

Total No. of Questions : 4]

SEAT No. :

[Total No. of Pages : 2

PE926

[6587]-19101

First Year B.Arch.

BUILDING CONSTRUCTION AND MATERIALS - II
(2019 Pattern) (Semester - II) (1201910)

Time : 2½ Hour]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data, if necessary.*
- 5) *Answer same questions from section-I on drawing sheet and from section-II in answer book only.*

SECTION - I

Q1) Draw to Scale (Any One)

[20]

- a) A main hall of a community hall having the size 18 m X 9 m with a clear height of 6.5 meters is to be provided with timber roof truss. The trusses are resting on 450 mm thick load bearing wall.
- i) Draw key plan and a section to scale 1:50
 - ii) Draw the sketches of
 - 1) Joint between the principal rafter and tie beam. (scale 1:10)
 - 2) Joint at the head of the truss at ridge level. (scale 1:10)

OR

- b) Draw plan, section and elevation (scale 1:10) of a T.W. Partition for opening of size 2400 mm X 2100 mm.
- i) Draw key plan and elevation to scale 1:50
 - ii) Draw the sketches of
 - 1) Joint between the principal rafter and tie beam. (scale 1:10)
 - 2) Joint at stud, posts and nogging. (scale 1:10)

Also draw any other detail at the suitable scale to explain the construction of the timber partition.

P.T.O.

Q2) Describe with the help of sketches (Any Three) [15]

- a) Explain basic earthquake resistant measures considered for load bearing construction.
- b) Domes in masonry construction.
- c) Precautions to be taken while construction of small span sloping roofs.
- d) What do you mean by timber derivatives? Explain the market forms of timber derivatives.
- e) Couple roof and close couple roof.

SECTION - II

Q3) Explain the following. (Any Two) [20]

- a) Construction of reinforced masonry walls, pillars and lintels.
- b) Differentiate between Jack Rafters and Valley Rafters.
- c) Explain various forces involved in truss members.
- d) What is the seasoning of timber? Explain various defects in timber.

Q4) Explain with sketches (Any Three) [15]

- a) Staircases with various terminologies involved.
- b) Wooden partition and wall panelling.
- c) Explain Single Floors.
- d) Introduction to various tools and equipment commonly used in carpentry work.
- e) Roofing materials for small span sloping roofs including Mangalore tiles, sheet roof covering.



Total No. of Questions : 4]

SEAT No. :

PE-928

[Total No. of Pages : 2

[6587]-19103
F.Y. B.ARCH
BUILDING CONSTRUCTION AND MATERIALS - I
(2019 Pattern) (Semester - I) (1201902)

Time : 2½ Hour]

[Max. Marks : 70

Instructions to the candidates :

- 1) All Questions are compulsory*
- 2) Neat Diagrams must be drawn wherever necessary*
- 3) Figures to the right side indicate full marks*
- 4) Assume suitable data, if necessary*
- 5) Answer same questions from section-I on drawing sheet and from section - II in answer book only.*

Section - I

Q1) Draw any one of the following

“T junction” of 1½ brick thick English bond with mortar thickness. **[20]**

- a) Plan of alternate courses at scale 1:10
- b) Elevation of six courses at scale 1:10

OR

The stopped end of the 1½ brick thick double Flemish bond with mortar thickness

- a) Plans of odd and even courses at scale - 1:10
- b) Elevation of six courses at scale 1:10

P.T.O.

Q2) Draw neat and labeled sketches (Any three) [15]

- a) Draw five types of arches with names
- b) Draw schematic elevations of Flint wall, Chamfered wall, Polygonal Wall
- c) Draw any three types of joinery used in stone masonry.
- d) Sketch any five types of bamboo joinery
- e) Draw any three types of tools used in plastering.

Section - II

Q3) Answer Any two of the following [20]

- a) Write any two tests to check the quality of good stone
- b) Explain manufacturing of bricks.
- c) What is load? Explain the different types of load acting on building
- d) Write advantages and disadvantages of bamboo as a material

Q4) Answer Any three of the following [15]

- a) What are the qualities of good brick.
- b) Write the difference between sub structure and super structure.
- c) Write short note on rammed earth construction.
- d) Write the difference between load bearing structure and framed structure
- e) Explain with neat sketches any three types of pointing



Total No. of Questions :8]

SEAT No. :

PE929

[Total No. of Pages : 3

[6587]-19104

First Year B. Arch

THEORY OF STRUCTURES-I
(2019 Pattern) (Semester-I) (1201904)

Time : 2½ Hours]

[Max. Marks : 70

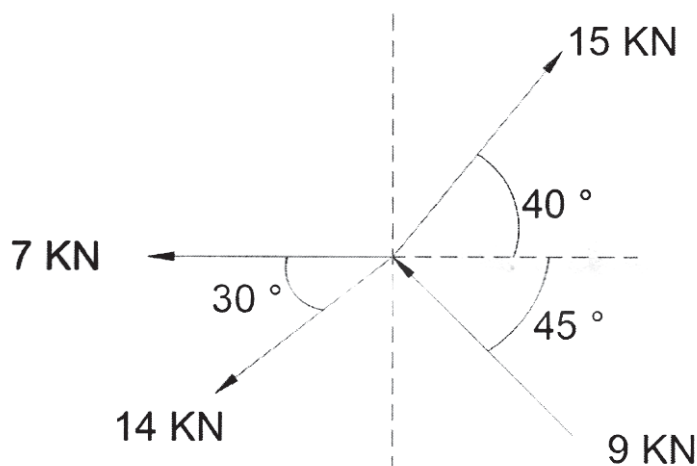
Instructions to the candidates:

- 1) Q. No. 1 & 5 are compulsory. Solve any 2 from the other 3 in each section.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data, if required mention the assumption.
- 4) Use of Non-Programmable calculator is allowed.

SECTION-I

Q1) Compulsory

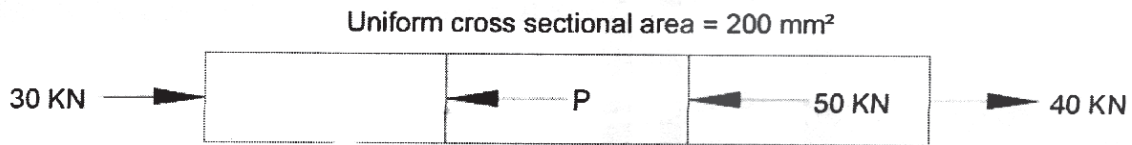
- a) i) Write any three properties of a Couple. [3]
- ii) Write effects of a Force. [3]
- b) Find magnitude & direction of Resultant of given force system. [7]



- Q2) a)** Find stresses in concrete and steel if an RCC column is subjected to axial compressive force of 1000 kN. Diameter of column is 350 mm and it is reinforced with 6 bars of 16 mm diameter. $E_{\text{steel}} = 2 \times 10^5 \text{ N/mm}^2$, whereas $E_{\text{concrete}} = 0.2 \times 10^5 \text{ N/mm}^2$ [8]
- b)** Define-Modular Ratio, Poisson's Ratio & Lateral Strain. [3]

P.T.O.

Q3) a) Find P and Stresses in each part of the rod. [7]



b) Write the Formulae for the relationship between the various Moduli [4]

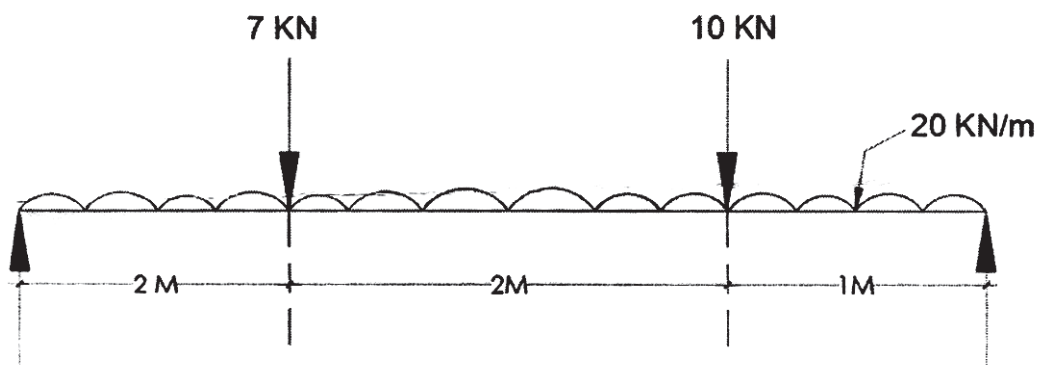
Q4) a) Differentiate between load bearing structure and framed structure. [4]

b) Explain in detail the Care to be taken in Design of Load Bearing Structures [4]

c) Write any three advantages of load bearing structure. [3]

SECTION-II

Q5) a) Draw SFD and BMD for the given beam.



i) Findings reactions [3]

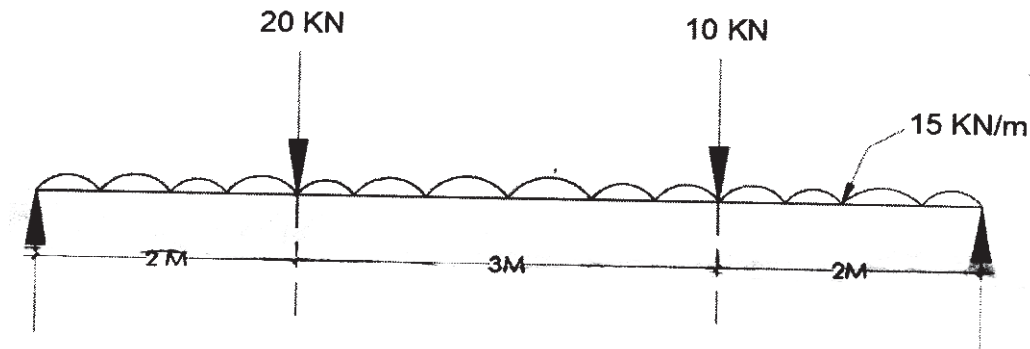
ii) Shear force diagram with point of zero shear [4]

iii) Bending moment diagram [3]

iv) Maximum bending moment [1]

b) Define Point of zero shear. [2]

- Q6) a)** Explain any four types of beam. [4]
- b)** Calculate Support reactions for the given beam. [7]



- Q7)** A L-beam has flange 100mm×10mm and a web of 10mm×90mm. Calculate the M.I. of composite section about Centroid XX and YY axes [11]

- Q8) a)** State the Theorem of Parallel Axis w.r.t. M.I and explain with a sketch. [4]
- b)** Draw S.F.D and B.M.D of Simply supported beam with udl over the entire span. [4]
- c)** What are the reactions offered by the following supports? [3]
- Hinged Support
 - Roller Support
 - Fixed Support



Total No. of Questions :4]

SEAT No. :

[Total No. of Pages : 2

PE930

[6587]-19201

Second Year B.Arch.

**BUILDING CONSTRUCTION AND MATERIALS -IV
(2019 Pattern) (Semester-IV) (2201927)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Answer to section I and Section II should be written in two separate answer sheets.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*
- 5) Assume suitable data if necessary.*

SECTION-I

Q1) A room of size 3000×4500 mm has a balcony on its shorter side. The width of the balcony is 1200 mm. Draw details as mentioned below to suitable scale.

[20]

- a) Plan showing framing and reinforcement details of slab for room and balcony in plan.
- b) Section through slab of room and balcony showing reinforcement details.

OR

A dog legged RCC staircase of 1000mm wide to be designed for a G + 1 bungalow with floor to floor height of 3000 mm. Draw the staircase with appropriate tread and riser and following details.

[20]

- a) Plan of staircase with framing showing columns and beams, dimensions in plan and nomenclature to a Scale of 1:20.
- b) Section through any one flight indicating the reinforcement details with necessary annotations and dimensions. Scale 1:20.

P.T.O.

Q2) Answer the following (ANY Three) [15]

- a) Sketch plan and section of Bay window protruding at the distance of 450mm from the living room wall.
- b) Write a short note on Light Weight Concrete.
- c) Write a short note on Ready Mix Concrete.
- d) Draw a sketch showing section through RCC Chajja showing reinforcement and water proofing.
- e) Draw a sketch showing any two arrangements for a group of escalators.

SECTION-II

Q3) Explain with sketch (ANY Three) [15]

- a) Waist slab.
- b) Reinforcement in cantilever beam.
- c) Bent up bar in slab.
- d) Distribution steel in slab.
- e) Reinforcement in folded slab stair.
- f) Lift pit.

Q4) Answer the following (ANY Four) [20]

- a) Compare traction elevators and hydraulic elevators.
- b) Draw sketch showing detail section of Brick Bat water proofing for toilet.
- c) Write a short note on the use of glass in a building.
- d) Write a short note on the use of plastics in a building.
- e) Write a short note on adhesives and sealants used in a building.
- f) Explain method of preventing rising dampness with sketch.



[6587]-19202
S.Y. B.Arch.
THEORY OF STRUCTURES - IV
(2019 Pattern) (Semester - IV) (2201929)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Q.no. 1 & 5 are compulsory in each Section. Any two out of Q 2,3,4 in Section I and Any two out of Q 6,7,8 in section II need to be attempted.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data, where necessary only.
- 4) Use M 25 Grade concrete and Fe 500 grade steel
- 5) Use of non-programmable Calculators and Standard Steel Tables of Plastic Design Allowed

SECTION - I

Q1) The plan of a Load Bearing Structure as shown in Figure 1. It has some basic flaws in transfer of load to the walls. Identify any four flaws, draw and explain the corrections such that its a feasible Load Bearing Structure. **[9]**

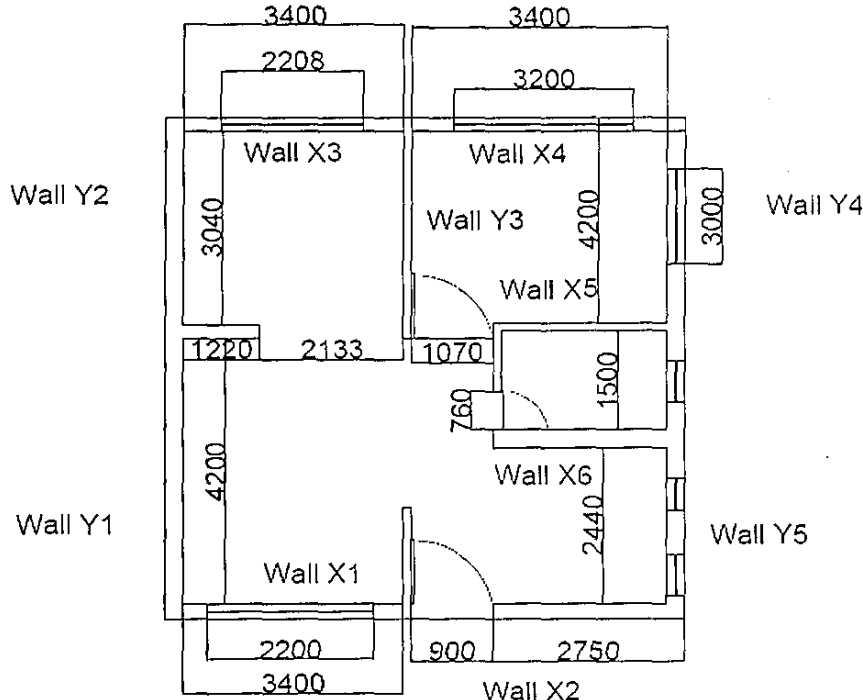


Figure 1.

Q2) Design Doglegged staircase for the given data :

- a) Building is an office building,
- b) 10 Treads in each Flight of 300 each and Riser is 175 mm.
- c) The width of Landing = Width of Flight = 1400mm.
- d) The Staircase is supported on 230mm wide beams on outer edges of the Landing.
- e) Consider Live Load = 4 kN/m^2 & Floor Finish = 1.25 kN/m^2 .
- f) Use 10 mm diameter bars for main steel and 8 mm, diameter bars for distribution (secondary steel).

Write your answers in the Form of a Schedule. Do not draw Reinforcement Sketch **[13]**

Q3) Design a Steel Girder using ISMB for a Effective Span of 8.23 m, UDL (Factored load) of 30 kN/m , simply supported on 230mm wide supports on each side. Select a Section for Flexure. Classify the Section Check for Shear Strength & Deflection only. **[13]**

Q4) Answer any 3 of the Following **[13]**

- a) Explain why I.S.456 does not permit the use of Over-Reinforced Sections.
- b) A Beam in R.C.C. is of Size 230mm x 400mm and is Reinforced with 4 no 16 mm bars in one row. Find its Moment of Resistance.
- c) Draw and Annotate the following
 - i) An I Section
 - ii) A C Section
 - iii) An Angle Section
 - iv) A T Section
- d) Explain with sketch: Different end conditions of effective length of the stanchion.

SECTION - II

- Q5)** Design rectangular RCC Cantilever Beam of clear overhang length 3m. This Beam is subjected to Factored loads of 24 kN/m (Inclusive of self weight) and fixed to 230 mm support at one end. Consider width of beam 230 mm. Design the beams for Flexure. Do Not Design for Shear. [9]
- Q6)** Design R.C.C. overhanging slab for the figure 2 below. Consider Live Load = 3kN/m² and Floor Finish = 1.25 kN/m². Use 10 mm diameter bars as main steel, clear cover of 25 mm. Draw reinforcement details for the same. No need a make a Schedule. [13]

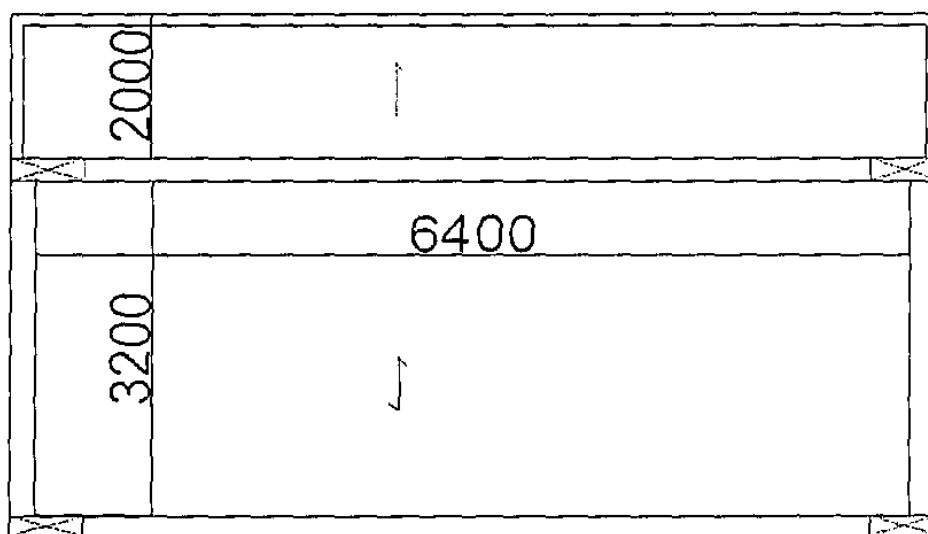


Figure - 2

- Q7)** Design a steel stanchion using ISHB sections for a factored compressive load of 1000 kN. Height of column is 6 m with one end hinged and other end fixed. Assume the design compressive stress (f_{cd}) as 120 N/mm² to begin with. [13]
- Q8) Answer any three of the Following** [13]
- a) Explain any 4 advantages of Steel Structures over Concrete Structures
 - b) Explain the Different Loads acting on a Steel Structure as per IS 800 2007
 - c) Explain Plastic Sections and Compact Sections
 - d) Draw and explain structural elements of a Typical Factory Building in Section



Total No. of Questions : 4]

SEAT No. :

PE-932

[Total No. of Pages : 2

[6587]-19203
S.Y. B.Arch.
BUILDING SERVICES - II
(2019 Pattern) (Semester - IV) (2201932)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) *All questions are compulsory.*
- 2) *Answer to Section I and Section II should be written in two separate answer sheets.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data wherever necessary.*

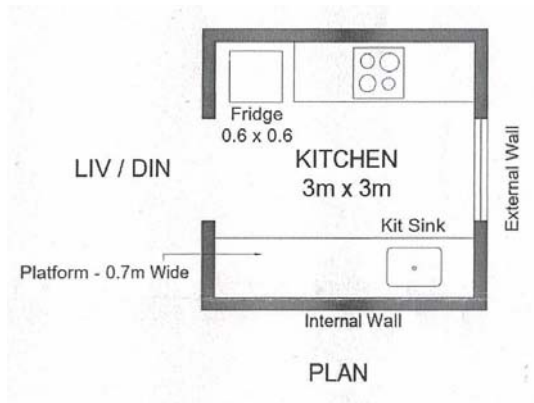
SECTION - I

Answer any 1 question from the following :

[15]

Q1) Draw an Electrical Layout with Switch board Schedule for a small Residential Kitchen (3m x 3m) given below. Show the following Electrical Points:

- a) Task and General Lighting
- b) Exhaust Fan / Exhaust Chimney.
- c) Power points for Fridge, Microwave and An Oven.
- d) Switch and Sockets for Mixer / Food Processor.
- e) Fan.



OR

P.T.O.

Q2) Explain the Sources and Classification of Municipal Solid Waste. Explain with a sketch Disposal method of Landfill; give Advantages and Disadvantages of Landfill.

Write short notes with proportionate and appropriate sketches (Any 04) : [20]

- a) Network communications Devices.
- b) Composting.
- c) Reflectors for Day lighting.
- d) Fire alarm systems.
- e) Ascent Lighting.
- f) Anidolic Duct.

SECTION - II

Answer any 1 question from the following : [15]

Q3) What is daylight factor? Why is daylight important in the design of buildings? Explain what are the parameters of daylight factor with sketches?

OR

Q4) What is the average illumination level on 1.2 M high work plane in a 12M × 18 air conditioned office with a 2.7M height and 12nos. twin ceiling mounted 40 W fluorescent lamp each emitting 2600 lumen, $C_u = 0.47$. Draw a proportionate Layout.

Write Short notes with proportionate and appropriate sketches (Any 04) : [20]

- a) MCB (Miniature circuit breakers).
- b) General Lighting.
- c) Classification of Municipal Solid waste according to their effects on Human Health and the Environment.
- d) Define LAN, MAN and WAN.
- e) Types of Electric wiring distribution systems.
- f) Light Shelves.



[6587]-19204

S.Y. B.Arch.

BUILDING CONSTRUCTION AND MATERIALS - III**(2019 Pattern) (Semester - III) (2201918)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

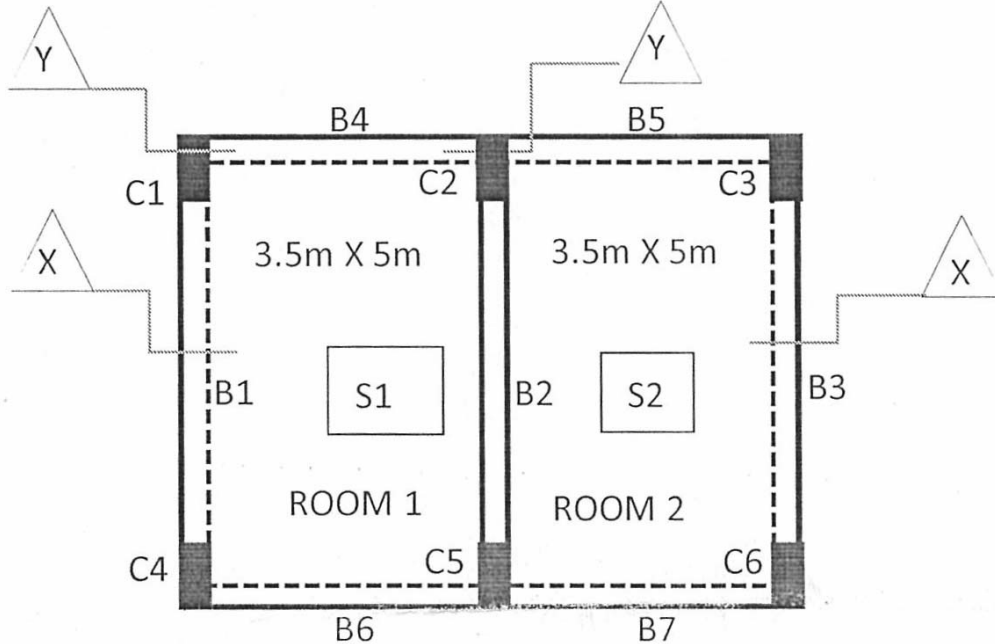
- 1) All questions are compulsory.
- 2) Answer to Section I to be attempted on drawing sheet only.
- 3) Answer to Section II to be written on answer sheet only.
- 4) Draw neat, labelled sketches wherever necessary.
- 5) Assume suitable data wherever necessary.
- 6) Figures to the right indicate full marks.

SECTION - I

Q1) Two Rooms as shown are situated on first floor of a residential building. The structure is built in RCC Frame. Draw the following to the scale of 1:10 showing all the required details.

Assume data: Column Size - (300×450)

Beam Size- B4, B5, B6 – (300×600) & B4, B5, B6, B7 – (300×450)



- a) Draw Section X-X, showing reinforcement details. [10]
- b) Draw Beam Longitudinal Section Y-Y showing reinforcement details. [5]
- c) For Beam drawn above, draw cross sections at Support and Mid-span. [5]

OR

P.T.O.

A plinth needs to be constructed for a Site office of size 4m × 4m in RCC frame structure. The Office needs to have a 1.2 m wide open platform on front side and provision for attached toilet of size 2.0 m × 1.2m. Considering plinth level 450mm above the existing ground level, draw the following to the suitable scale.

- a) Draw the RCC framing plan for the above plinth showing column footings, columns and beam positions. [10]
- b) Draw a detailed section of plinth through toilet area showing various elements. [10]

Q2) Draw neat, labelled sketches on sheet for the following. (Any three) [15]

- a) RCC Column Beam Junction with earthquake resistant features.
- b) Sectional detail at Window sill level showing provision made for Two-track Aluminum Sliding Window.
- c) Eccentric RCC footing & Combine Footing.
- d) Explain with sketches its use of Cover Blocks while casting different RCC members.

SECTION - II

Q3) Answer any two draw sketches wherever necessary. [20]

- a) Explain Slump Cone test in detail and draw the necessary tools needed to conduct the test.
- b) Explain manufacturing process of Cement.
- c) Explain bulb of pressure and its significance in soil investigation.
- d) State and sketch different elements that can be pre-casted.

Q4) Write short notes any three of the following. [15]

- a) Curing of Concrete and methods used for curing slab.
- b) Explain the use of Steel in RCC. State different types of steel used in RCC.
- c) Methods of soil investigation.
- d) State advantages of Precast technology.
- e) Explain paving block fixing.



[6587]-19205

S.Y. B.Arch.

THEORY OF STRUCTURES - III
(2019 Pattern) (Semester - III) (2201920)

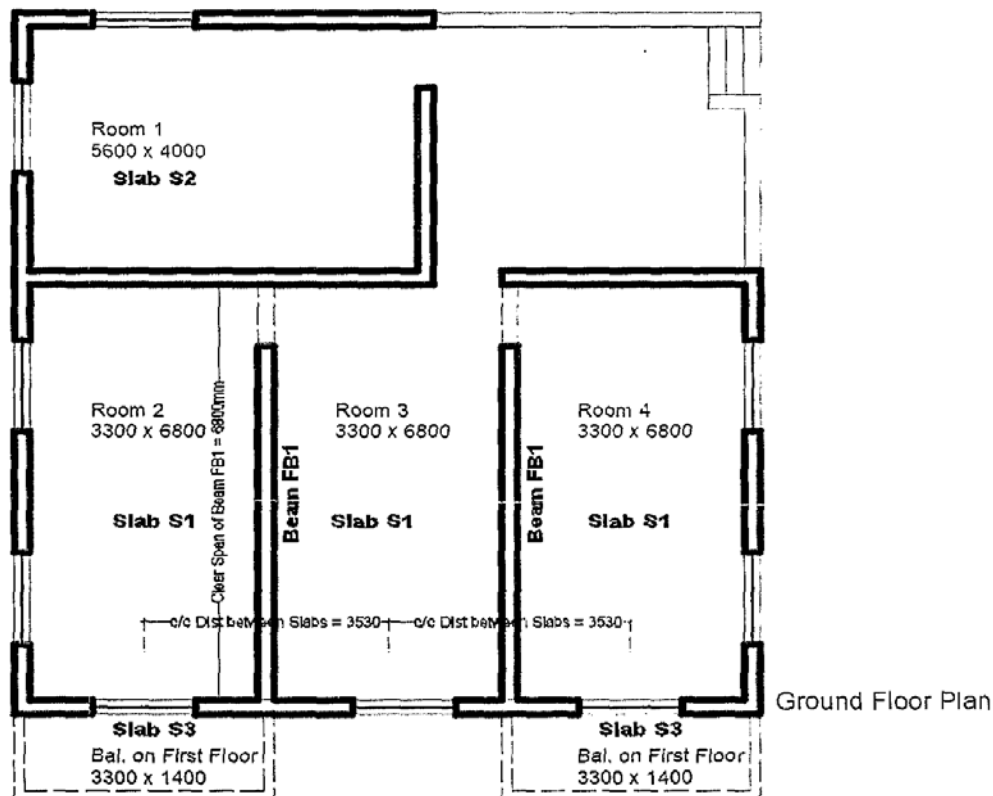
Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Question No 1 and 5 are Compulsory in each Section. Any two out of Q2,3,4 in Section I and any two out of Q 6,7,8 in Section II have to be solved.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data where necessary only.
- 4) Use M 25 Grade concrete and Fe 500 grade steel.
- 5) The Sketch Shown Below is applicable to both Sections.
- 6) Use of non-programmable Calculators and Standard Steel Tables of Plastic Design Allowed.

SECTION - I



Q1) Design Slab S3 from the Sketch as a Cantilever Slab, Consider Live Load = 4kN/m^2 and Floor Finish = 1.25kN/m^2 . Use 10mm diameter bars as main steel, 8mm diameter as distribution steel. Write the answer in the form of schedule.

[11]

P.T.O.

Q2) A fixed beam of length 8m, carrying a UDL of 30kN/m over its entire span. It is also carrying a point load of 28kN at distance of 3m from LHS Support. Find support reactions and Draw S.F.D and B.M.D [12]

Q3) Design Beam FB1 from the sketch. Assume Slab S1 as 140mm thick. Assume wall 100thk and 2.8m high. Live Load on slab S1 and Floor Finish are 4kN/m² and 1.25kN/m². Design for Flexure only and Draw Sketch of Reinforcement. Design for Shear not expected [12]

Q4) Answer any 3 of the Floowing : [12]

- a) Write a short note on the various Functions of Distribution Steel.
- b) Draw a 3 Span Continuous Beam with udl wN/m on all 3 spans of 1m. Draw the B.M.D using Coefficients from Table 12 of I.S.456.
- c) Write a Short note on Aggregate used in Production of Concrete.
- d) Explain Reasons why only Steel is used as the Reinforcing Material.
- e) Write a short note on Popularity of Slump Test.

SECTION - II

Q5) For a short axially loaded RCC column subjected to Service Load of 1400kN having one dimension 230mm, Design the Column. Consider 2% steel. Find spacing of 8mm links. Make the schedule and draw a sketch of reinforcement details. [11]

Q6) A Balcony is to be constructed for an office building using timber joist spaced at 2.5m c/c cantilevering out for a span of 1.4m. The Flooring is of Indian Oak Boards 50mm thick with floor finish of 25mm Flooring Boards in Indian Oak. Use Indian oak for joist and flooring. Take depth of Wooden Beam $d = 3b$ b is width of Beam. Design the Wooden Beams for Flexure and Check for Deflection [12]

Q7) Design Slab S1 from the Sketch above. Use 10mm dia steel bars as main steel and 8mm dia for distribution. Use Floor Finish as 2.5kN/m² and Live Load as 5kN/m². Make Schedule and Draw Sketch of Reinforcement [12]

Q8) Answer any three of the following :

[12]

- a) Explain w.r.t Wooden Beams: Form factor.
- b) Explain any 4 Advantages of Wood as a Structural Material.
- c) For a Two way Slab S2 of the Sketch the Total load is 20kN/m. Distribute this load along the Shorter and Longer Span.
- d) Differentiate between S.S Beams and Fixed Beams w.r.t Number of Reactions, Bending and Deflection.
- e) Write a Short Note on Curing of Concrete.



Total No. of Questions : 4]

SEAT No. :

[Total No. of Pages : 2

PE935

[6587]-19206

Second Year B.Arch.

BUILDING SERVICES - I

(2019 Pattern) (Semester-III) (2201923)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Figures to the right indicate full marks.*
- 3) Assume suitable data wherever necessary.*
- 4) Draw suitable diagrams wherever necessary.*
- 5) Answers to the two sections to be written on separate answer sheets.*

SECTION-I

Q1) Explain in detail with suitable sketches how water is tapped from municipal mains.Explain UGWT and OHWT and their uses with sketches. **[15]**

OR

Explain and elaborate with neat sketches Direct and Indirect Systems of Hot Water Supply. **[15]**

Q2) Write short notes with neat labeled sketches (Any 4): **[20]**

- a) Gravity System of Water supply
- b) Grid Iron method
- c) Use of pipes in water supply. List various pipes used for water supply based on material.
- d) Air Lift Pump and its use
- e) Differencebetween Bib Tap and Pillar Tap
- f) Pressure relief Valve

P.T.O.

SECTION-II

Q3) What is function of a trap in drainage system? List the various traps used in drainage system. Explain in detail any two types of traps used in building drainage system along with neat labelled sketches. **[15]**

OR

Draw a neat labeled Plan and Section of Septic Tank. Explain Septic tank, its use and its working in detail. **[15]**

Q4) Write short notes with neat labeled sketches (Any 4): **[20]**

- a) Anti-Siphonage pipe
- b) Bio Gas Plant
- c) Disconnecting Chamber
- d) Joint in Stoneware Pipes
- e) Wash Hand Basins
- f) Concept of Rain water Harvesting and methods of Rain water collection.



Total No. of Questions : 8]

SEAT No. :

PE936

[6587]-19301

[Total No. of Pages : 4

T.Y.B.Arch.

THEORY OF STRUCTURES - VI
(2019 Pattern) (Semester - VI) (3201947)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to candidates:

- 1) *Q No1 and Q No 5 are compulsory. Out of the Remaining three solve any two in each Section.*
- 2) *Figures to the right indicate full marks.*
- 3) *Assume suitable data where necessary only.*
- 4) *Use M25 Grade concrete and Fe500 grade steel and L.S.M of Design in R.C.C problems.*
- 5) *For structural Steel Use Steel Fe410 (E250) whose $f_y = 250\text{N/mm}^2$. Use L.S.M of Design.*
- 6) *Every R.C.C Design should be accompanied by relevant Schedule and Reinforcement Sketch.*
- 7) *Use of non-programmable Calculators Allowed.*
- 8) *Use of Approved Standard Steel Tables in LSM and Wind Load Tables allowed.*

SECTION-I

Q1) Draw the framing plan for the given ground floor only considering main halls on ground floor and first floor (excluding staircase). Draw framing plans of ground floor in your answer sheets. No need to draw double line diagram as per scale, proportionate line sketch is acceptable. **[15]**

Show Columns only on Ground Floor, Size could be 230mm×350mm

Show all Beams and indicate depth on plan and the Span to Depth Ratio considered for type of beam. Restrict Depth of Beams to 400mm.

Show Spans of all Slabs(Including Staircase) and Indicate Depth considered, Span to Depth Ratio.

Slab depths to be restricted to 150mm. Staircase Slab depth upto 200mm

No Columns to be provided within the Main Halls

Window Positions are indicative only and could be changed to adjust for Column Positions.

P.T.O.

Q2) A.R.C.C Cantilever Retaining wall is detailed as below. [10]

1. Top width of stem-250mm Width of base - 3000mm S.B.C of soil - 230 kN/m²
2. Bottom width of stem-500mm thickness of base - 500mm Density of soil - 17 kN/m³
3. Height of stem - 5000mm Toe projection - 700mm Coefficient of friction - 0.6
4. Density of Concrete-25 kN/m³ Angle of repose - 26°

Check the stability of the retaining wall with respect to Over Turning and sliding.

Q3) a) What is compound stanchion and explain the need for the same. [3]

b) Design a purlin for the Following Data: [7]

- i) Spacing of Trusses = 3.8m, Span of Truss = 12m and Height of Truss = 2.1m
- ii) Roof Covering = G.I. Sheets
- iii) Spacing of Purlins = 1.48m
- iv) Neglect Wind Load

Angle Section	Zezz in mm ³
ISA 75x50x6	6700
ISA 75x50x8	8000
ISA 75x50x10	10400
ISA 75x50x12	12700
ISA 80x50x6	7500
ISA 80x50x8	9000
ISA 80x50x10	11700
ISA 80x50x12	14400
ISA 90x60x6	11500
ISA 90x60x8	15100
ISA 90x60x10	18600
ISA 90x60x12	22000

Angle Section	Zezz in mm ³
ISA 100x65x6	14200
ISA 100x65x8	18700
ISA 100x65x10	23100
ISA 100x75x6	14400
ISA 100x75x8	19100
ISA 100x75x10	23600
ISA 100x75x12	27900
ISA 125x75x6	22200
ISA 125x75x8	29400
ISA 125x75x10	36300

Angle Section	Zezz in mm ³
ISA 125x95x6	23100
ISA 125x95x8	30600
ISA 125x95x10	37800
ISA 125x95x12	44800
ISA 150x75x8	41700
ISA 150x75x9	51600
ISA 150x75x10	61200
ISA 150x115x8	44200
ISA 150x115x10	54900
ISA 150x115x12	65300
ISA 150x115x15	80400

Q4) Write Short Notes with relevant sketches on any Two of the Following. [10]

- a) Explain the remedial measures to control crack width or to take care of the limit state of cracking in RCC water tanks.
- b) Advantages of bolted Connections.
- c) Explain the structural need for shear key in a Cantilever Retaining Wall, its placement and reinforcement provided.
- d) Why are Equal Angle Sections preferred for a Strut and Unequal Angle Sections preferred for a purlin.

SECTION-II

Q5) A Factory Building is to be Built over a Plinth Area of 15m × 36m. [15]

- a) Decide at what centre to centre distance you will place the Stanchions to support Roof Trusses. Accordingly Draw a key plan Showing Stanchions, Bracing System Used and Position of Bracing System.
- b) Use a Fink Truss. Draw the Single Line Elevation of the Truss Showing Important Dimensions. Show Purlins and Purlin Spacing. Calculate the Live Load based on the angle of the Truss. Suggest an Unequal Angle Purlin (You may use Thumb Rules for the same)
- c) Suggest Angle Sections for Top Chord Members and Struts and Slings.
- d) Explain the joint of the Truss and Stanchion as to a Sliding End and a hinged or Fixed End.

Q6) Design a Compound Stanchion consisting of 2no ISMC placed back to back with a Lacing system to take a load of 1400kN. Height of the Stanchion is 9.0m with both ends fixed in both directions.

(Hint: Assume Stress = 200N/mm²). Assume Lacing size having width 60mm and thickness 10mm. Draw sketch. [10]

Q7) Attempt Any Two [10]

- a) Write a Short Note on structural action of barrel vaults.
- b) Write a Short Note on Shear Wall.
- c) Write a Short Note on Tensile Structure and its applications.

OR

Design a Tension Member to take a Service load of 130kN. Design the Welded Connection.

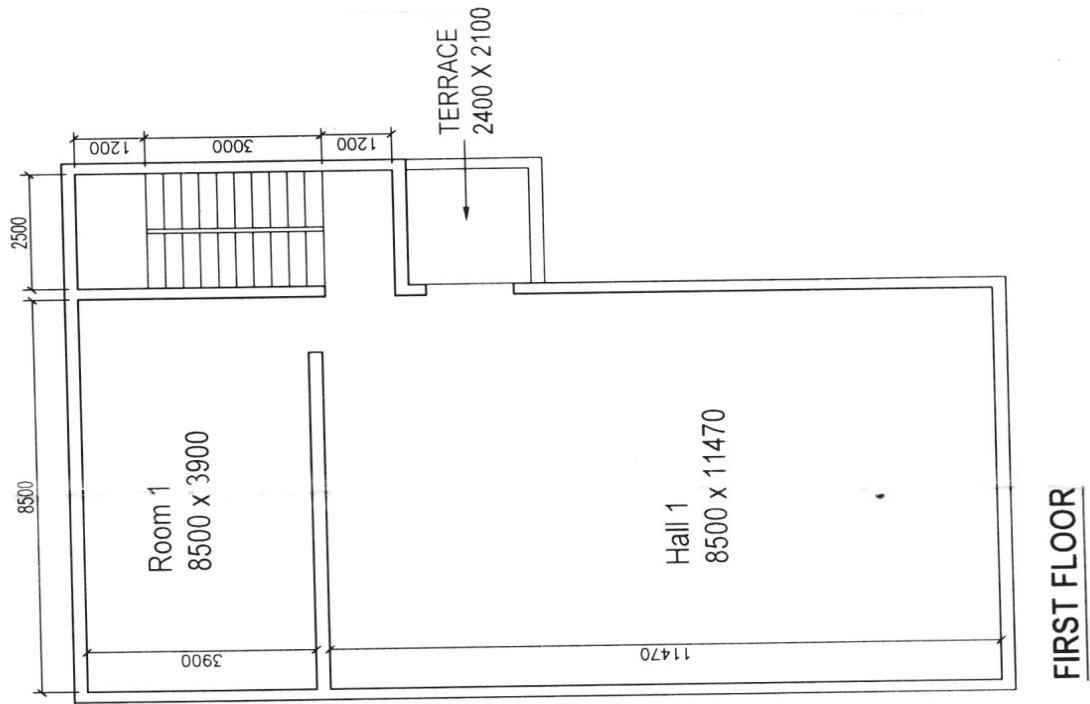
Use design weld strength as $\frac{fu}{\sqrt{3}} \times \frac{1}{1.25}$ where $fu = 410\text{N/mm}^2$. Use

$\beta = 1.08$ [10]

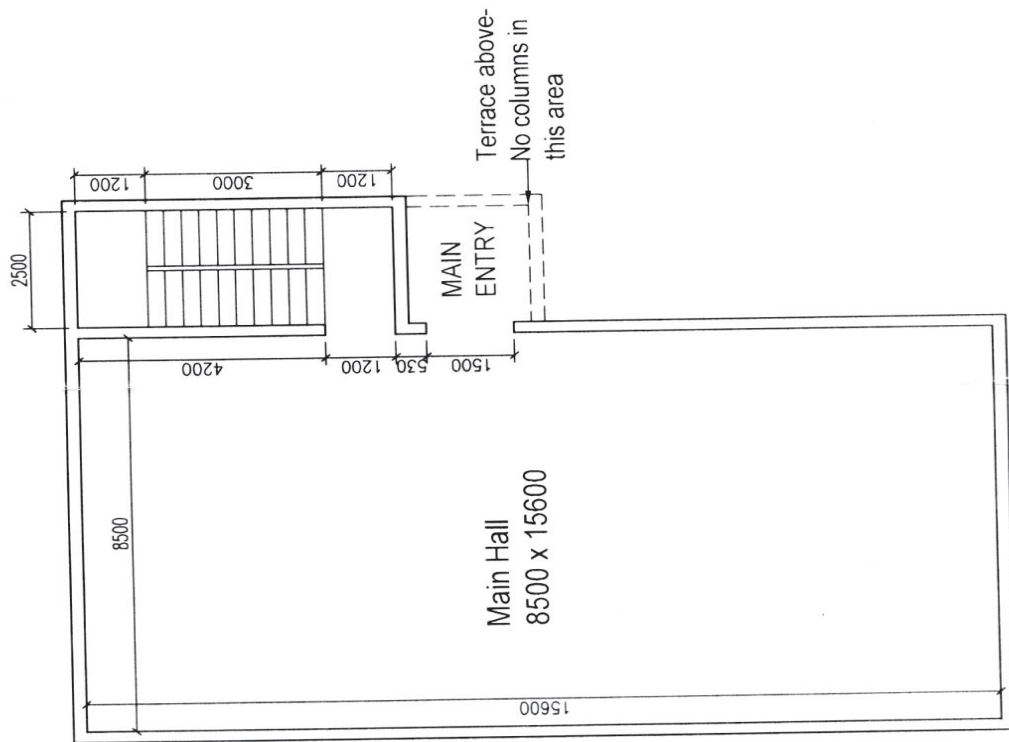
Q8) Calculate Design equivalent static wind forces on an R.C.C Multistory building having size 10m × 20m × 30m located in pune in a flat land average storey height is 3m and frames are spaced at 5m c/c in both directions. The building is oriented with smaller dimension facing the wind.

$v_b = 39\text{m/s}$, $k_1 = 1$, $k_3 = 1$, $k_4 = 1$, $k_d = 0.9$, $k_a = 0.9$, $k_c = 0.95$, $c_f = 1.35$. k_2 as per following table $k_2 = 0.91, 0.97, 1.01, 1.06$ at height of 10m, 15m, 20m, 30m

Calculate the Design Nodal Wind Load on all floors above the fifth floor Explain k_3 = Topography Factor.



FIRST FLOOR



GROUND FLOOR

3 3 3

Total No. of Questions : 4]

SEAT No. :

PE937

[Total No. of Pages : 2

[6587]-19302

T.Y.B. Arch.

BUILDING SERVICES - IV

(2019 Pattern) (Semester - VI) (3201950)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer to the two sections should be written in separate answer books.*
- 2) *Answer all questions.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) a) Explain types of Acoustical materials used for sound insulation in a building. **[15]**

OR

b) Explain Air borne sound and Structure borne sound and way of controlling air borne and structure borne with neat sketches. **[15]**

Q2) Write short notes on any FOUR of the following from. (Each 5 marks) **[20]**

- a) Explain properties of sound
- b) Acoustic Shadow
- c) Explain Methods of cutting of air-borne noise
- d) Defects of sound
- e) Explain Human hearing range
- f) Explain NRC and STC ratings

P.T.O.

SECTION - II

Q1) a) Explain with the help of neat sketches, water supply scheme in a high-rise building for firefighting purpose. **[15]**

OR

b) Explain with neat sketches sprinkler system used for firefighting purpose in a building. **[15]**

Q2) Write short notes on any FOUR of the following. (Each 5 marks) **[20]**

- a) Explain Fire alarm
- b) Explain Fire load
- c) Means of escape for Fire safety
- d) Static storage tank for fire fighting
- e) Types of fire extinguishers
- f) Bylaws for Firefighting while designing basement for parking



PE938

SEAT No. :

[Total No. of Pages : 3]

[6587]-19304

T.Y. B.Arch.

**ARCHITECTURAL DESIGN-V (Enlodge)
(2019 Pattern) (Semester - VI) (3201945)**

Time : 12 Hours (Day 1+Day 2 = 6 Hrs. each day)

[Max. Marks : 100]

Instructions to the candidates:

- 1) Design will be valued as a whole.*
- 2) Day-1 Submission of Single line Sketch of Site layout scale 1:100. This drawing will not be returned the next day to avoid major deviation in planning.*
- 3) Draw neat sketches where necessary.*
- 4) Assume and mention suitable data where necessary.*
- 5) Drawings should be clear and self-explanatory legible and readable showing graphics, text, dimensions.*
- 6) Assume suitable data if necessary.*

POLICE STATION AT BANER, PUNE

Today Pune is know as fast growing and developing city. To maintain, the peace and decorum in a city, and to enforce the law, prevent crime, provide emergency response, and provide support services Maharashtra Police Authority has proposed the Police station at outskirts growing region of Pune near **BANER**. Which would facilitate people to go to the police to report any cases or inform about any mishappenings in their area like theft, accident, fight, injury etc. While designing, sustainable design approach is needed.

Space requirement:

No	Description	Area in sqm
Public Entry Area		
1	Entry reception+Waiting area	40
2	Enquiry area	10
3	Complaint area (1station officer. + 2 relief officers+1 writer)	40
4	Public toilets for 5 men+5women	Sufficient

P.T.O.

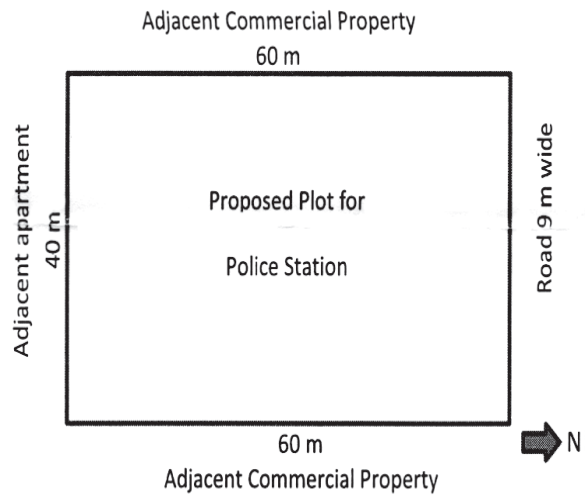
Administrative area

1	Accounts room (1 head+3 clerks+2assistants)	40
2	Senior Police officer cabin + writer + toilet + rest area	35
3	Law & order officer + writer	25
4	Administrative officer cabin + writer	30
5	Duty distribution officer	20
6	Record room	15
7	Public relation officer + writer	15
8	Crime Police Officer + writer	15
9	External Officer cabin+writer	25
10	Temporary prison cell-Women	25
11	Temporary prison cell-men	25
12	Temporary prison cell-Juveniles (Children victims)	15
13	Prison visitor area	15
14	Arms ammunitions room	20
15	Wireless room	20
16	Detention officer	15
17	Dispatch & postal room+officer + store	15
18	Lost & found properties room	15
19	Meeting room	40
20	Library	20

Staff area

1	Female staff changing room + lockers + resting area 10 nos. + toilets	30
2	Male staff changing room + lockers + resting area 10 nos. + toilets	30
3	Small kitchen + Pantry + staff tiffin room	20
	Total Carpet area	525
	Add Circulation and toilets + 15%	78
	Add Built up area + 40%	210
	Total Built up area	813

Note : • Parking for 4 Jeeps + 6 CARS + 15 wheelers
• Maximum height of structure should be less than 8m



Plot Layout

Site parameters-

- Plot size - 60 m X 40 m
- Set back from road (9.0 m front & 6.0 m from all sides
- Maximum Ground coverage 40% of plot area.
- Permissible FSI 1.00

Drawing requirements-

1. Site plan with roof plan (site features , drive ways , pathways, parking, services) 1:100
2. Site section 1:100
3. Floor plans with furniture (1:100)
4. All Floor plans with furniture (1:100)
5. Sections 2 nos.(toilet staircase) (1:100)
6. Elevations two nos. (1:100)
7. Skin section showing wall , projection details 1:20
8. Appropriate view to explain the



Total No. of Questions : 8]

SEAT No. :

PE939

[Total No. of Pages : 4

[6587]-19305

T. Y. B. Arch.

THEORY OF STRUCTURES - V
(2019 Pattern) (Semester - V) (3201938)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Question No. 1 and 5 are Compulsory in each Section.
- 2) Answer any two questions 2 to 4 in section - I and any two questions 6 to 8 in section - II.
- 3) The Plan given Below applies to questions in Both Sections.
- 4) Figures to the right indicate full marks.
- 5) Assume suitable data where necessary only.
- 6) Use M 25 Grade concrete and Fe 500 grade steel.
- 7) Every R.C.C Design should be accompanied by relevant Schedule and Reinforcement Sketch.
- 8) Use of non-programmable Calculators and Standard Steel Tables of Plastic Design Allowed.

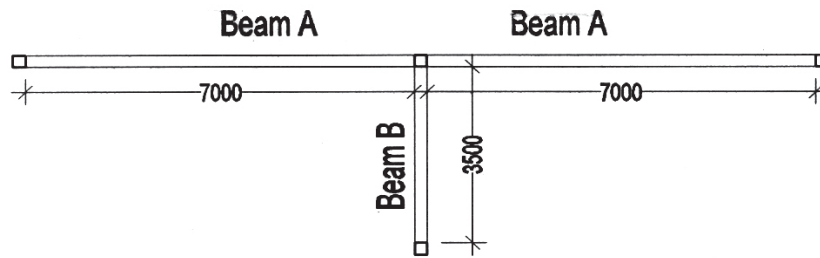


Figure 1.

SECTION - I

Q1) As shown in figure 1, a column in a building is abutted by 3 beams. Two beams of clear span 7.0 M carrying a load of 42 kN/M each in the same direction and one beam of 3.5M clear span carrying a load of 32kN/M. The Building is Parking + 4 Floors. Calculate the load on each Floor considering the same configuration exists at every floor; also design column on third floor using 1.5% steel and M25 grade concrete. Keep the size same and Design column on First floor. Make schedule and Draw sketch of reinforcement of both the columns. [13]

% Steel	M25	M30	M35
1	13.25Ag	15.23Ag	17.21Ag
1.5	14.875Ag	16.845Ag	18.815Ag
2	16.5Ag	18.46Ag	20.42Ag
2.5	18.125Ag	20.075Ag	22.025Ag
3	19.75Ag	21.69Ag	23.63Ag

P.T.O.

- Q2) a)** A Class Room of Size $12\text{M} \times 8\text{M}$ is to be provided with a slab supported on beams spanning across the 8M dimension of the room, two intermediate T beams and two end L beams. Design the End L Beams. Consider Slab Thickness of 140mm and Live Load as 4kN/M^2 . Floor to Floor Height is 3400mm . Take $d_o = \text{Clear span}/12$ or 650 whichever is smaller. Design for Flexure reinforcement only. (Consider N.A position as within flange). Refer Figure 2. [8]
- b)** Explain the Advantages and Disadvantages of a Flanged Beam. [3]

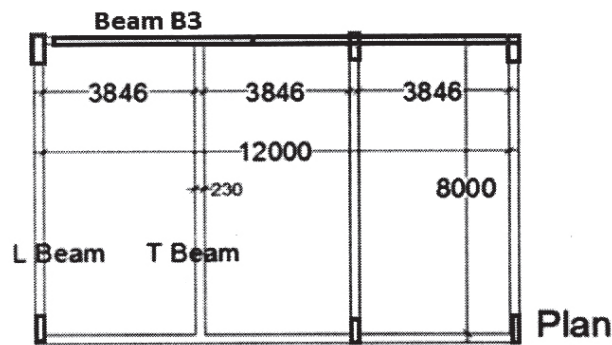


Figure-2

- Q3) a)** Design the Beam B3 shown in given figure 2. The Beam has a clear span of 7692mm and resting on 230 wide column. The Service Load on the Beam is 42kN/M . Restrict the Overall depth to 500mm . Design for flexure only. Consider 2 rows of 20mm bars in Tension. Refer the given table for f_{sc} (Stress in Steel in Compression). [8]

f_y in N/mm^2	d'/d_e			
	0.05	0.1	0.15	0.2
f_{sc} for $f_y = 415 \text{ N/mm}^2$	355 N/mm^2	353 N/mm^2	342 N/mm^2	329 N/mm^2
f_{sc} for $f_y = 500 \text{ N/mm}^2$	424 N/mm^2	412 N/mm^2	395 N/mm^2	370 N/mm^2

- b)** State the need and application of doubly reinforced beam. [3]
- Q4) a)** Write Short Notes on any two of the Following drawing sketches wherever necessary. [8]
- Raft Foundations - Types and Applications
 - Explain the Advantages and Disadvantages of Flat Slab Construction.
 - Explain the Advantages and Disadvantages of a Coffered Slab.
 - Explain the reasons for Eccentricity of Load on a Column.
- b)** Draw the BMD of a Combined Footing along Length and Width. [3]

SECTION - II

- Q5) a)** ISMB 450 was used as a Girder Section for a Simple Supported Effective Span of 10.0 m, carrying a service load of 20kN/m. It is to be welded with Flange Plates 200 mm $\times$ 12 mm on each side.
- i) Calculate the M_p of the Built Up Section,
 - ii) Calculate the extra load it can carry if the effective span is still 10.0 m,
 - iii) Calculate the extra effective distance it can span if the service load is still 20kN/m. The sectional properties of ISMB 450: $b_f = 150$ mm, $t_f = 17.4$, $h_1 = 379.2$ mm = d_w , $t_w = 9.4$ mm, $I_{zz} = 303908000$ mm⁴, $Z_p = 1533360$ mm³. **[10]**
- b) Explain the evolution of Stanchions from Plain I sections to Built-up I sections. **[3]**

OR

- a) Calculate the load taken by the Section ISHB 450 @ 859 N/m of Area 11114.33 mm² if it has flange plates of 300mm $\times$ 12mm welded on both sides. The height along ZZ direction is 9 m with both ends fixed. The height along YY directions is 7 m with both end fixed. I_{zz} of ISHB450 section = 392108000 mm⁴ and I_{yy} of ISHB450 section = 29852000 mm⁴ Design Compressive Stress for S.R of 40, 50, 60, and 70 is 198, 183, 168 and 152 N/mm² respectively. **[8]**
 - b) Explain the basic concept of a Portal Frame and Draw B.M.D of a Three Pin Portal Frame, its Application. Draw the detail of a Rigid joint between the R.C.C. Column and Foundation. **[5]**
- Q6) a)** An U.C.R Masonry wall is to be provided to retain Earth on its Vertical Face **[8]**
- Density of Retained Earth = 16kN/m³, Density of Masonary = 23kN/m³
Top Width of Wall = 1.2m, Take Bottom Width of wall = 0.5h
Height of Wall = 5.2m = h
Angle of Repose = 28°, Coefficient of Friction $\mu = 0.6$, S.B.C of Soil = 225kN/m²
Check the Stability of the wall with respect to Overturning and Sliding
- b) Write a Short Note on Gravity Retaining wall. **[3]**

Q7) a) List the Advantages of Pre- Stressed Constructions over conventional R.C.C Construction. [3]

b) A Pre- stressed beam of size 300×900 is simple supported on a span of 11M. It carries an udl of 36 kN/M over its entire span exclusive of its self-weight and a central point load of 28kN. It is pre-stressed by tendons supplying 2200 kN force which are placed at 300 mm from the bottom most fibre. Calculate the extreme fiber stresses at end span (support) and at mid-span span. [8]

Q8) Design the Isolated Pad Footing for a Column of Size 300×600 carrying a load of 1300kN and resting in a soil of S.B.C 240kN/m^2 . Check for Single Shear. Assume 0.25% Steel and Design Shear Stress as 0.36N/mm^2 for the assumed % of Steel. Do not Design or Check for Double Shear. [11]



Total No. of Questions : 3]

SEAT No. :

PE-940

[Total No. of Pages : 2

[6587]-19306

T.Y. B.Arch.

BUILDING CONSTRUCTION AND MATERIALS - V
(2019 Pattern) (Semester - V) (3201936)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to Section-I & Section-II should be written in two separate Answer sheets.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data if necessary.*

SECTION - I

Q1) An office space of size 8.0M × 4.0M is to be provided with Timber Partition dividing the area into two equal parts. Partition size is of length 4.0M × 3.0M high with door opening of 0.9M × 2.1M. The partition touches the false ceiling of the office space. The height from floor finish to bottom of finished slab is 3.5M & the false ceiling is 0.5M below the bottom of finished slab.

- a) Draw plan & section with construction detail of Timber partition with glass of size as per design to scale 1:10. **[10]**
- b) Draw elevation of partition indicating material & dimensions to scale 1:10 **[05]**
- c) Draw any two details to 1:5 for **[05]**
 - i) Function of ceiling & partition
 - ii) Framing & finishing material
 - iii) Fixing of glass to timber partition frame

OR

The office cabin of 4.5M × 3.5M is to be provided with proprietary system false ceiling with appropriate light over executive table.

- a) Draw reflected ceiling plan with cut plan showing framing system & light position of lighting to scale 1:10 **[10]**
- b) Draw section to scale of 1:10 to indicate hanging mechanism. **[5]**
- c) Draw details of panel fixing & light fixing to scale 1:5 **[5]**

P.T.O.

Q2) Answer the following (Any three) (Draw appropriate sketches) [15]

- a) Any five types of retaining wall
- b) Types of flat slab.
- c) Lap joint, tenon & mortise joint
- d) Basement internal tanking
- e) Joinery details of plywood cabinet.

SECTION - II

Q3) Answer the following (Any Seven) : [35]

- a) Short note on shallow & deep foundations with respect to basement construction.
- b) Pretension & posttension slab
- c) Waffle slab technique & its types
- d) Painting process for newly constructed smoothly plastered wall
- e) Flat slab - its advantages & disadvantages
- f) Polishing for new teak wood furniture.
- g) Difference between wood, veneer & laminates.
- h) Difference between paints & varnishes
- i) Different types as per density of Fiber boards & its use.
- j) Differentiate between engineered wood & laminate.



Total No. of Questions : 4]

SEAT No. :

PE-941

[Total No. of Pages : 2

[6587]-19307
T.Y.B. Arch.
BUILDING SERVICES - III
(2019 Pattern) (Semester - V) (3201941)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer books.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) All questions are compulsory.*
- 4) Figures to the right indicate full marks.*

SECTION - I

Q1) Explain in detail with sketches: **[15]**

- a) What is Natural ventilation? Explain in detail the different methods to achieve natural ventilation in the building with appropriate sketches.

OR

- b) Explain in detail the different systems used for mechanical ventilation with appropriate sketches.

Q2) Write short notes on any FOUR of the following: **[20]**

- a) Explain Roof Pond system
- b) Explain Centrifugal Fan with neat sketch
- c) Explain Factors Affecting Human Comfort
- d) Explain Evaporative Cooling with neat sketch
- e) Explain Sensible Heat and Latent Heat
- f) Explain Psychrometric Chart with neat sketch

P.T.O.

SECTION - II

Q3) Explain in detail with sketches : **[15]**

- a) Describe the different types of Air conditioning systems along with neat and appropriate sketches.

OR

- b) Explain Refrigeration cycle process, components with neat and appropriate sketches.

Q4) Write short notes on any FOUR of the following: **[20]**

- a) Explain Any two types of filters used in air-conditioning
- b) Explain Types of AC ducting Systems
- c) Explain Cooling Towers and Its Types
- d) Explain Central DX System with neat sketch
- e) Explain Air Handling Unit with neat sketch
- f) Explain Vrv Or Vrf Units In Air Conditioning



Total No. of Questions : 6]

SEAT No. :

PE-942

[Total No. of Pages : 3

[6587]-19401

Fourth Year B.Arch.

QUANTITY SURVEYING & SPECIFICATION WRITING - II
(2019 Pattern) (Semester - VIII) (4201965)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) All Questions are Compulsory.
- 2) Solve Section I and II in separate Answer Books.
- 3) Figure on Right Hand Side Shows the Maximum Marks for the Questions.
- 4) Assume Suitable Data where ever necessary.
- 5) Draw the required formats, Diagrams in the Answer sheet wherever necessary.
- 6) Use of Logarithmic Table, Electronic Scientific Calculators, Steel table is allowed.

SECTION - I

Q1) a) What is rate analysis? What are the factors affecting rate of any item?

[1 × 10 = 10]

OR

b) What is the importance of rate analysis and what are the essentials of rate analysis?

Q2) a) Prepare Rate Analysis for: (Any Two)

[2 × 5 = 10]

- i) Vitrified tile for toilet wall (Dado) with 15 mm thick backing mortar in C.M. 1:2
- ii) 115mm thick Flyash brick masonry in C.M. 1:6
- iii) Internal Neeru finish plaster 12-15mm thick for wall in C.M. 1:4 in river sand
- iv) Reinforced Cement Concrete (RCC) in Floor Beam in design mix proportion 1:1:2

Material Rates :

- I) Cement – Rs. 320/- per Bag
- II) Crush Sand – Rs. 1150/-per Cu.M.
- III) Stone Metal – Rs. 1050/- per Cu.M.
- IV) Fly Ash Brick – Rs. 10/- per No.
- V) River Sand – Rs. 3175/-per Cu.M.
- VI) Vitrified Tile – Rs. 750/- per Sq.M.
- VII) Sanla (Neeru) – Rs. 80/- per Bag.

P.T.O.

Labour Rates :

- A) Vitrified tile flooring – Rs. 900/- per Sq.M.
- B) 115mm thick Flyash Brick Masonary – Rs. 280/- Sq.M.
- C) Internal neeru finish wall plaster – Rs. 330/- per Sq.M.
- D) Concrete work in RCC floor beam – Rs. 3175/- per Cu.M.

b) Answer the Following (Any One) : **[1 × 5 = 5]**

- i) Kota stone flooring with 50mm thick sub base mortor in C.M. 1:3-210 Sq.M
- ii) 230mm thick BB Masonary in C.M. 1:6 – 120 Cu.M.

Q3) Answer the Following (Any Two) : **[2 × 5 = 10]**

- a) What are the factors affecting rate of any item?
- b) What is Unit Rate? Explain Direct & Indirect Cost?
- c) Write checklist for RCC Slab.
- d) What is Day Work, Task Work and Piece Work

SECTION - II

Q4) Workout Quantities of the Following Items from Fig-1 attached (Any Three) : **[3 × 5 = 15]**

- a) Principal Rafter for all Trusses.
- b) All Verticals with Kingpost from One Truss.
- c) All Struts (Slants) for One Truss.
- d) Purlins for Full Shed.
- e) Roof Sheeting for Full Shed.

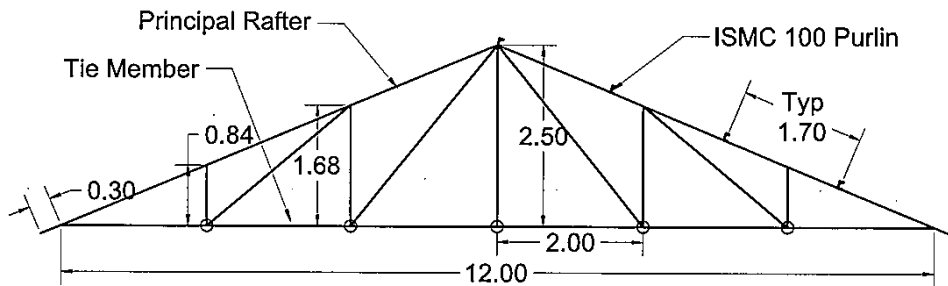
Q5) Explain in Detail the Specifications for (Any Two) : **[2 × 5 = 10]**

- a) Water Supply
- b) Acoustics
- c) Communication Systems
- d) HVAC
- e) Drainage System

Q6) Write Names of the Manufacturers of the Following (All Ten)

[1 × 10 = 10]

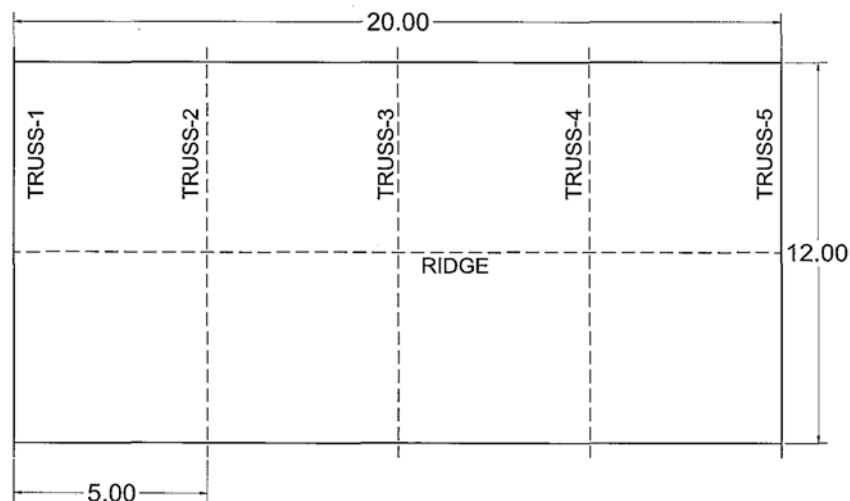
- | | |
|----------------------|------------------------|
| a) Plumbing Fixtures | b) Elevators |
| c) Escalators | d) Sanitary ware |
| e) Air Conditioners | f) Electrical Switches |
| g) Electrical Cables | h) Fire Extinguishers |
| i) Plumbing pipes | j) Light fixtures. |



SCHEMATIC ELEVATION OF TRUSS

WEIGHT PER RMT FOR STEEL MEMBERS :

- i) TIE MEMBER - 2 NO'S ANGLES -75×75×6 (6.80 Kg/M)
- ii) RAFTER MEMBER -2 NO'S ANGLES -75×75×6 (6.80 Kg/M)
- iii) KING POST & ALL VERTICLES ANGLES - 65×65×6 (5.93 Kg/M)
- iv) ALL STRUTS(SLANT) ANGLE -65×65×6 (5.93 Kg/M)
- v) PURLINS ISMC 100 (8.90 Kg/M)



**SCHEMATIC PLAN FOR FACTORY SHED
(FIG-1)**



Total No. of Questions : 8]

SEAT No. :

PE943

[Total No. of Pages : 2

[6587]-19402

Fourth Year B.Arch.

PROJECT MANAGEMENT

(2019 Pattern) (Semester - VIII) (4201966)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer to the two Sections are to be Written in Separate Answer Books.*
- 2) *Q No 1 is Compulsory Question in Section I and Q No 5 is compulsory Question in Section II.*
- 3) *Answer any Two Questions of Question no 2, 3 and 4 in Section I and any Two Questions of Question no 6,7 and 8 in Section II.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Explain Tradition project management, its benefits with examples. **[11]**

Q2) Write Short Notes on any 3. **[12]**

- a) Write short note on Policy - definition and examples.
- b) Explain Project, Program and Portfolio with examples.
- c) Explain need for Construction project management.
- d) Explain advantages of Modern project management.
- e) Importance of collaborative project management.

Q3) Answer any 2 questions (6 marks each). **[12]**

- a) Explain C.L.E.A.R goals.
- b) Explain how is feasibility study conducted? Give example.
- c) Explain the processes in project closing phase w.r.t construction project.
- d) State the importance of different phases of project in project life cycle.

P.T.O.

- Q4)** Answer any 2 questions. **[12]**
- a) What are benefits of Project Cost management?
 - b) What is QA, QC? Explain in brief.
 - c) Explain the concept of Integrated management in Construction management.

SECTION - II

- Q5)** Explain the system, application, advantages and dis-advantages of Unrestricted tender and Tender by Invitation. **[11]**

- Q6)** Write Short Notes on any 3. **[12]**
- a) Security deposit amount.
 - b) Write a short note on Negotiated deals.
 - c) Retention amount.
 - d) Virtual Completion certificate.
 - e) Explain Liquidated damages.

- Q7)** Answer any 3 of the Following. **[12]**
- a) What should be the frequency of site visits and what is to be observed and noted by the Architect during the visit?
 - b) Explain Physical resource management.
 - c) List various Risk factors in a project.
 - d) Explain how does an Architect Manage Verbal Instruction on Site.

- Q8)** Explain any 3 of the Following. **[12]**
- a) What are the factors affecting safety issues on construction site?
 - b) Explain application of Design management.
 - c) What are the challenges project managers face with Project Financials?
 - d) What are the skillsets a Facility manager should possess?



Total No. of Questions : 9]

SEAT No. :

PE944

[Total No. of Pages : 4

[6587]-19403

Fourth Year B. Arch.

QUANTITY SURVEYING & SPECIFICATION WRITING - I
(2019 Pattern) (Semester - VII) (4201958)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Solve section - I and section - II in separate answer books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Assume suitable data wherever necessary.*
- 5) *Draw required formats, diagrams wherever necessary.*
- 6) *Use of scientific calculators, steel tables is allowed.*

SECTION - I

Q1) Calculate the quantities of the following from the Figure 1 attached : (Any two) **[10]**

- a) Excavation
- b) PCC below Masonry Wall
- c) 230 thk. Masonry Wall

Q2) Calculate the quantities of the following from the Figure 2 attached : (Any Three) **[15]**

- a) Excavation for footings
- b) RCC Beams
- c) RCC Slab
- d) Internal Plaster
- e) Doors & Windows

Q3) What is the purpose of estimating and what are the accompaniments of an estimate? **[5]**

Q4) Write the Units of the following Items (Any Five) : **[5]**

- a) RCC Slab
- b) Half Brick Wall
- c) Aluminium Windows
- d) Electrical Switches
- e) Underground Water Storage Tank
- f) Drainage Chamber
- g) Gully Trap

P.T.O.

SECTION - II

Q5) What are specifications? What is the need and importance of specification writing? [5]

Q6) What is the relation of specifications with working drawing bill of quantities and schedule of rates? [5]

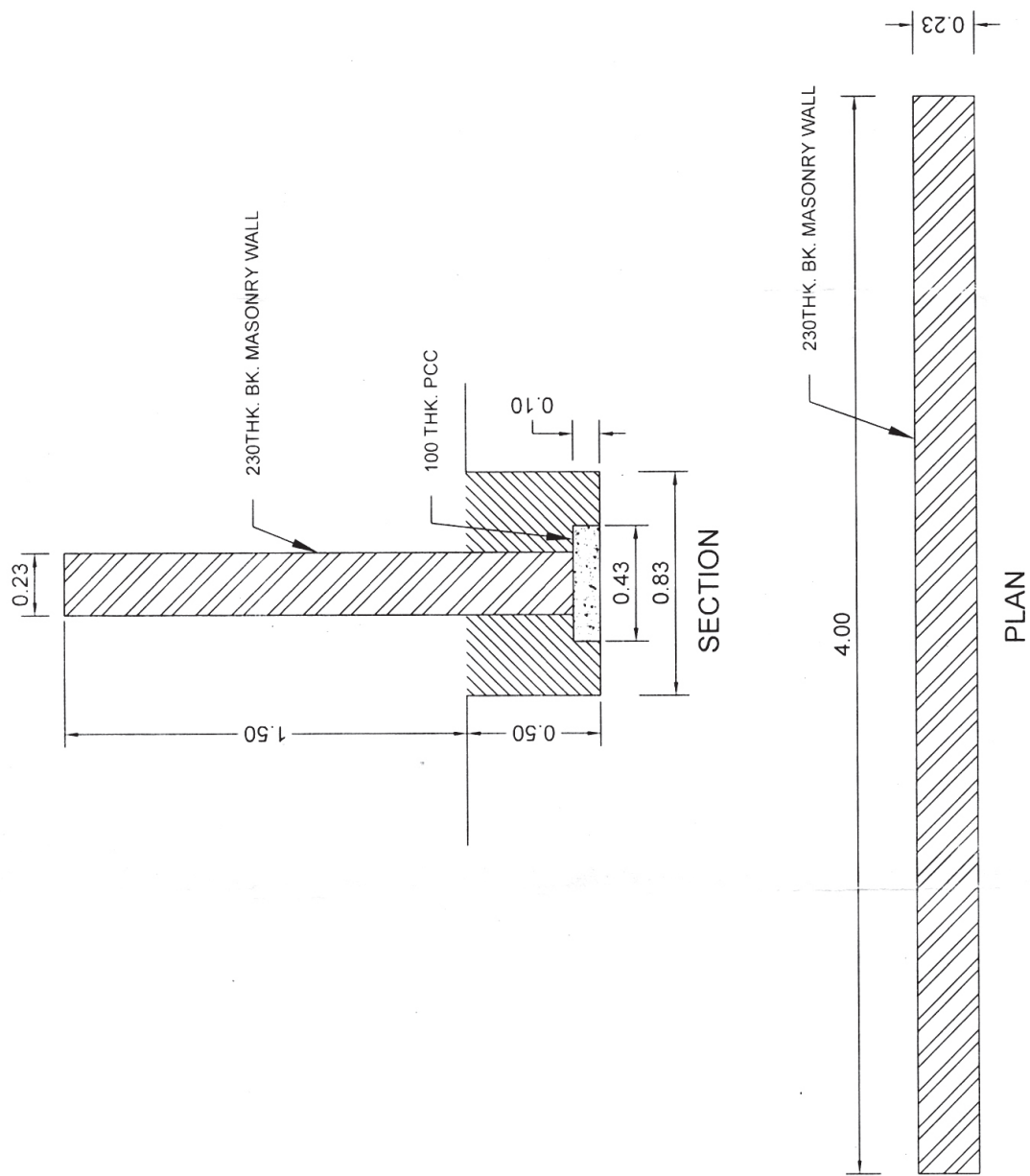
Q7) Write the details specifications for (Any Three) : [15]

- a) RCC beam
- b) Excavation
- c) 230 thick brick masonry
- d) Half brick wall
- e) RCC slab

Q8) What is the importance of manufacturers guides and how can they be effectively used for specification writing? [5]

Q9) Write the manufacturers for the following : [5]

- a) Cement
- b) Reinforcement Steel
- c) Aluminium Sections
- d) Vitrified Tiles
- e) AAC blocks



SECTION I : QUESTION NO. 1

D1 : 1.50M x 2.45M
W1 : 1.50M x 1.50M
W2 : 0.60M x 0.90M

RCC FOOTING 1200x1800

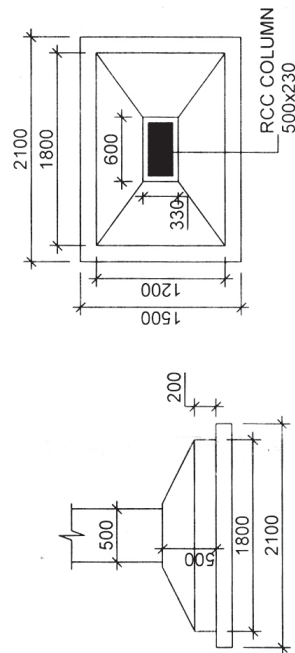
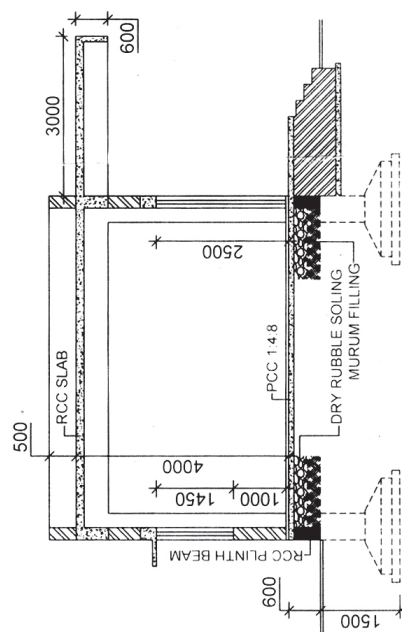
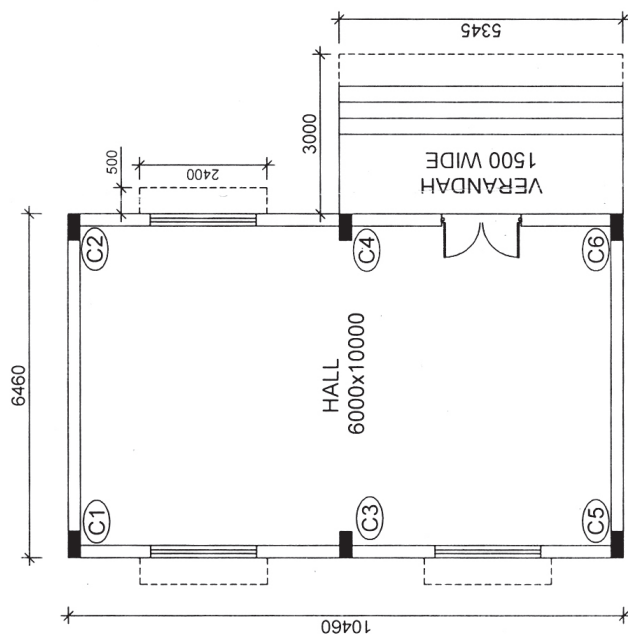
d : 200

RCC COLUMN : 230 x 500

RCC FLOOR BEAM : 230 x 600

SOLING : 250

EXTERNAL SAND FACED PLASTER : 15MM. THK.



Total No. of Questions : 8]

SEAT No. :

PE-945

[Total No. of Pages : 2

[6587]-19404
F.Y. B.Arch.
PROFESSIONAL PRACTICE
(2019 Pattern) (Semester - VII) (4201959)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answers to the two Sections I & II must be written on SEPARATE Answer Books.*
- 2) *Answers to Q.1 from Section-I, and Q.5 from Section - II are COMPULSORY.*
- 3) *Attempt ANY TWO out of the remaining Questions in EACH Section.*
- 4) *Figures to the right of each Question indicate Full Marks.*

SECTION - I

Compulsory Question:

Q1) What is the Council of Architecture? When and why was it established? Who are the members of the Council of Architecture? **[11]**

Answer any TWO of the following:

Q2) Write a note on The Indian Institute of Architects and its Role and Activities as an Institution of Architects. **[12]**

Q3) Write a note on the Types of Architectural Competitions. Why are Architectural Competitions important for Architects? **[12]**

Q4) WHAT is the ROLE of a professional architect? Write a comprehensive note on Architects Duties, Liabilities, Conduct and Image in Society. **[12]**

P.T.O.

SECTION - II

Compulsory Question:

Q5) Write a note on Comprehensive Architectural Services and scale of fees recommended by the Council of Architecture for professional Architects [11]

Answer ANY TWO of the following:

Q6) What is site supervision by Architects? Why is supervision important? What does an Architect DO in the periodic visit to a construction site?. [12]

Q7) Define the Difference between the following (4 marks each): [12]

- i) Mediation and Arbitration
- ii) Proprietary and Partnership Practice
- iii) Current Account and Savings Accounts

Q8) State the Full Form and 2 salient Feature of each of the following organization [12]

- i) IIA
- ii) ISOLA
- iii) ITPI
- iv) IID

