

Total No. of Questions : 4]

SEAT No. :

PB4057

[Total No. of Pages : 2

[6266]-501

F.Y.B.Arch.

BUILDING CONSTRUCTION AND MATERIALS - I

(2019 Pattern) (Semester - I) (1201902)

Time : 2½ Hours]

[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 indicate full marks*
- 4) *Assume suitable data if necessary.*
- 5) *Answer all questions from Section-I on Drawing Sheets and from Section-II in Answer Book only.*

SECTION - I

Q1) Draw any one of the following. **[20]**

Draw details of a 350 mm thick square rubble masonry compound wall as follows-

- a) Plan and Elevation of stopped end of square rubble masonry compound wall of height 1500mm at scale 1:10.
- b) Cross section from foundation to coping at scale 1:10. Assume rubble masonry foundation of depth 900mm.

OR

Draw the following for the stopped end of 1½ brick thick English bond with mortar thickness.

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

Q2) Draw neat and labeled sketches ONLY for the following: (Any three) **[15]**

- a) Load transfer diagram from roof to foundation of G+1 load bearing structure.
- b) Construction tools with their names. (Any five)
- c) Types of coping with nomenclature. (Any three)
- d) Sketch of semicircular arch showing its components.
- e) Types of pointing with nomenclature. (Any five)

P.T.O.

SECTION - II

Q3) Answer any two.

[20]

- a) Elaborate advantages and limitations of concrete blocks? Draw any two types of concrete blocks.
- b) What is strip foundation? Explain plinth formation with a sketch.
- c) Explain the process of plastering. What are the different types of plasters?
- d) What is mortar? Mention different materials used in mortar. Explain its use in building construction.

Q4) Answer any three of the following.

[15]

- a) What is Stabilization process? Explain Soil stabilized earth blocks.
- b) Write a note on classification of rocks with stating examples.
- c) Explain with sketches different types of lintels.
- d) Explain with necessary sketches any five building elements.
- e) List qualities of bamboo as a construction material.



Total No. of Questions : 8]

SEAT No. :

PB-4058

[Total No. of Pages : 3

[6266]-502

F.Y. B.Arch.

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

Time : 2½ Hours]

[Max. Marks : 70

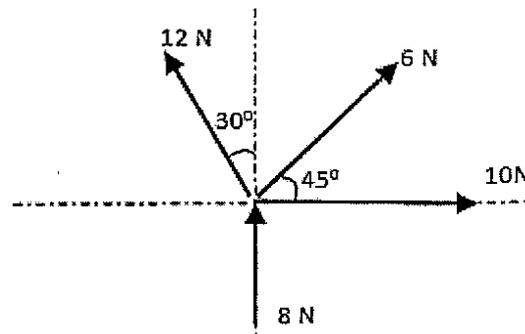
Instructions to the candidates:

- 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

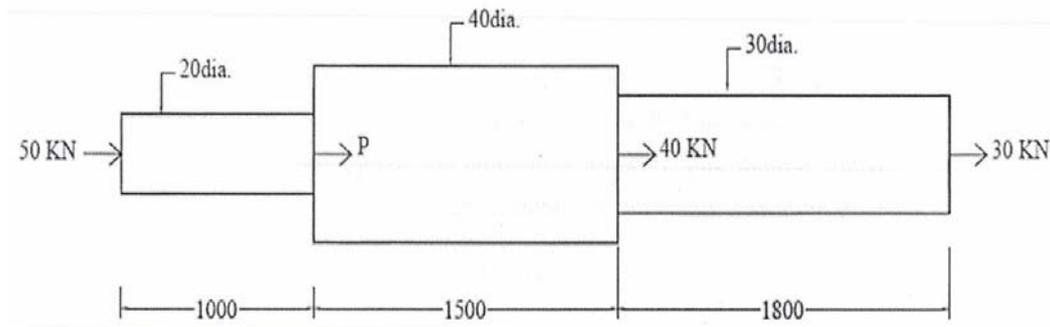
- a) i) State Law of Parallelogram of forces with sketch and formula. [3]
ii) Define Moment of a force and write its characteristics. [3]
- b) Find Resultant Force both in Magnitude and Direction for a given system [7]



- Q2) a) Explain modulus of elasticity and yield stress of ductile material in stress-strain curve. [3]
- b) A circular R.C.C. column of 300 mm diameter is reinforced with 8 no. of 20mm diameter steel bars. If the load carried by column is 1200kN. Calculate the stresses in each material. Modulus of elasticity for steel and concrete are $E_s = 2 \times 10^5 \text{ N/mm}^2$, $E_{con} = 0.25 \times 10^5 \text{ N/mm}^2$. [8]

P.T.O.

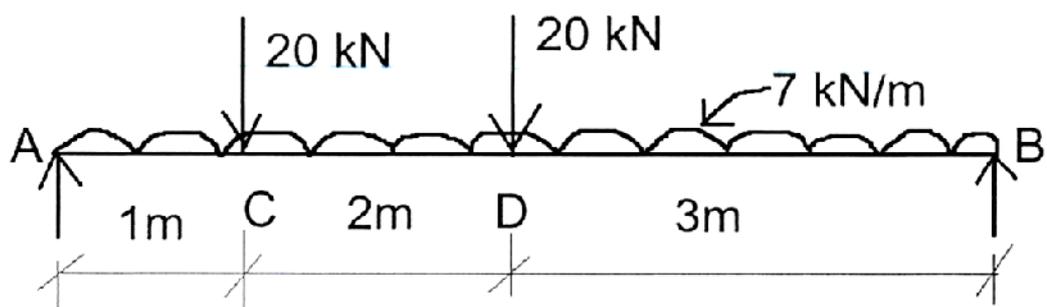
- Q3) a)** Write the Formulae for the relationship between the various Moduli. [4]
- b)** A Steel bar of square sections as shown is subjected to axial load along its length and it is in equilibrium. If $E = 2 \times 10^5 \text{ N/mm}^2$ [7]
- Find P in magnitude for equilibrium
 - Find stresses in each part of the bar.



- Q4) a)** Write an advantages and dis-advantages of Load Bearing Structures. [4]
- b)** Explain the Method of Load Transfer in Load Bearing Structures. [4]
- c)** Guidelines (any three) to improve Seismic Resistance of Load Bearing structures. [3]

SECTION - II

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



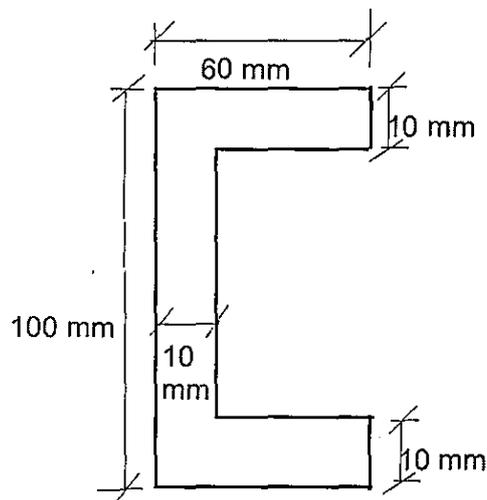
- Findings reactions [3]
 - Shear force diagram with point of contrashear [4]
 - Bending moment diagram [3]
 - Maximum bending moment [1]
- b)** Write the sign conventions of Bending moment. [2]

Q6) a) Draw the following beams and write the static degree of indeterminacy of the following [4]

- i) A fixed beam
- ii) Simply supported beam

b) Find the support reaction of Simple supported R.C.C. beam of 230×350 mm, carrying the load of brick wall of 230 mm thick and 2.7 m height above it. Centre to centre length of beam is 4m. [7]

Q7) Find centre of gravity at X and Y co-ordinate with respect to origin. Also find moment of inertia about Centroidal XX and YY axis for the lamina shown in figure. [11]



Q8) a) Explain : i) Overhanging beam ii) roller support iii) Dead load [3]

b) Explain the following : [4]

- i) Radius of gyration
- ii) Define moment of Inertia with unit

c) Draw S.F.D and B.M.D of Simply supported beam having uniformly distributed load over entire span. [4]



Total No. of Questions : 4]

SEAT No. :

PB-4059

[Total No. of Pages : 2

[6266]-503

F.Y. B.Arch.

BUILDING CONSTRUCTION AND MATERIALS- II)

(2019 Pattern) (Semester - II) (1201910)

Time : 2½ Hours]

[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 indicate full marks.*
- 4) Assume suitable data if necessary.*
- 5) Answer all questions from Section-I on Drawing Sheets and from Section-II in Answer Book only*

SECTION - I

Q1) Draw any one of the following:

[20]

- a) Draw a timber paneled door for opening size 1200mm × 2100 mm.
 - i) Draw a plan, elevation, section to scale 1: 10
 - ii) Give any one door joinery detail to appropriate scale.

OR

- b) Design a suitable timber roofing system for a room of size 6 m × 14 m.
 - i) Draw a key plan at 1:100 and section at 1:20 scale.
 - ii) Draw any two timber joinery details in roof construction to appropriate scale.

Q2) Draw neat labeled sketches ONLY for the following: (any 3)

[15]

- a) Roofing tiles and roofing sheets fixing detail.
- b) Timber casement window.
- c) Tools used in Carpentry work
- d) Components of Staircase with terminology
- e) Any 3 carpentry tools

P.T.O.

SECTION - II

Q3) Answer any two with necessary sketches [20]

- a) Earthquake resistant measures used in load bearing construction.
- b) Explain single floor timber construction with relevant sketches.
- c) Explain with sketches importance of Reinforced masonry and its types.

Q4) Answer any three of the following with necessary sketches [15]

- a) Difference between vault and Dome.
- b) Write note on Timber as construction material.
- c) Explain load distribution and forces in roof truss with sketches.
- d) Difference between Timber partition and paneling.
- e) Explain with sketch, earthquake terminologies- focus, epicenter and waves.



Total No. of Questions : 8]

SEAT No. :

PB-4060

[Total No. of Pages : 3

[6266]-504
F.Y. B.Arch.
THEORY OF STRUCTURES - II
(2019 Pattern) (Semester - II) (1201912)

Time : 2½ Hours]

[Max. Marks : 70

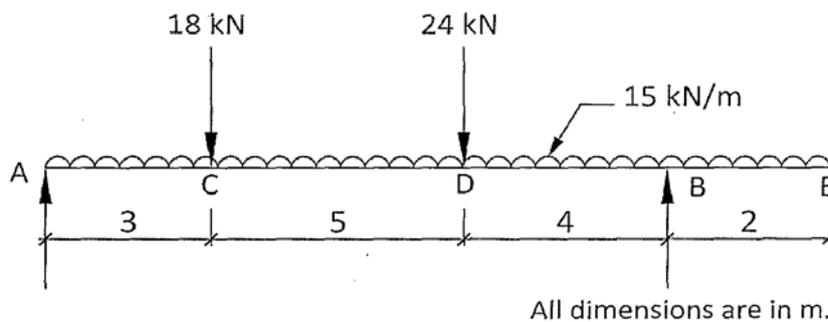
Instructions to the candidates :

- 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) a)** Write any four assumptions of Theory of simple bending. **[4]**
- b) A simply supported beam 230×500 in cross section is subjected to a load of 21 kN/m over the entire span of 4.7 m. It also is subjected to a central point load of 25 kN. Determine, **[7]**
- i) Maximum compressive and tensile bending stress.
 - ii) Bending stress at a layer 100mm above the neutral axis.
- c) Write down the formula for Modulus of section of a rectangular section, along X - X axis. **[2]**

- Q2)** Draw SFD & BMD for a given beam as shown in fig. Show the point of contra-shear & contra-flexure. **[11]**

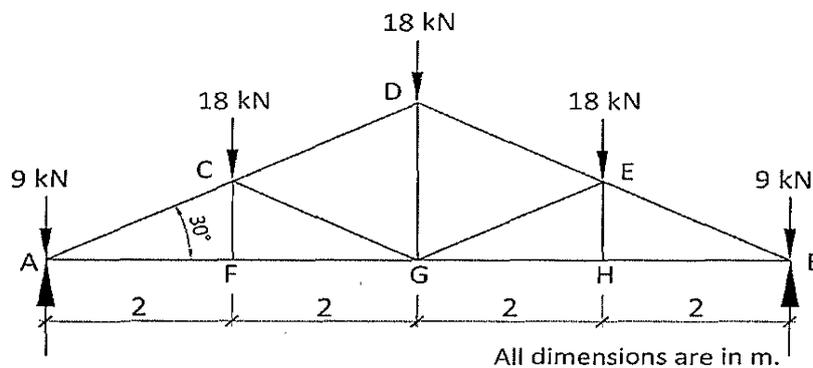


P.T.O.

Q3) a) A simply supported beam 230×600 in cross section is subjected to a load of 25kN/m over the entire span of 6.5m and a central point load of 35kN . Determine maximum shear stress and draw the shear stress diagram. [7]

b) Sketch the conceptual shear stress diagrams of a typical T & I section. Also show the location of maximum magnitude of shear stress. [4]

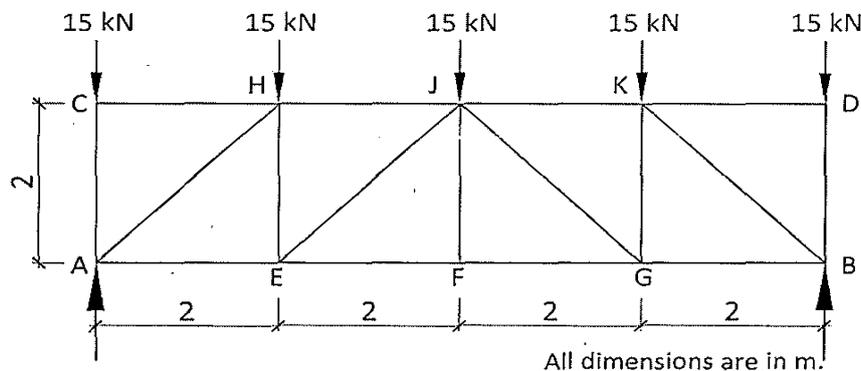
Q4) a) For the truss shown below, calculate the forces in members AC, AF, CF & FG. Tabulate the end results. [7]



b) Define an imperfect frame? Explain giving example. [3]

OR

b) W.r.t. the frame shown below, determine forces in magnitude & type in the members EJ, EF, HE & HJ. Tabulate the end results. [7]



SECTION - II

Q5) a) Explain with sketches, the end conditions of a column with their respective effective heights. [4]

OR

b) Explain any 4 assumptions of Euler's theory. [4]

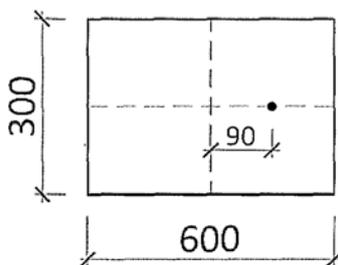
c) A column 300×600 in cross section is 3.80 m high and fixed at both ends. Determine Crippling load of the column. Take E value as 0.2×10^5 N/mm². [7]

d) Explain long & short columns with their failure tendencies. [2]

Q6) a) Show the deflection curve of a simply supported beam subjected to a central point load. Also write the formulae for maximum slope and deflection. [4]

b) A simply supported beam 230×450 in cross section is subjected to a load of 20 kN/m over the entire span of 6m. and a central point load of 25 kN. Determine maximum deflection only. Take E value as 0.15×10^5 N/mn². [7]

Q7) Determine stresses at the corners of the column subjected to an eccentric load of 1000 kN, as shown below. Sketch the stress diagram. [11]



Q8) a) Explain with sketches the concept of core of a section of a rectangular column. [4]

b) A hollow steel column with outer diameter 250 mm & thickness 5 mm is 6.5 m high, with one end fixed and the other hinged. Check whether the column is safe to take a load of 2250 kN, if the E value & crushing stress for steel are 2×10^5 N/mm² and 325 N/mm² respectively. [7]



Total No. of Questions : 4]

SEAT No. :

PB-4061

[Total No. of Pages : 3

[6266]-505

S.Y. B.Arch.

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

Time : 2½ Hours]

[Max. Marks : 70

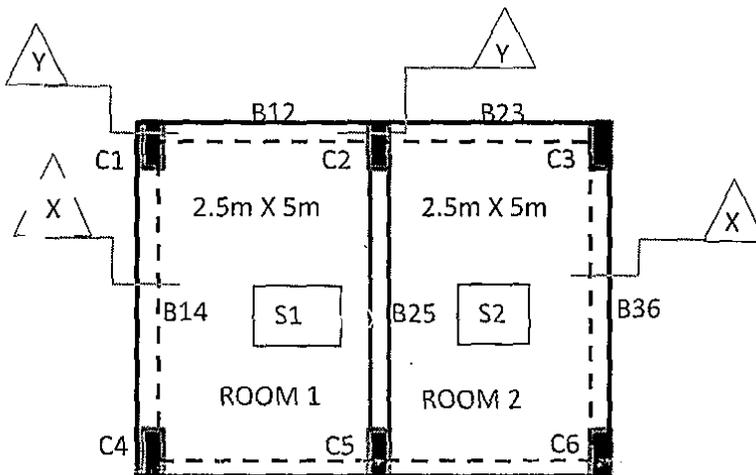
Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Answer to Section I to be drawn 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 in brackets on right of each question 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 : C1, C2, C3 – (230×450)
B12, B23 – (230×450)
B14, B25 – (230×600)



- a) Draw Section X-X, showing reinforcement details. [10]
- b) Draw Beam B12 Longitudinal Section Y-Y showing reinforcement details. [5]

P.T.O.

- c) Draw cross sections at Support and at Mid-span for the beam B12 above. [5]

OR

A plinth needs to be constructed for a Security office of size $3\text{m} \times 3\text{m}$ in RCC frame structure. The Office needs to have a 1.2 m wide open platform on front side. Considering plinth level 350mm 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 across open front platform showing various elements. [10]

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

- b) Draw a cross section through RCC Trapezoidal Footing showing reinforcement.
- b) Draw a junction of RCC Beam fixed to RCC column.
- c) Draw cross sectional detail at Window sill level showing provision made for Two-track Alluminium Sliding Window.
- d) Draw Eccentric RCC footing and state its application.
- e) What is Cover block? Explain with sketches its use while casting any two RCC members.

SECTION - II

Q3) Answer **any two** with the help of neat sketches. [20]

- a) Explain steps involved in laying White Marble floor for a Living room of size $(3.15 \times 4.5\text{m})$
- b) Explain different types of soils found in India and the type of foundations decided for each case.
- c) Explain the characteristics of good quality concrete.
- d) Explain how Steel is important for RCC construction.

Q4) Write in short any three of the following :

[15]

- a) Effects due to dampness in the building.
- b) Explain the slump test for testing the workability of concrete. Suggest the solution if the test result fails.
- c) Raft foundation.
- d) Formwork in RCC.
- e) Safe bearing capacity of soil.



Total No. of Questions : 8]

SEAT No. :

PB-4062

[Total No. of Pages : 3

[6266]-506

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 Q6, 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) Use of non-programmable Calculators and Standard Steel Tables of Plastic Design Allowed.*

SECTION - I

Q1) A room of institutional building having clear size 7.2 m × 3.4 m has to be covered with RCC simply supported slab resting on two beams having 230mm width and 7.2 m length. Consider Live Load = 4 kN/m² and Floor Finish = 1.50 kN/m². Use 10 mm diameter bars as main steel, 8 mm diameter as distribution steel. Write the answer in the form of schedule. Do not draw RCC details. **[11]**

Q2) A fixed beam of length 7.5 m, carrying a UDL of 12 kN/m over its entire span. It is also carrying a central point load of 20 kN. Find support reactions and draw shear force and bending moment diagram. **[12]**

Q3) Design a simply supported RCC beam of length of 6 m. The beam is supporting slab load of 3.75 kN/m and wall load of 8 kN/m. Calculate the self weight of beam and design the beam for all the loads mentioned. For flexure use 20mm dia bars and for shear use 8 mm dia 2 legged stirrups. Width of beam is 230 mm. Consider Wall thickness of 230 mm. **[12]**

P.T.O.

Table 19 Design Shear Strength of Concrete, τ_e , N/mm²
 (Clauses 40.2.1, 40.2.2, 40.3, 40.4, 40.5.3, 41.3.2, 41.3.3 and 41.4.3)

$100 \frac{A_0}{hd}$	Concrete Grade				
	M15	M20	M25	M30	M35
(1)	(2)	(3)	(4)	(5)	(6)
≤ 0.15	0.28	0.28	0.29	0.29	0.29
0.25	0.35	0.36	0.36	0.37	0.37
0.50	0.46	0.48	0.49	0.50	0.50
0.75	0.54	0.56	0.57	0.59	0.59
1.00	0.60	0.62	0.64	0.66	0.67
1.25	0.64	0.67	0.70	0.71	0.73
1.50	0.68	0.72	0.74	0.76	0.78
1.75	0.71	0.75	0.78	0.80	0.82
2.00	0.71	0.79	0.82	0.84	0.86

Q4) Answer any 3 of the following : **[12]**

- a) Draw the B.M Diagram for a 3 equal span continuous Beam Showing Max Values of Positive and Negative B.M at Mid Span and over Supports.
- b) Write a short note on seismic load.
- c) Explain the function on longitudinal reinforcement in column.
- d) Explain the disadvantages of timber as a material.

SECTION - II

Q5) What is the load taken by a circular column of 500 diameter reinforced with 6 No 16 mm bars. Design the links and make the schedule and draw a sketch of reinforcement details. **[11]**

Q6) A room of size $8\text{m} \times 3\text{m}$ with 230 thick walls on all four sides is to be provided with a loft made of Block Boards 50mm thick to be supported on timber joists 3 in number along the shorter span. The Block Boards are to be finished with 14mm thick timber flooring slats. Design the middle Timber Beam Considering Indian Oak as the type of Timber and Live Load for an Office Building. Let $d = 3b$ where d = depth of the beam, b = width of the beam. Indian Oak has permissible bending stress 12.16 N/mm^2 , Modulus of elasticity $12.26 \times 10^3 \text{ N/m}^2$ density 8.48 kN/m^3 , permissible shear stress 1.67 N/mm^2 . and permissible deflection is $L/240$. [12]

Q7) For a room having size $6.4 \text{ m} \times 4 \text{ m}$, RCC simply supported slab has to be designed using limit state method. Consider load acting on slab as 10 kN/m^2 including dead load, live load and floor finish. Slab is resting on 230 mm wide beams at four edges. No need for schedule or sketch. (Use 10 mm dia steel bars as main steel and 8 mm dia for distribution) [12]

Q8) Answer any three of the following : [12]

- a) State the reason why in a compression member like column, steel is added when concrete is itself good in Compression.
- b) Explain any three structural properties of timber
- c) Write a short note on advantages and disadvantages of manufactured sand.
- d) Draw and explain different types of Slump.



Total No. of Questions : 4]

SEAT No. :

PB-4063

[Total No. of Pages : 2

[6266]-507
S.Y. 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) *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) Determine the UGWT and OHT tank size for a residential building with 20 flats of 2BHK each. Assume water consumption of 135liters/person/day. Draw with neat labelled sketches of the UGWT & OHWT for the calculated capacity. **[15]**

OR

- b) Explain the following water distribution systems with advantages and disadvantages along with sketches **[15]**
- i) Dead- End method
 - ii) Grid Iron method
 - iii) Radial system

Q2) Write Short notes with neat labelled sketches wherever necessary (ANY FOUR) **[20]**

- a) Sources of water.
- b) Differentiate between Continuous & Intermittent water supply systems.
- c) P,Q and S traps
- d) Any two types of pumps
- e) Exhaust fans and its use
- f) Downfeed system for hot water supply

P.T.O.

SECTION - II

Q3) a) Explain Septic tank, its working and uses in detail. Draw a neat labeled diagrams showing plan and section of septic tank. **[15]**

OR

b) Explain a Sewage Treatment plant and its working. Explain with the help of diagram. **[15]**

Q4) Write Short notes with neat labelled sketches wherever necessary (ANY FOUR) **[20]**

- a) Differentiate between centralized and decentralized hot water supply system.
- b) One pipe and Two pipe plumbing systems
- c) Anyone one type of Bio gas plant
- d) Catch basin and its uses
- e) Types of Pipes used in water supply
- f) Decentralized Wastewater Treatment (DWWT)



Total No. of Questions : 4]

SEAT No. :

PB4064

[Total No. of Pages : 2

[6266]-508

S.Y. B.Architecture

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) *Answers to the two sections should be written in separate answer books.*
- 3) *Answer to section - I to be drawn on drawing sheet only.*
- 4) *Answer to section - II to be written on answer sheet only.*
- 5) *Neat diagrams must be drawn wherever necessary.*
- 6) *Figures to the right indicate full marks.*
- 7) *Assume suitable data if necessary.*

SECTION - I

Q1) A dog leg RCC staircase is to be designed for residence from ground floor to first floor. Draft the following details. **[20]**

- a) Draw plan of the staircase showing details reinforcement with all details. Scale 1:10.
- b) Draw section XX' cutting through longer side of staircase showing reinforcement details of main steel & distribution steel. Scale 1:10.
- c) Draw Isometric view showing reinforcement details.

(Note : floor to floor ht. 3000mm | Main steel $\phi = 12\text{mm}$ @ 150 c/c | Distribution steel $\phi = 8\text{ mm}$ @ 150 c/c | Waist slab thickness = 150 to 200mm | Ld = 50d / scale : 1:100, consider appropriate tread & riser)

OR

A room of size 5 m \times 6 m with a height of 6 m need to have a 4m sliding folding door at longer side. What is the suitable material in which you can make the door? **[20]**

- a) Draw plan showing track, door shutters
- b) Draw section & elevation
- c) Show fixing detail of the door with the floor, lintel/beam & walls
- d) Draw isometric view of any one joinery.

P.T.O.

Q2) Draw Sketches for following : (any Three) [15]

- a) What do you understand by “Bay Window” with sketches?
- b) Explain with sketch what do you understand by the term “RMC”.
- c) Explain any 3 types of Concrete Admixture and their Uses.
- d) What do you understand by Escalator explain with proper sectional sketch.

SECTION - II

Q3) Answer the following: (any Two) [20]

- a) Explain the manufacture process of glass.
- b) What are the properties of plastic and where all can it be used as a building material.
- c) What are the different methods or treatments of damp- & water-proofing, explain any one in detail.
- d) What is the Difference between Adhesives and Sealants?

Q4) Write short notes: (any three) [15]

- a) Types of Glass used in the Architectural Field explain any 3 in details.
- b) Explain in detail what do you understand by Ferrocement.
- c) Explain any 3 uses of Plastics in Different Aspects of the Construction Industry.
- d) Explain in details what do you understand by Light-weight Concrete.

x x x

Q2) Design Doglegged staircase for the given data: [13]

- a) Building is an office building.
- b) 9 Treads in each Flight of 280 each and Floor to Floor Height 3400mm.
- c) The width of Landing = Width of Flight = 1500mm.
- d) The Staircase is supported of 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 12mm 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.

Q3) Design a Steel Girder using ISMB for a Clear Span of 8m, UDL (service load) of 20 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]

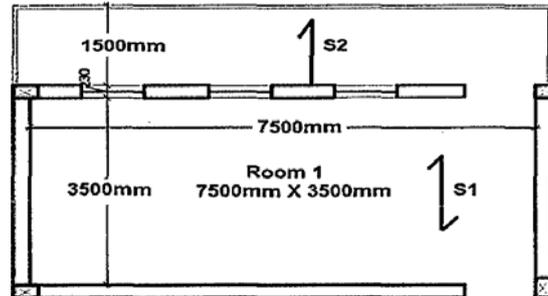
Q4) Answer any 3 of the Following : [13]

- a) Define Balance Section, Under Reinforced Section and Over-Reinforced Sections.
- b) A Beam in R.C.C. is of Size $230 \text{ mm} \times 500 \text{ mm}$ and is Reinforced with 3 no 20 mm bars in one row. Find its Moment of Resistance.
- c) Draw RCC details of a section of three equal span continuous slab.
- d) Explain the Advantages of Steel Baring Structure

SECTION - II

Q5) Design rectangular RCC Cantilever Beam of clear overhang length 2.8 m. This Beam is subjected to working loads of 15 kN/m and fixed to 230mm support at one end. Consider width of beam 230 mm. Add self weight and design the beams for Flexure. **Do Not Design for Shear. [9]**

Q6) Design R.C.C. overhanging slab for the following sketch and details below. Consider Live Load = 4kN/m^2 and Floor Finish = 2.5 kN/m^2 on a water Proofing of Brick Bat Coba 75mm Thick. Use 10mm diameter bars as main steel, clear cover of 25mm. Draw reinforcement details for the same. **No need to make a Schedule.** [13]



Q7) Design a steel stanchion using ISHB sections for a compressive service load of 700 kN. Height of column is 5.5 m with one end hinged and other end fixed. Assume the design compressive stress (f_{cd}) as 120 N/mm^2 to begin with. [13]

Q8) Answer any three of the Following : [13]

- Explain the Classification of Section used in Steel Structure.
- Explain the Different Loads acting on a Steel Structure as per IS 800 2007.
- Explain the term Characteristic Loads and Design Loads.
- Define plastic Section Modulus and plastic Moment.



Total No. of Questions : 4]

SEAT No. :

PB-4066

[Total No. of Pages : 2

[6266]-510
S.Y. B.Architecture
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 necessary.*

SECTION - I

Q1) Explain Electrical Supply system to a building and further to individual tenements. Explain each of its components with sketches **[20]**

OR

Explain Lumen method of Calculation in context to its formula, An office has a length of 20M × 10m height = 3m. ceiling to desk height is 2m. The area to be illuminated to a general level of 250 lux using twin lamp of 40-watt CFL luminaires with SHR 1.25. Each lamp has initial output of 80 lumen per watt. MF = 0.63 AND U. F = 0.69. Calculate the number of light fixtures for indoor lighting.

Q2) Answer the following (ANY THREE) **[15]**

- a) Explain Refuse Chutes components with sketches.
- b) Explain disability glare and discomfort glare and its effects.
- c) Explain types of artificial lighting as per its dispersment.
- d) Explain Networking systems LAN-WAN-MAN.

P.T.O.

SECTION - II

Q3) Answer the following (ANY Two) : **[20]**

- a) Explain Daylighting controls with sketches.
- b) Explain any 4 methods of solid waste disposal with sketches.
- c) Explain Earthing system, components and types.
- d) Explain the following terminologies with sketches.
 - i) Luminous flux
 - ii) Luminous intensity
 - iii) Lux
 - iv) Illuminance
 - v) Luminance

Q4) Answer the following with sketches wherever necessary. (ANY Three) **[15]**

- a) Explain Daylighting factor with sketches.
- b) Explain EPABX systems and where it is used.
- c) Explain National/State Grid.
- d) Explain Miniature Circuit breaker and compare it with fuse.
- e) Explain 3Rs in Solid Waste management.



Total No. of Questions : 5]

SEAT No. :

PB-4067

[Total No. of Pages : 2

[6266]-511

Third Year B. Arch.

**Building Construction & Materials - V
(2020 Pattern) (Semester-V) (3201936)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Draw neat sketches wherever necessary.*

SECTION - I

Q1) Draft the following (Any One) :

[25]

- a) Draw plan, elevation & section of sandwich partition proposed for a sound recording studio with detail of acoustic treatment. Size of partition of 3m in length & 3 m in height with a glass window of size 1.2 m x 1.2 m located at center. Draw a plan, elevation & section at 1:10 scale. Draw any two enlarged details.
- b) Draw reflected plan & section of suspended ceiling for a leaving room of size 4.5m x 3.5 m Draw plan & two sections to 1:20 scale. Show light fixing & edge fixing details to enlarged scale.

Q2) Draw sketches for (Any Two) :

[10]

- a) Any two joinery details in plywood
- b) Water proofing details in Basement construction
- c) Any two type of RCC floor construction systems

P.T.O.

SECTION - II

Q3) Write Short Notes on (Any Three) : **[15]**

- a) Retaining wall
- b) Application process for paint on old surface
- c) Any five qualities of timber
- d) Explain in brief polishing & varnishing.
- e) Explain the 5 derivatives of timber used as finishing material.

Q4) Explain the following (Any Two) : **[20]**

- a) What are Reinforced cement concrete floor construction systems? Explain any two in detail.
- b) Difference between Pre and Post tensioning.
- c) Explain any five defects in painting work.
- d) Explain with sketches different types of suspenders used in suspended ceiling work.



Total No. of Questions : 8]

SEAT No. :

PB4068

[Total No. of Pages : 4

[6266]-512

T.Y.B. Arch.

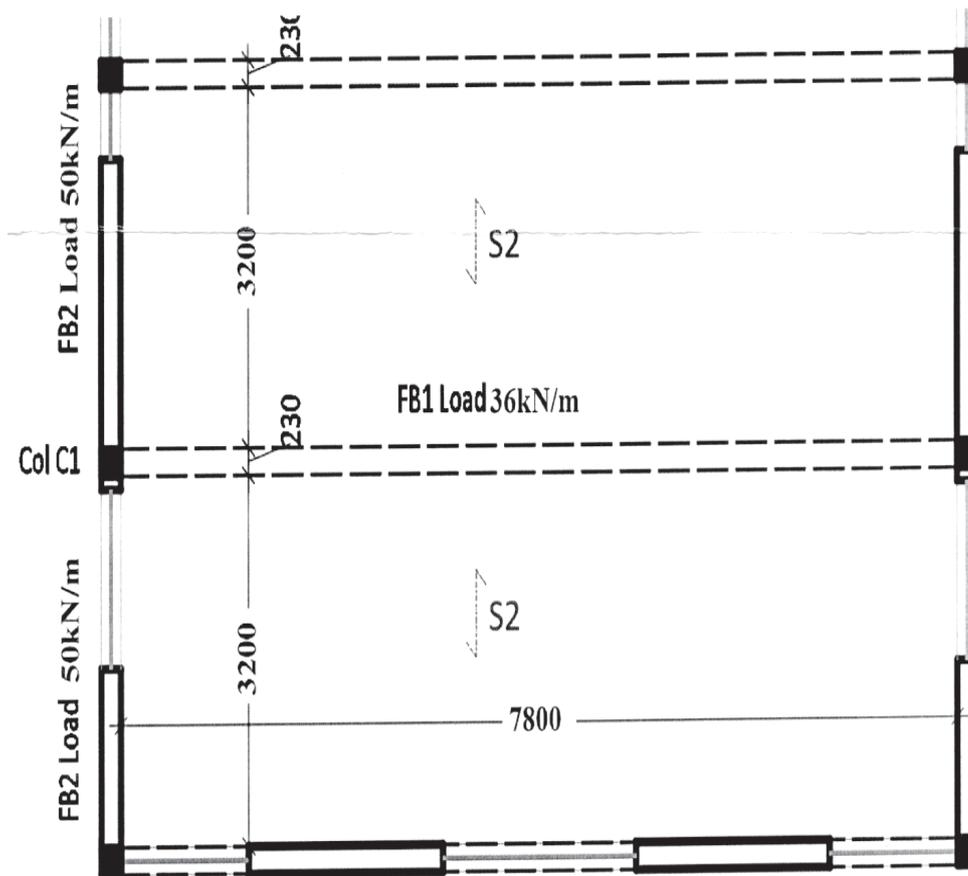
THEORY OF STRUCTURES - V
(2019 Pattern) (Semester - V) (3201938)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Question No.1 and 5 are Compulsory in each Section.
- 2) The Plan given below applies to questions in Both Sections.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data where necessary only.
- 5) Use M 25 Grade concrete and Fe 500 grade steel in R.C. C. problems and Steel of Grade Fe 250 for Structural Steel.
- 6) Every R.C.C. Design should be accompanied by relevant schedule and Reinforcement Sketch.
- 7) Use of non - programmable Calculators and Standard Steel Tables of Plastic Design Allowed.



P.T.O.

SECTION - I

Q1) Find the Load acting on column C1 per floor. Assume Load on FB1 to be 36kN/m and Clear Span = 7.8m and Load on FB2 to be 50kN/m and Clear Span = 3.2m. Calculate Load on every Floor considering Parking + 5 Floors. Design Column of 230 mm width on Second Floor using 2% 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	23.36Ag

Q2) a) Design the Beam FB1 as a T Beam (Shown Dashed) across Clear span 7.8m. Calculate Load (Do not take load as per q. no. 1.) Take the overall depth to 450 mm. Assume Slab Depth = 130mm of Slab S2. **[8]**

Take Live Load as 4kN/m². Consider 2 rows of 20mm bars in Tension. Design for Flexure only. Assume N. A Position within Flange. Calculate N. A Position. Do not design for Shear.

b) Why Do Cantilever Slabs have inverted Flanged Beams. **[3]**

Q3) a) FB1 is a Pre Cast Beam and cannot be considered as a Flanged Beam. Design Beam FB1 as a Doubly. Reinforced Beam of Clear Span 7.8m to carry an u.d.l. of 36 kN/m. Restrict the Overall depth to 450mm. Design for flexure only. Consider 2 rows of 20mm bars in Tension. Do not design for Shear. **[8]**

b) Explain the Situations leading to reversal of Stresses and hence Doubly Reinforcing the Beam. **[3]**

- Q4) a)** Write Short Notes on any two of the Following drawing sketches wherever necessary. [8]
- i) 3 Situations Leading to Eccentricity of Load on a Column
 - ii) Flat Slab Construction - Types
 - iii) Coffered Slab - Structural Action and Applications Two columns P1 and P2 of size 400mm × 400mm and 500mm × 500 mm respectively each carrying a Load of 1600kN and 2500kN rest in a soil of 240kN/m². They are spaced 2.7m apart center to centre.
 - iv) Do they require a Combined Footing.
- b) Explain the need for Piles. [3]

SECTION - II

(Solve Any Three)

- Q5)** Beam FB1 of Clear span 7.8m is to be replaced by ISMB 350. Calculate the load it can carry if welded with Flange Plates of 175mm × 12mm on each side. Check for Deflection.
Explain the circumstances when Flange Plates needed to be added to an I Girder. [13]

OR

- a) Calculate the Load taken by ISHB 400 @ 806N/m. if it is Welded with Flange Plates of 350mm × 15mm on each side. Length = 7500mm with both ends fixed in both Directions. [8]
 - b) Write a short note on Manufacturing and Disadvantages of Castellated Girder. [5]
- Q6) a)** An U.C.R Masonry wall is to be provided to retain Earth on its Vertical Face. Density of Retained Earth = 18kN/m³, Density of Masonary = 23kN/m³ Top Width of Wall = 1.2m, Take Bottom Width of Wall = 0.5h [8]
Height of Wall = 4.8m = h
Angle of Repose = 25°, 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 Weep Holes. [3]
- Q7)** a) Explain why High Strength Concrete is to be used in Prestressed Construction. [3]
- b) A Pre- stressed beam of size 230mm × 600mm is used as Beam FB1 it carries an Udl of 36k N/m over its effective span of 8.03m exclusive of its self- Weight. It is pre-stressed by tendons supplying 1800kN force which are placed at 75mm below the neutral axis. Calculate the extreme fiber stresses at end span (support) and at mid span and End span. [8]
- Q8)** Design the Isolated Pad Footing of a Column 230mm × 700mm C1 to carry a load of Service Load of 1850kN in a Soil of S.B.C 250kN/m². Assume 0.25% Steel and Design Shear Stress as 0.36N/mm² for the assumed % of Steel. Do not Design or check for Double shear. [11]

* * *

Total No. of Questions : 4]

SEAT No. :

PB-4069

[Total No. of Pages : 2

[6266]-513
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 :

- a) How can Passive techniques help buildings to heat and/or cool? Explain with examples and list the advantages and disadvantages of using these techniques. **[15]**

OR

- b) Calculate the number of exhaust fans required for a workshop in College measuring 7m × 15m × 3.5m. Show the position of fans in plan and section.

Data to be assumed	Fan dia. (mm)	Air handling capacity (cu.m/hr.)
	230	860
	300	1060
	450	4400

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

- a) Double-skin envelope for Cooling.
- b) Supply-and-Exhaust Mechanical Ventilation.
- c) Cross ventilation.
- d) Evaporative Cooling.
- e) Thermal Mass.
- f) Psychrometric Chart.

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 with sketches, on any FOUR of the following : **[20]**

- a) Heat exchangers in an Air Conditioning System.
b) Refrigerants.
c) VRV/VRF Air conditioning.
d) Central Air Conditioning.
e) Cooling Tower.
f) Window Air-Conditioner.



Total No. of Questions : 8]

SEAT No. :

PB-4070

[Total No. of Pages : 5

[6266]-514

T.Y. B.Arch.

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

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) *Q. No. 1 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

Q. No. 1 Compulsory. Answer any 2 From Q. No. 2, 3 and 4

Q1) Make the Framing Plan for the Given Ground Floor And First Floor.
Framing Plan to be shown on Ground Floor Plan Only [15]

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

Show all Beams. Restrict Depth of Beams to **550mm**. Indicate depth on plan and the Span to Depth Ratio considered for type of beam

Show Spans of all Slabs (Including Staircase) and Indicate Depth considered, **Span to Depth Ratio**. Slab depths to be restricted to **120mm**. 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]

- a) Top width of stem-280mm Width of base – 3200mm
S.B.C of soil – 250 kN/m²
- b) Bottom width of stem – 520mm Thickness of base – 500mm
Density of soil – 17 kN/m³
- c) Height of stem – 5400mm Toe projection – 750mm
Coefficient of friction – 0.6
- d) Density of Concrete – 25 kN/m³ Angle of repose – 28°

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

Q3) a) List and Explain the Dis-Advantages of a Welded Connection. [3]

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

- i) Spacing of Trusses = 3.8m, Span of Truss = 16m and Height of Truss = 2.6m
- ii) Roof Covering = G.I. Sheets
- iii) Spacing of Purlins = 1.85m
- 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) Structural Action on a Walls and Floor of a Cylindrical Water Tank with a Flexible Joint between walls and the Base
- b) Structural Action on various parts of a Counterfort type Retaining Wall.
- c) Any 4 Points to decide Column Positions in a R.C.C. Building.
- d) Pressure Conditions on an Underground Water Tank.

SECTION - II

Q. No. 5 Compulsory. Answer any 2 From Q No 6, 7 and 8

Q5) A Factory Building is to be Built over a Plinth Area of $13.5\text{m} \times 27\text{m}$. [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) Explain the Importance of a Bracing System.
- 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 2 no ISMC placed front to front with a Battened Lateral system to take a load of 900kN. Height of the Stanchion is 9.5m, with both ends fixed in both directions. (Hint : Assume Stress = 200N/mm^2). Assume End Battens of Size $200\text{mm} \times 8\text{mm}$ and Intermediate Battens $150\text{mm} \times 8\text{mm}$ wide. Draw Sketch. [10]

Q7) Attempt Any Two : [10]

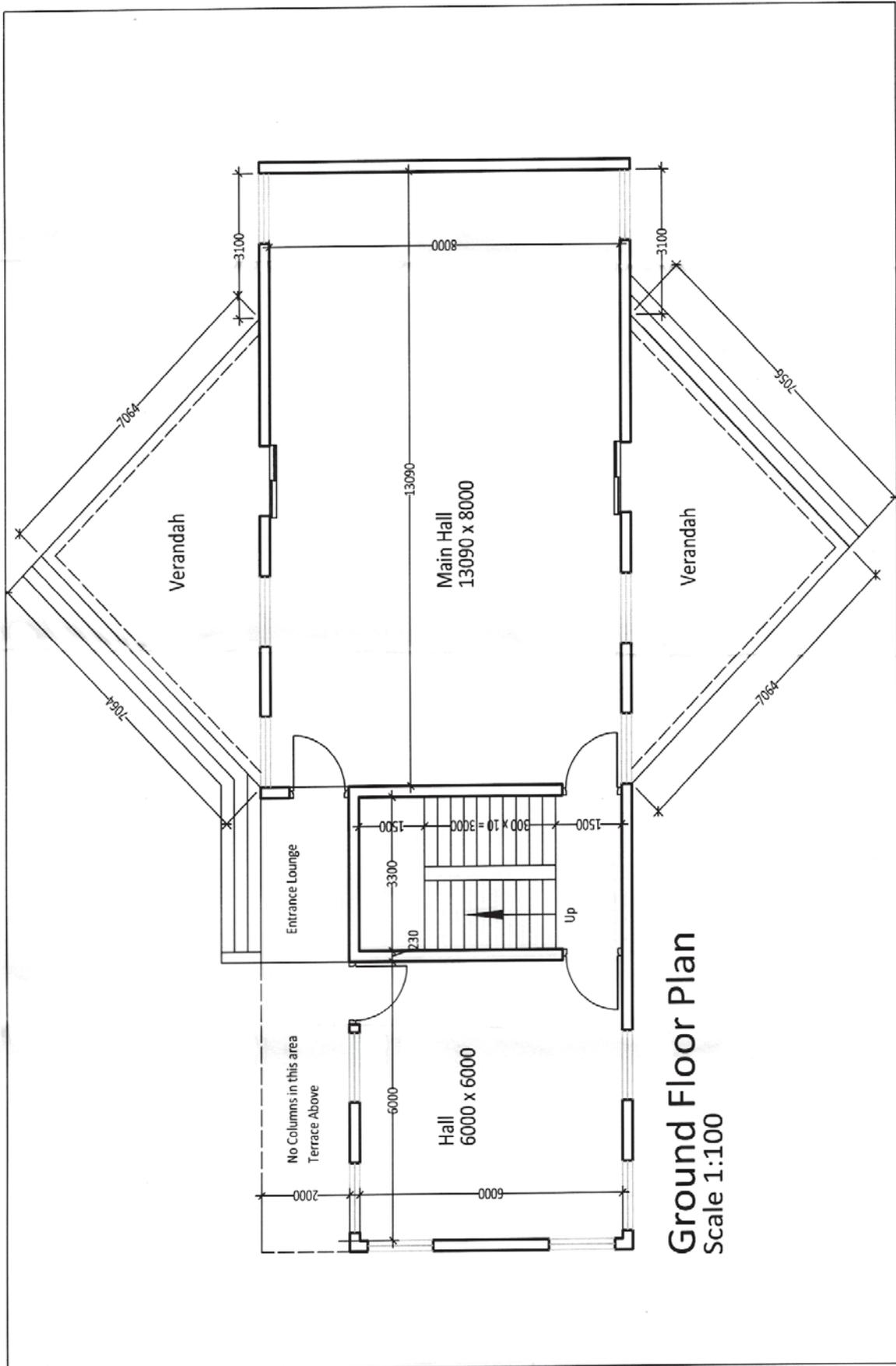
- a) Write a Short Note on Structural Action of Barrel Vaults.
- b) Write a Short Note on Out Rigger Systems used in High Rise Buildings.
- c) Write a Short Note on Geodesic Domes.

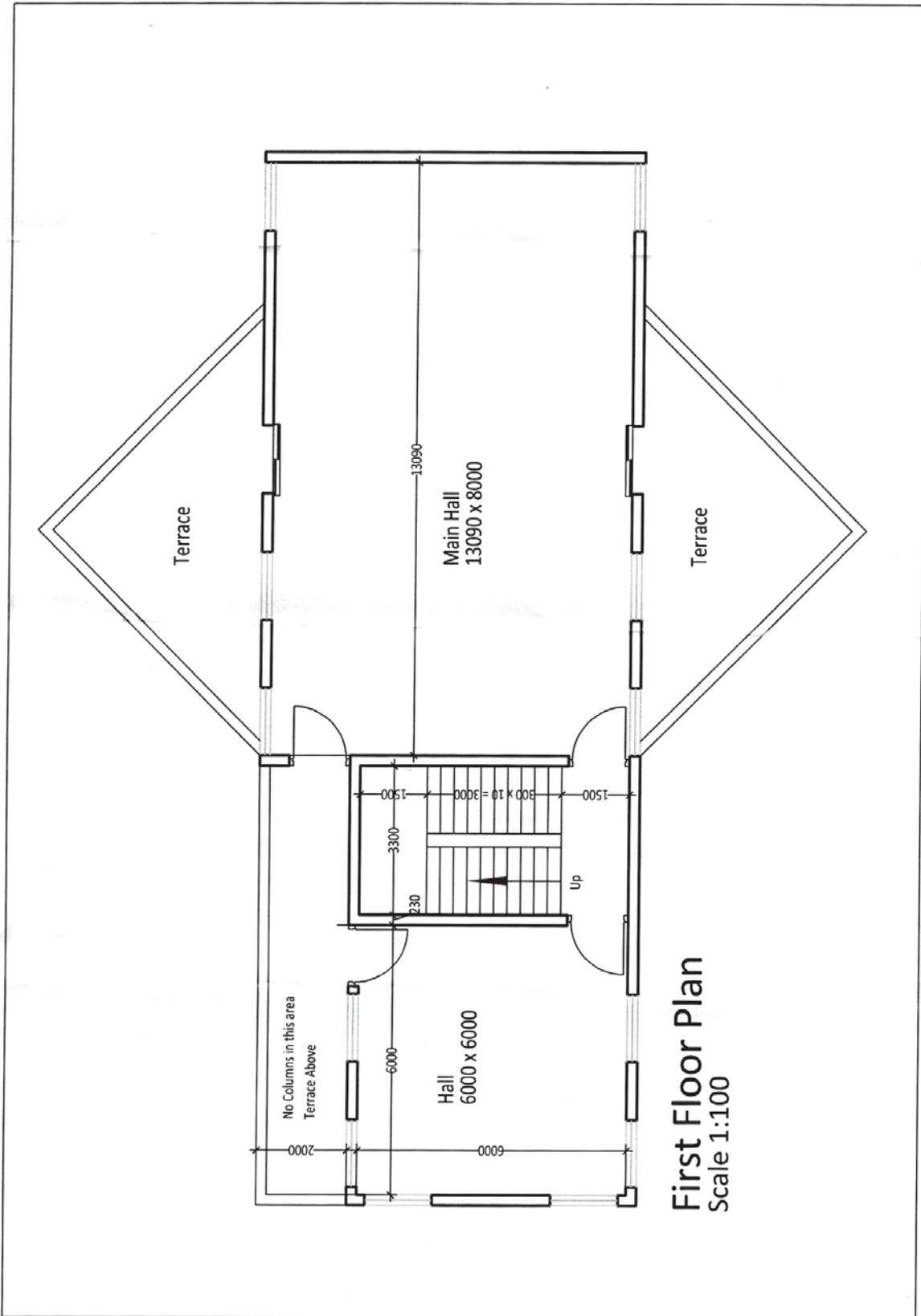
OR

Design a Tension Member to take a Service load of 140kN. It is to be bolted with 20mm Bolts Design the Bolted Connection. Use $\beta = 1.08$ and K_b for bolted connections = 0.55. [10]

Q8) Calculate Design equivalent static wind forces on an R.C.C Multistory building of a General Type having size $15\text{m} \times 35\text{m} \times 30\text{m}$ height 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. Use Terrain Category 3. [10]

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





Total No. of Questions : 4]

SEAT No. :

PB-4071

[Total No. of Pages : 2

[6266]-515
T.Y. B.Arch.
BUILDING SERVICES - IV
(2019 Pattern) (Semester - VI) (3201950)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

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

SECTION - I

Q1) What are the different firefighting materials/agents used for extinguishing fire? State the suitability of these agents for specific types of fire. With the help of sketches explain the components and the working principles of any 4 types of portable fire extinguishers. **[15]**

OR

Explain the concept and significance of a Fire triangle. As per the National Building Code what are the provisions to be planned in the designs of the basements. Explain the egress components to be provided in the buildings for fire and life safety.

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

[20]

- a) Fire Hydrant
- b) Fire Sprinklers
- c) Fire Detectors
- d) Pressurized Staircase
- e) Wet and Dry Riser system
- f) Storage Tanks for fire fighting

P.T.O.

SECTION - II

Q3) What is Reverberation Time? **[15]**

State and explain the Sabine's formula and the optimum reverberation time for a "lecture hall".

Calculate the reverberation time for a lecture hall with length = 12m, width = 6m, height = 3.0m. Seating capacity of the hall = 40

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>No.S</u>	<u>SIZE</u>
Flooring	Polished Kota Stone	-	-
Walls	230 thick brick walls with cement finished plaster	-	-
Ceiling	Concrete slab with cement finished plaster	-	-
Doors	T. W. fully paneled doors	2 No.s	1m × 2.1m
Windows	Fully glazed windows	6 No.s	1.5m × 1.2m

Assume full occupancy, all windows open and all doors closed.

OR

Explain with neat sketches the structure-borne and air-borne noise and the various methods of their mitigation in common applications.

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

- a) Speakers in sound amplification systems
- b) Explain with sketches the terms wave-length and frequency of sound
- c) Masking of sound and its applications
- d) Acoustical ceiling tile
- e) NRC and STC ratings
- f) List with sketches 2 different ways to mitigate outdoor noise



PB4537

SEAT No. :

[Total No. of Pages : 4

[6266]-517

Third Year B. Arch.

ARCHITECTURAL DESIGN-V

(2019 Pattern) (Semester-VI) (3201945)

Time : 12 Hours (Enlodge 6 Hours)]

[Max. Marks : 100

Instructions to the candidates:

- 1) *The design will be valued as whole*
- 2) *Line drawings at the scale of 1:100 should be submitted at the end of the first day. These drawings will not be returned to the candidates therefore a due record of the same should be kept for reference on the subsequent day. Candidates should not deviate from the design scheme submitted on the first day.*
- 3) *Draw neat sketches where necessary.*
- 4) *Assume and mention suitable data where necessary.*
- 5) *The drawings should be self-explanatory with requisite graphics, nomenclature, dimensions, levels and structural concept clarity.*

Design Topic : PILGRIM CENTER AT ALANDI

Alandi is a popular pilgrimage site and the resting place of the 13th century Marathi saint 'Sant Dnyaneshwar'. His samadhi (tomb) is in the Alandi Gaon Temple, which is the town's main attraction. The temple is situated on the banks of the sacred Indrayani River, and the site is located across the river from the temple. The project is to design a Pilgrims Retreat Center comprising of dormitories, dining areas & ancillary spaces that can cater to temple pilgrims, school trips, small wedding groups and general tourists on a budget travel.

Sr. No	Activity	No. of Users	Area (Sq.M.)	Nos.	Total Area (Sq.M.)
1	Multipurpose Halls that can be used as		60	2	120
	Dormitory (Floor mattress)	12			
	Enclosed Dining Hall (floor seating)	40			

P.T.O.

2	Store (Mattress)		20	1	20
3	Shower stalls @ 24 persons	12 Male 12 Female		4 2 Male, 2 Female	As required
4	Toilets @ 100 persons	50 Male		3 WCs	As required
				2 Urinals	As required
				4 WB	As required
		50 Female		4 WCs	As required
				4 WB	As required
5	Kitchen inclusive of store		60	1	60
6	Utensil and pot wash		20	1	20
7	Semi open Dining @ 1.5/person	100	150	1	150
8	Dining Handwash		20	5WB	20
9	Drinking water		20	5 Outlets	20
10	Entrance Foyer cum Reception		30	1	30
11	Caretakers Room inclusive of pantry And attached toilet		20	1	20
12	Admin & Accounts		10	1	10
13	Open gathering place			100	150
14	Bus parking			2	As required
15	Security		5	1	150
16	Circulation & Walls 25%				175
	Total built UP Area				800

Note:

- Add appropriate open to sky and semi covered areas as per your Design.
- Maximum height of the building is G + 1.
- Ramp to be provided at entry or at any other place of level difference for universal access objectives of senior citizens & physically challenged persons.

Drawing requirements:

1. Concept drawing/ Design approach drawing with appropriate sketches.
2. Site plan showing (either roof plan or exploded ground floor) pathways, setbacks, security, parking, landscape, services. (1:200)
3. All Floor plans with all furniture layouts and structural layouts. (1:100)
4. Roof plan (1:100)
5. Sectional elevations explaining the design-min. two (1:100)
6. Elevation (Roadside)-(1:100)
7. Appropriate view to explain the entire design.

SITE parameters:

- Plot size 46M.×31M.
- Plot Area 1426 SQ.M.
- Set back from road (9.0M front & 4.0 M from all other sides)
- Maximum Ground coverage 648 SQ.M. of plot area

Site is flat.

- Maximum permissible height of the building is 7.5 M.

GHATS OF INDRAYANI RIVER

8.0M WIDE ROAD ALONG INDRAYANI RIVER GHATS

ROAD
EDGE

1.5 M WIDE FOOTPATH

1.5

9.0M
SETBACK

SITE BOUNDARY

31.0

SITE AREA = 1426 SQ.M.
AREA AVAILABLE FOR BUILDING = 684 SQ.M
ALL DIMENSIONS IN METERS

18.0 M.

4.0M
SETBACK

38.0 M.

4.0M
SETBACK



4.0 M
SETBACK

SITE BOUNDARY

46.0 M

SITE PLAN

Total No. of Questions : 9]

SEAT No. :

PB-4073

[Total No. of Pages : 4

[6266]-518

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 on the right-hand side show maximum marks for the question.*
- 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 Two) **[10]**

- a) Excavation for footings
- b) RCC Beams
- c) RCC Slab

Q3) Answer the following in detail (Any One) : **[10]**

- a) Explain with example the relationship between working drawings. Bill of Quantities and schedule of rates.

OR

- b) What is meant by Open, Restricted and Closed Specification? Give one example for each.

P.T.O.

Q4) Write the Units of the following items : **[5]**

- a) RCC Slab
- b) Aluminium Windows
- c) Underground Water Storage Tank
- d) Drainage Chamber
- e) Gully Trap

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]**

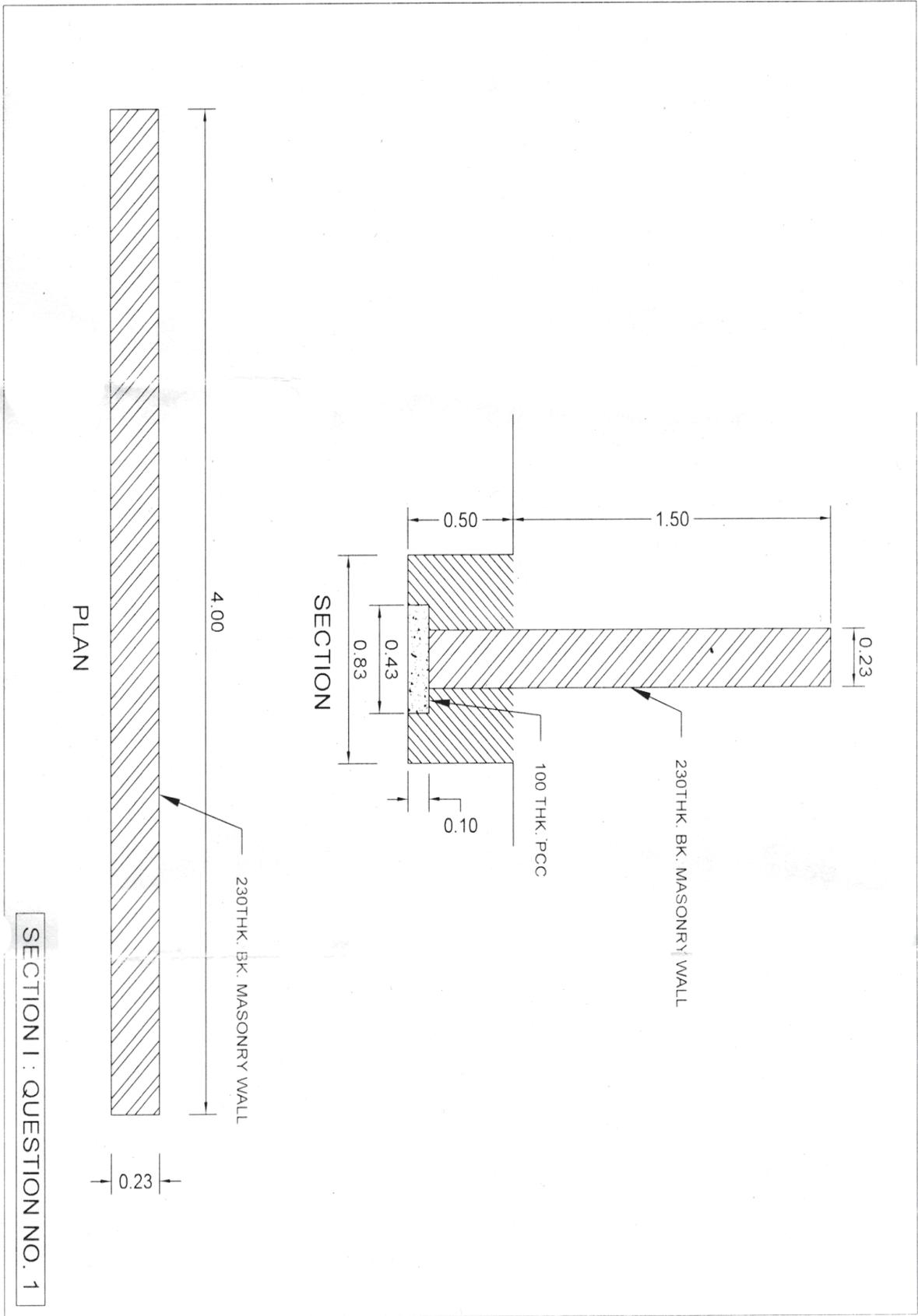
Q7) Write the details specifications for : (Any Three) **[15]**

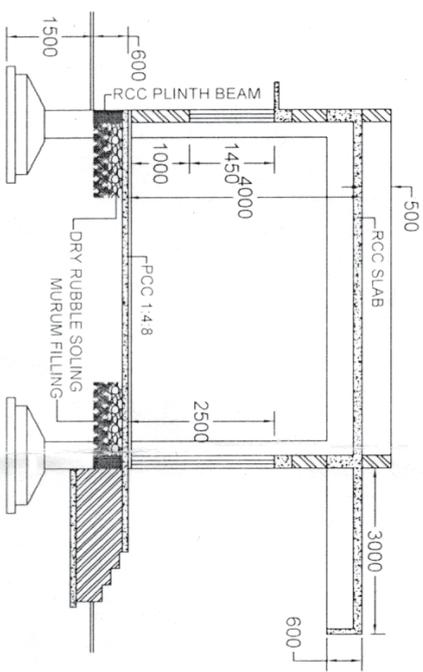
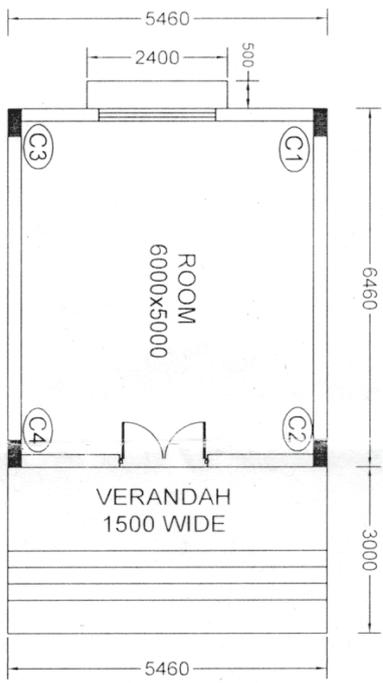
- a) RCC beam
- b) Excavation
- c) Half brick wall
- d) RCC slab

Q8) Explain the various types of specifications and their classifications. **[5]**

Q9) Write the manufactures for the following : **[5]**

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



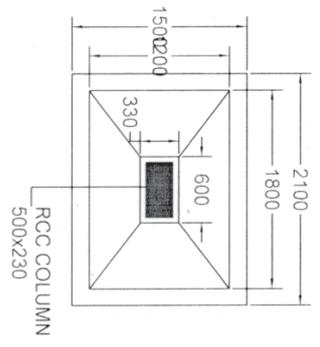
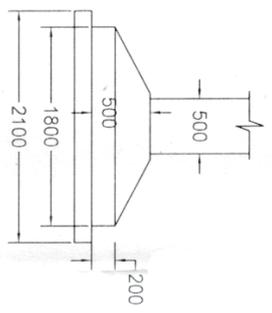


SCHEDULE OF OPENINGS

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

IMPORTANT NOTES:-

- RCC FOOTING 1200x1800
- D : 500
- d : 200
- PCC BELOW FOOTING : 150 THK.
- RCC COLUMN : 230 x 500
- RCC PLINTH BEAM : 230 x 500
- RCC FLOOR BEAM : 230 x 600
- RCC SLAB : 150 THK.
- SOLING : 250
- INTERNAL PLASTER : 12MM. THK.
- EXTERNAL SAND FACED PLASTER : 15MM. THK.



SECTION I : QUESTION NO. 2



Total No. of Questions : 8]

SEAT No. :

PB-4074

[Total No. of Pages : 3

[6266]-519
Fourth Year B.Arch.
PROFESSIONAL PRACTICE
(2019 Pattern) (Semester - VII) (4201959)

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) If you have been appointed as an architect for an Apartment building in a society, explain your duties & responsibilities towards the society & client. Also explain, what will be the Nature of Liability in case you are found guilty of Professional Misconduct. **[11]**

Q2) Write short notes on (any 3) : **[12]**

- a) The Term of a Council Member
- b) Various Departments in an Architect's Office
- c) "Title And Style of An Architect"
- d) What are the main functions of C.O.A.?

Q3) Answer any 3 : **[12]**

- a) List the allied fields in which an architect can offer services to a client.
- b) Explain why you consider architectural practice as a profession and not business.
- c) If you are a client, what will be your Role and Responsibilities?
- d) Explain the concept of teamwork in architecture.

P.T.O.

Q4) Answer the following : [12]

- a) Explain under what circumstances can a name be removed from the Register of Architects & also How can a name be added to the register of Architects?
- b) List and explain the various Salient Features of an Architect's Office.

SECTION - II

Q5) The percentage of fees to be charged at every stage are based on the total professional fees to be charged. Explain what total cost is considered at every stage to work out the fees. Explain with the example. [11]

Q6) Write short notes on (any 3) : [12]

- a) Explain Project and Ideas Competitions.
- b) List the various taxes to be paid by an Architect either on behalf of himself as an individual or on behalf of his Firm or on behalf of his client.
- c) Shop Act
- d) Explain the services offered by an Architect for the Concept Design Stage of service.

Q7) Answer Any 3 : [12]

- a) Define Valuation and the Explain any 3 purposes of valuation.
- b) Different types of Arbitration.
- c) Explain Insurance and its applications in an Architect's office Clients.
- d) Architects and Civic Activism.

Q8) Answer the following (Any 1) : [12]

- a) State each of the following w.r.t to an Architect's Fees (any 4) :
 - i) Indemnification by Client To Architect
 - ii) Documentation and Communication Charges
 - iii) Ownership and Copy-Right of an Architects Design and Drawings
 - iv) Reimbursable Expenses to an Architect
 - v) Termination of Agreement Between an Architect and Client

OR

b) State the Full Form and any 2 Salient Feature of each of the following organization (any 4) :

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



Total No. of Questions : 6]

SEAT No. :

PB-4075

[Total No. of Pages : 4

[6266]-520

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 land 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) Explain Rate Analysis and importance of Specifications in its Preparation. **[1 × 10 = 10]**

OR

b) Explain the Essentials of Rate Analysis.

Q2) a) Prepare Rate Analysis for (Any Two) : **[2 × 5 = 10]**

- i) Reinforced Cement Concrete (RCC) for Column in 1:1.5:3 design mix concrete.
- ii) Neeru finished plaster 8-10mm thick in C.M. 1:3 in river sand for ceiling.
- iii) 230mm thick BB masonry in C.M. 1:5 in superstructure.
- iv) Ceramic Tile flooring with 40mm thick bedding C.M. in proportion 1:6.

Material Rates :

- 1) Cement - Rs. 320/- per Bag
- 2) Crush Sand - Rs. 1150/- per Cu.M.
- 3) Stone Metal - Rs. 1050/ per Cu.M.

P.T.O.

- 4) Standard Brick - Rs. 10/- per No.
- 5) River Sand - Rs. 3175/-per Cu.M.
- 6) Ceramic Tile - Rs. 600/- per Sq.M.
- 7) Sanla (Neeru) - Rs. 80/- per Bag.

Labour Rates :

- 1) Concrete work in RCC column - Rs. 2250/- per Cu.M.
 - 2) Neeru finish plaster to ceiling - Rs. 280/- per Sq.M.
 - 3) 230mm thick BB Masonary - Rs. 1200/- per Cu.M.
 - 4) Ceramic tile flooring - Rs. 360/- per Sq.M.
- b) Answer the Following (Any One) : [1 × 5 = 5]
- i) Prepare Indent of Material for Sand faced plaster for wall 15-18mm thick in C.M. 1:4 - 160 Sq.M.
 - ii) Prepare Indent of Material for RCC Slab beam in 1:1:2 mix - 120 Cu.M.

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

- a) What is the need of Checklist in Construction Work?
- b) Prepare a Checklist for 230mm thk Brick Masonry.
- c) Explain responsibility of a Wood work Carpenter as a Trade.
- d) Write Short Note on Administrative Expenses as an Overhead.

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) Kingpost and All Vertical Members for One Truss.
- c) All Struts (Slant Members) for One Truss.
- d) Purlins for Full Shed.
- e) Roof Sheeting for Full Shed.

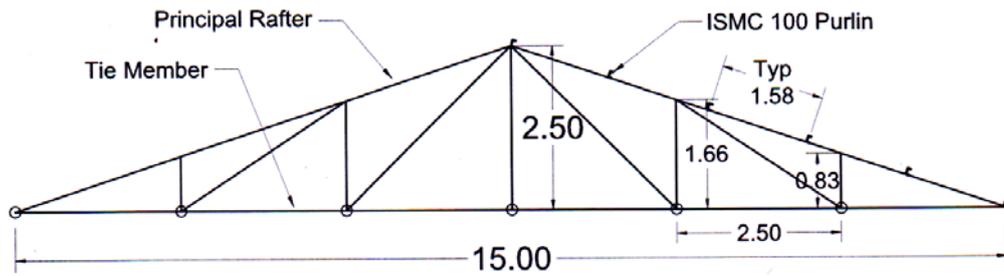
Q5) Answer the Following (Any Two) :

[2 × 5 = 10]

- a) Write Specification for a Toilet Block for Physically Disabled Persons.
- b) Write Various Properties of Acoustic Materials.
- c) Write Short Note on Miniature Circuit Breaker(MCB)
- d) Explain different types of Air Conditioning Systems.

Q6) Write Names of the Manufacturers of the Following (All Ten) : [10 × 1 = 10]

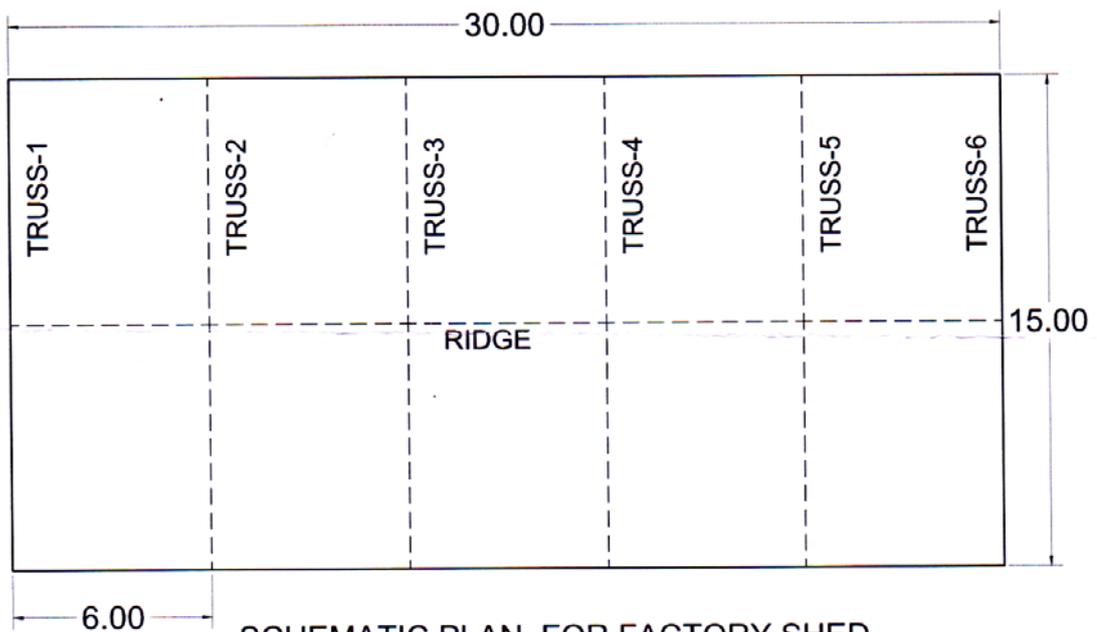
- a) Sanitary Fixtures.
- b) UPVC Pipes.
- c) Electrical Switches.
- d) Air Conditioners.
- e) Elevator.
- f) Escalator.
- g) LED Light Fittings.
- h) Electrical Cables.
- i) CP Plumbing Fittings.
- j) Cement.



SCHMATIC ELEVATION OF TRUSS

WEIGHT PER RMT FOR STEEL MEMBERS:

- A. TIE MEMBER - 2 NO'S ANGLES -100X100X8 (12.30 Kg/M)
- B. RAFTER MEMBER - 2 NO'S ANGLES -100X100X8 (12.30 Kg/M)
- C. KING POST & ALL VERTICLES ANGLES -75X75X6 (6.80 Kg/M)
- D. ALL STRUTS(SLANT) ANGLE -75X75X6 (6.80 Kg/M)
- E. PURLINS ISMC 100 (8.90 Kg/M)



SCHMATIC PLAN FOR FACTORY SHED
(FIG-1)



Total No. of Questions : 8]

SEAT No. :

PB4076

[Total No. of Pages : 2

[6266]-521

Fourth Year B.Architecture

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 about the importance of Project Manager & role of an Architect as a Project Manager. **[11]**

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

- a) Project and Project Environment.
- b) Project, program & portfolio.
- c) The Triple constraint triangle of Project Management.
- d) Traditional Project Management vs Modern Project Management.

Q3) Answer any 2 **[12]**

- a) Write in detail about the different Phases of a Construction Project.
- b) Explain in detail about the difference between Project Management and Construction Management.
- c) What is Project feasibility? What does a Feasibility Study analyze? Write about the types of Feasibility surveys.

P.T.O.

- Q4) Answer any 2** **[12]**
- a) Write a note on Project Time Management. What is Architect's role in Time Management?
 - b) Elaborate on Project Quality Management. Explain an Architect's Role in maintaining quality of construction.
 - c) Explain the importance of Project Cost Management. Explain about the knowledge areas of cost management.

SECTION - II

Q5) Explain the entire procedure of Tendering. **[11]**

Q6) Write Short Notes on any 3 **[12]**

- a) Tender & the purpose of Tendering
- b) Item Rate Tender
- c) Contract and Contract drawings
- d) Earnest Money Deposit & Security Deposit Amount

Q7) Answer any 2 **[12]**

- a) Write about Project Resource Management.
- b) Introduce the Knowledge Area of Project Procurement Management and list the PMP involved.
- c) Elaborate on Risk Management.
- d) Define Stakeholders and make a list of multiple Stakeholders in a Construction Project of a building.

Q8) Explain any 2 the Following **[12]**

- a) Elaborate on the different safety issues on construction sites.
- b) Define Financial Management elaborate on it's functions.
- c) Define Design Management. Which are the different areas of Design Management?
- d) Explain the Types of Facilities Management. Write about the functions of a Facility Manager?

x x x