height to mezzanine floor 240 cm. Use appropriate standard size M.S Angles, channels, plates, pipes, tubes etc. Assume any other details, if found necessary. (20)

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



VII. Draw to an appropriate scale plan, elevation, section of a steel window with glazed openable shutters and M.S grill fixed to window frame, showing interface fixing details with masonry wall. Size of masonry opening 210 cm × 130 cm. Use appropriate standard steel profiles. Assume any other details, if found necessary. (20)

VIII. Draw to a suitable scale, plan, elevation, fixing details at jamb and head of an aluminium sliding glazed window of size 120 cm × 140 cm to be fixed to 20 cm thick masonry wall, using available standard profiles. Assume any other necessary data, if required. (20)

OR

IX. Draw to an appropriate scale plan, elevation, section of a glazed double leaf door, size of opening 200cm × 220cm fixed on floor and aluminium transom, using standard aluminium profiles. Assume any other necessary data, if required. (20)

I. Write short notes on the following: (20)
 (a) Properties and use of T.M.S. steel bars.
 (b) Anti-corrosive treatment for steel.
 (c) Advantages of space frames for roofs.
 (d) Methods of structural steel connections.
 (e) Extended slenderness profiles and their uses in building construction.
 (f) Application of aluminium foil in building construction.
 (g) Aluminium alloy sheet piling.
 (h) Materials for curtain walling.

II. Briefly explain various structural market forms of steel and indicate their standard sizes and uses in buildings. (10)
 OR
 III. Describe materials available for roof covering, indicate their standard size, merits and limitations. (10)

IV. What are the advantages and disadvantages of using aluminium for building construction? (10)

V. What are the considerations in the selection of types and materials for doors? Indicate various types of operation of doors. (10)

PART B

VI. Draw to a suitable scale longitudinal section and an enlarged detail of a step flange surrounding connections - steel stringer - beam on sides, fixed, closed, near ceiling, behavior etc. for a straight run steel staircase to mezzanine floor of a shop. Height to mezzanine floor 240 cm. Use appropriate standard size M.S. Angles, channels, plates, girths, etc. Assume any other details, if found necessary. (20)

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B.Arch. Degree IV Semester Examination April 2018

AR 1403 HISTORY OF ARCHITECTURE III

(2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

- I. (a) Distinguish between SQUENCHES and PENDENTIVES.
- (b) Explain:
 - (i) FLYING BUTTRESSES and CLERESTORY.
 - (ii) Differentiate Latin Cross Plan and Greek Cross Plan.
- (c) Explain the architectural characteristics of Gothic Architecture period.
- (d) Explain:
 - (i) TRACERY and LANCET.
 - (ii) What is Renaissance architecture?
- (e) What is Moorish architecture? Explain the characteristic elements of Moorish style?
- (f) What is Mayan architecture? What were the common characteristic features of Mayan cities?
- (g) Briefly explain the characteristics of Japanese architecture.
- (h) Explain Torri.

PART B

(4 × 15 = 60)

- II. Explain the salient features of early Christian architecture taking, ST.PETER'S, ROME as an example.
- OR**
- III. Explain in detail the Pisa Group, Italy with neatly drawn sketches highlighting the architectural character used in Italy.
 - IV. Explain the following.
 - (i) Compare early, decorated and perpendicular architectural characteristics.
 - (ii) What is Palladian architecture and its architectural characteristics? Explain using an example.
- OR**
- V. Explain in detail the Gothic architectural character used in England taking Westminster Abbey, England with neatly drawn sketches.
 - VI. Explain the Moorish architectural characteristic elements and principles.
- OR**
- VII. Explain the evaluation of Cordoba mosque. How are the Christian and Islamic practices of worship reflected in its architecture?
 - VIII. Explain the architectural characteristics used in Japanese architecture. What is Shinto architecture?
- OR**
- IX. Explain in detail, with neatly drawn sketches:
 - (i) FORBIDDEN CITY
 - (ii) ANGKOR WAL

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B.Arch. Degree IV Semester Examination April 2018

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) Hanging gardens of Babylon.
- (c) Grading in landscape.
- (d) Visual and non visual characteristics in landscape design.
- (e) Avenue lighting.
- (f) Importance of analyzing Microclimate in landscape design.
- (g) Propagation techniques.
- (h) Hydroponics and Aquaponics.

PART B

(4 × 10 = 40)

II. Describe in detail the characteristic features of an English Landscape Garden.

OR

III. What are the forms of water in landscape? Explain with examples from history and modern garden.

IV. How do the principle of landscape design help in achieving balance in landscape Architecture? Explain with suitable example.

OR

V. Explain briefly the elements in landscape. Sketch a detailed garden explaining the elements in landscape designing.

VI. Function, use and construction methods of Terrace gardens and Terrace pools.

OR

VII. What are the precautions a landscape architect should take during planning and execution of a landscape project?

VIII. Explain functional, visual, ecological and microclimatic aspects of trees, shrubs and ground covers with minimum two examples for each with botanical name.

OR

IX. Planting and transplanting techniques in landscape design.

PART C

(1 × 20 = 20)

X. Design an outdoor children's play area of size 12 m x 8 m for an apartment building. The play area should include a lawn with creative landscape elements, play equipments and seating capacity for 8 people. Make a presentation drawing with site plan and section in 1:50 scale and details with minimum 2 views. All other information can be assumed.

OR

XI. Design a covered scooter parking lot for 20 vehicles, which is temporary, and could be dismantled and used again. There should be enough green shading, hard raised floor, ramp to reach, protected pedestrian path leading to the parking and good turning circle. Plan, section and a view to a suitable scale.

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B.Arch. Degree IV Semester Examination April 2018

AR 1405 ARCHITECTURAL ACOUSTICS

(2014 Scheme)

Time : 3 Hours

Maximum Marks : 100

(Illustrate answers with sketches wherever necessary)

PART A

(Answer *ALL* questions)

(8 × 5 = 40)

- I. Write short notes on the following.
- (a) Threshold of audibility and pain.
 - (b) Define sound pressure and sound pressure level.
 - (c) Behaviour of sound in enclosed spaces.
 - (d) Reverberation time and Sabine formula.
 - (e) Sound transmission loss.
 - (f) Define noise reduction coefficient.
 - (g) Mounting of acoustical materials.
 - (h) Acoustical plaster.

PART B

(4 × 15 = 60)

- II. Briefly explain the various properties of sound.
- OR**
- III. Explain the following.
- (i) Effect of temperature difference in the propagation of sound in open air.
 - (ii) Effect of landscape elements in the propagation of sound.
 - (iii) Inverse square law of sound.
- IV. Explain the various acoustical defects in enclosed spaces and their recommended remedies.
- OR**
- V. 'The shape of a room is one of the important factors affecting its acoustical properties'. Justify the statement with respect to the Reverberation and Echo control.
- VI. What are the different sources of noise in buildings? Briefly explain the various methods of controlling machinery noise and vibrations.
- OR**
- VII. What is Air borne noise? Explain the methods of controlling sound transmission through walls and partitions.
- VIII. Describe the acoustical problems associated with a school design. List out the solutions in terms of planning, design and detailing of the project.
- OR**
- IX. Explain the various types of sound absorbing materials used. Also explain with the help of neat sketches, its application in reverberation control, noise reduction and echo control in enclosed spaces.

B.Arch. Degree IV Semester Examination April 2018

AR 1406 ESTIMATION AND SPECIFICATION (2014 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer ALL questions)

(8 × 5 = 40)

- I. (a) What do you understand by the term “estimation”? Write its classifications.
 (b) Explain the following terms.
 (i) Contingencies (ii) Contract documents.
 (c) Define the principles of writing specifications in BIS, PWD, CPWD formats.
 (d) Define Schedule of Rates.
 (e) Differentiate between detailed specification and general specification.
 (f) What are the specifications for: (i) Water (ii) Sand.
 (g) Write the specifications for carrying out R.C.C. construction.
 (h) What is the purpose of obtaining approximate cost estimation for a proposed building?

PART B

(4 × 15 = 60)

- II. Write and explain the methods for obtaining approximate estimate in the ascending order of accuracy.
- OR**
- III. Differentiate between approximate estimation and detailed estimation.
- IV. What do you understand by the term specifications? Why is it necessary? Explain.
- OR**
- V. Write the detailed specifications for:
 (i) Brick Masonry (ii) Random Rubble Masonry (iii) Sand.
- VI. What do you understand by the term “cost of construction”? What are its components? Explain in details the various factors on which the cost of a project depends.
- OR**
- VII. Write the general specifications for a first class building.
- VIII. Calculate the unit rate of CC 1:2:4.

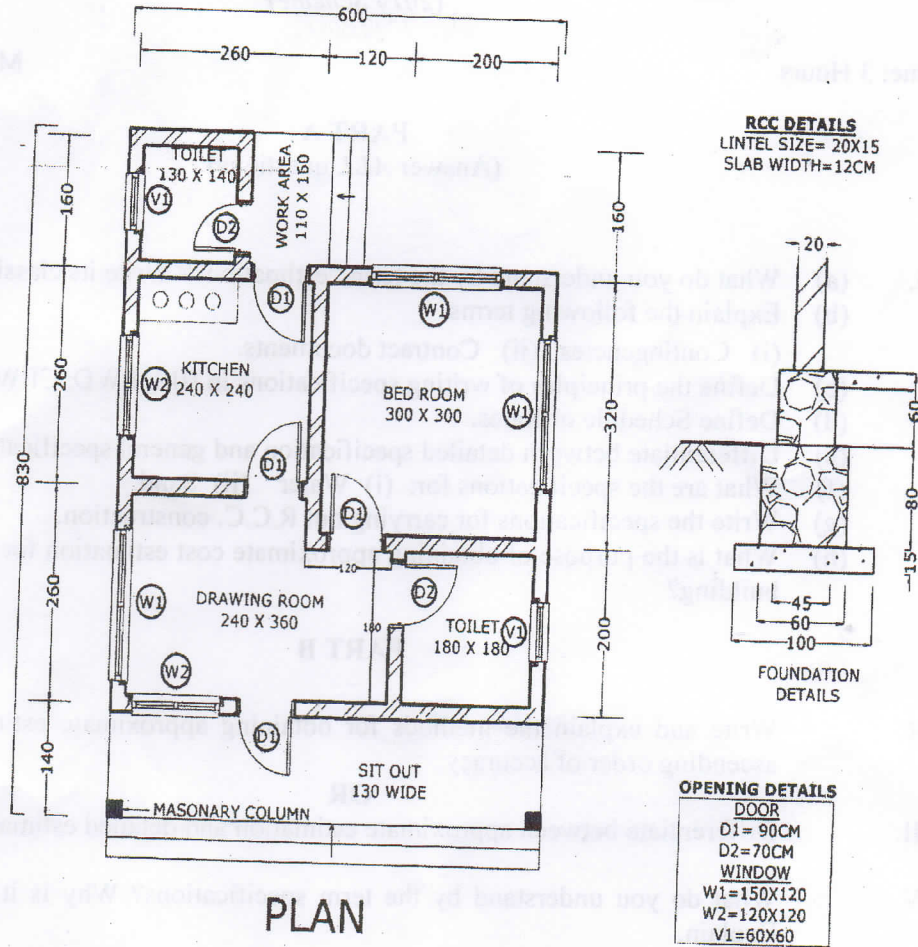
MATERIALS DETAILS	QUANTITY/NO	RATE
Coarse aggregate	8.4 m ³	620/ m ³
Sand	4.2 m ³	500 /m ³
Cement	2.8 m ³	420/bag
LABOUR		
Head Mason	0.5	500/person
Mason	3	450/person
Mazdoor	2.3	400/person

OR

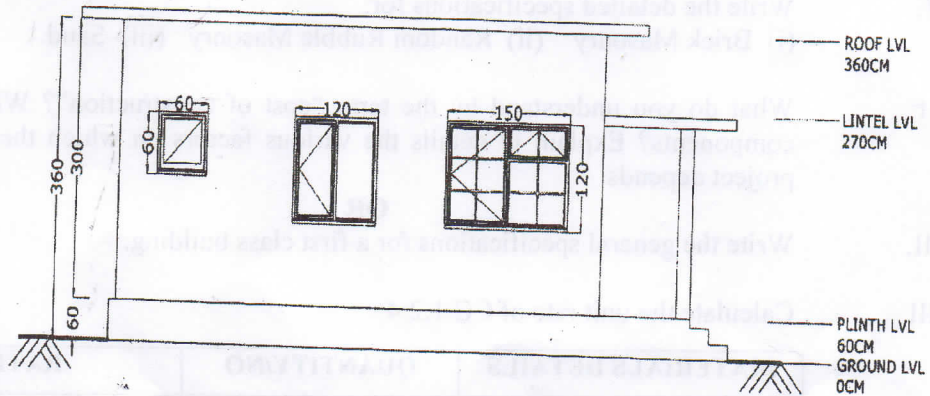
(P.T.O.)

IX. Prepare a detailed estimate (ref drawing: 1)

- (i) Earth work excavation.
- (ii) PCC in foundation.
- (iii) Masonry in foundation.
- (iv) Brick work for super structure.



PLAN



ELEVATION

(Drawing 1)

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B.Arch. Degree IV Semester Examination April 2018

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) Why are distribution pipes provided with various pipe appurtenances? Draw neat sketches of any two plumbing fixtures.
- (b) What are the considerations given in calculating the capacity of over head tanks?
- (c) Draw the details of a septic tank for a house with 5 people.
- (d) Why infiltration and runoff calculations are important in the design of sewers?
- (e) With a neat sketch explain 'drop manhole'. Why is it provided in a sewage line?
- (f) Explain the process of self purification.
- (g) What are sanitary appliances? Explain the use of traps in a drainage system.
- (h) What are the design considerations on drainage scheme for the planning of kitchen in domestic buildings?

PART B

(4 × 15 = 60)

- II. Explain the general considerations in planning a water distribution system.
- OR**
- III. Discuss, in detail, the types of water piping systems used in buildings.
- IV. What are the basic principles of sanitation? Explain the operation of a septic tank.
- OR**
- V. Enumerate the process of design for sewer systems.
- VI. Explain, with neat sketches and design considerations, the disposal of sewage from isolated buildings.
- OR**
- VII. What are sewer appurtenances? Provide neat sketches of various sewer appurtenances and explain under what conditions they are located within a sewer network.
- VIII. What are the design considerations on drainage scheme for bathrooms and lavatory blocks in domestic and multistoried buildings?
- OR**
- IX. Discuss, in detail, the mandatory requirements regarding water supply, sanitation, rain water harvesting and fire protection of buildings.

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AR 1408 STRUCTURAL ANALYSIS II

(2014 Scheme)

Time : 3 Hours

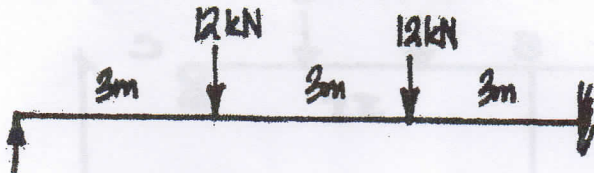
Maximum Marks : 100

PART A

(Answer ALL questions)

(8 × 5 = 40)

- I. (a) What is an encastre beam?
 (b) Explain statically indeterminate beams.
 (c) Determine prop reaction in the beam shown below:



- (d) Explain kinematic indeterminacy.
 (e) Explain briefly the methods of analysis of continuous beams.
 (f) Explain how Clapeyrons theorem of three moments is applied to continuous beam with fixed end supports.
 (g) Explain Kani's method.
 (h) What are the causes of side sway in portal frames?

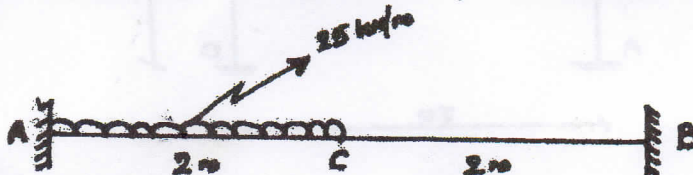
PART B

(4 × 15 = 60)

- II. A cantilever beam of span 6m is supported at 2m from the free end to the level of fixed end. It carries a concentrated load of 25 KN/m over the entire span. Draw SFD and BMD for the given beam by consistent deformation method.

OR

- III. Draw SFD and BMD for the given beam by consistent deformation method.



- IV. A continuous beam ABCD of length 15m rests on four supports covering 3 equal spans and carries a uniformly distributed load of 1.5 KN/m length. Calculate the moments and reactions at the supports. Draw SFD and BMD.

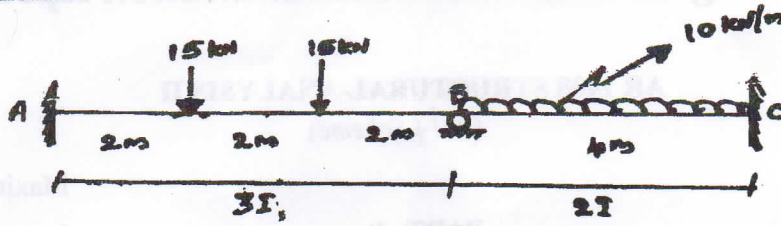
OR

- V. A continuous beam ABC of uniform section, with span AB and BC as 4m each, is fixed at A and simply supported at B and C. The beam is carrying a uniformly distributed load of 6 KN/m run throughout its length. Find the support moments and reactions. Also draw BMD and SFD.

(P.T.O.)

VI.

Analyse the 2 span continuous beam shown below by moment distribution method.



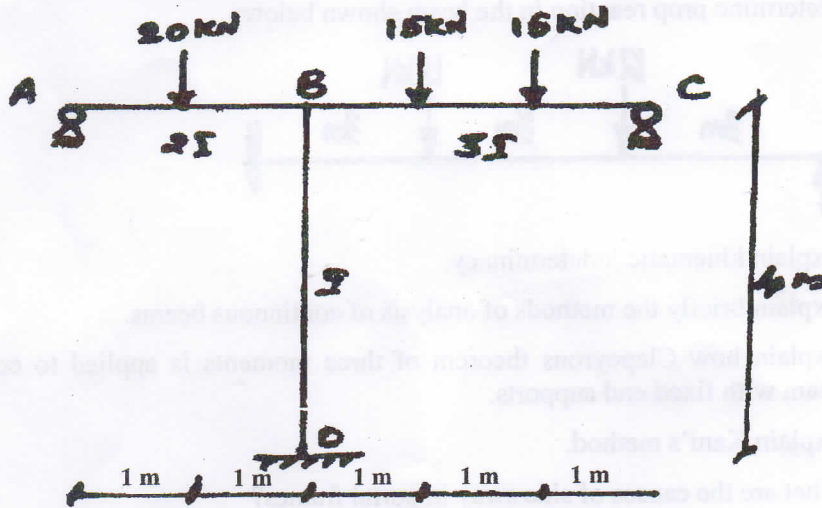
OR

VII.

A continuous beam ABCD of length 9m is simply supported at its ends and propped at the same level at points 3m and 7m from the left end A and carries a uniformly distributed load of 5 KN/m over span CD. Analyse the beam if support sinks by 25 mm below B. Assume $I = 6000000 \text{ mm}^4$ and $E = 200 \text{ KN/mm}^2$.

VIII.

Analyse the simple portal frame shown below by moment distribution method.



OR

IX.

Determine end moments of the members of frame shown below:

