Total No. of Questions : 4]

SEAT No. :

PC5035

[Total No. of Pages :2

[6357]-101

First Year 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 room of size 6000 mm × 12000 mm needs king post roof truss roofing

a) Draw a key plan at 1:100 scale elevation at 1:20 scale **[10]**

b) Any one detail at 1: 10 scale **[10]**

OR

A room of 5000 × 6500 mm of size has an opening 1000 × 2100 mm with all thickness of wall 230 m. provide a paneled door for the opening

a) Plan, section and elevation of the door at 1:10 scale. **[10]**

b) Draw any one journey details used in door construction at suitable scale. **[10]**

Q2) Write answer of (any 3) **[Total 15 - 5 each]**

a) Draw any five tools used in the carpentry work.

b) Give a list and sketches of fixtures and fastening which are commonly used for Doors and Windows.

c) Sketch cut section of tree.

d) Draw well labeled section through timber lean to roof.

P.T.O.

SECTION -II

Q3) Answer any two. **[Total 20 - 10 each]**

a) Explain with neat sketches a timber partition.

b) Explain with neat sketch Timber staircase.

c) Sketch two types of earthquake waves and how they affect the structure?

d) Explain with neat sketch single timber floor.

Q4) Write short notes on.(any 3) **[Total 15 - 5 each]**

a) Write types of Earthquakes and Faults

b) Seismic Waves

c) A seasoning of timber

d) Difference between king post and queen post

e) Clay roofing Tiles

Total No. of Questions : 8]

SEAT No. :

PC5036

[Total No. of Pages :3

[6357]-102

First Year 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) Compulsory:

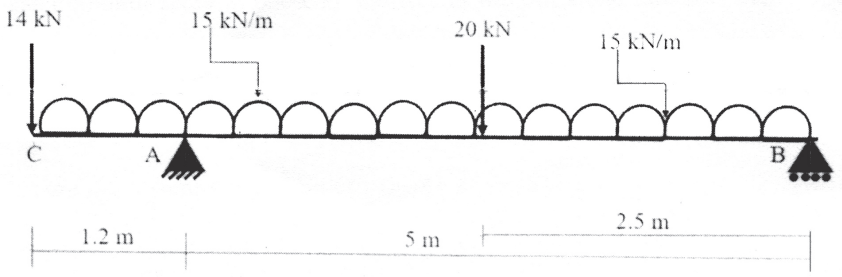
a) A wooden beam of size of 150mm × 450mm is simply supported over a span of 6m and carries an u.d.l. of 4.5KN/m over the entire span and a central point load of 8KN. **[8]**

i) Calculate the maximum tensile and compressive bending stress.

ii) Draw Bending stress diagram across cross section

b) What are the assumptions in the Theory of Simple Bending? **[3]**

Q2) a) Draw SFD and BMD for given beam. **[8]**



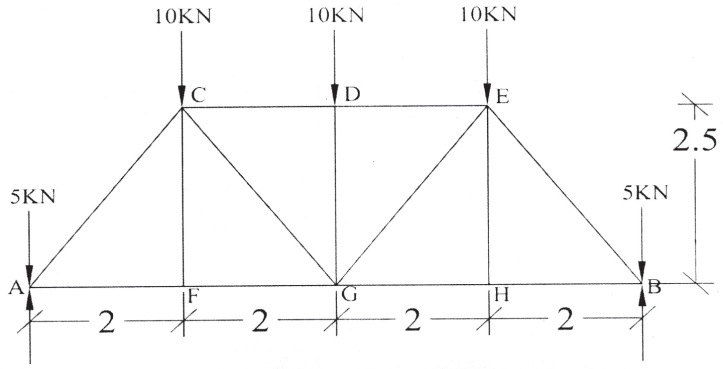
b) Define following terms **[4]**

i) Moment of Resistance

ii) Neutral Axis

P.T.O.

Q3) a) Calculate the forces in member AC, AF, CF & CD. Present your answer in the form of table. **[8]**



b) What are the different methods of Solving a frame? What are the assumptions in the Solution of Frames? **[4]**

Q4) a) Draw shear stress diagram across section of rectangular, T, L and I. Show the important values. **[4]**

b) Write down shear stress formula across the section for rectangular and circular beam. **[4]**

c) Write down the flexural formula and explain each term in detail. **[4]**

SECTION -II

Q5) Compulsory:

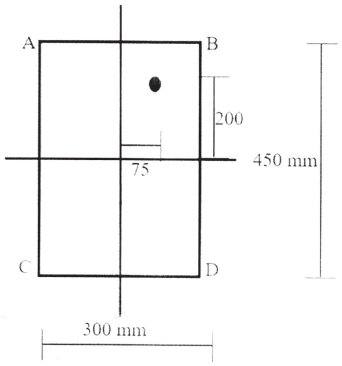
a) A steel column fixed at one end and free at the other end has Ixx = 39210.8×10^4 cm^4 and Iyy = 2985.2×10^4 cm^4 it is required to carry a safe load of 240KN with factor of safety of 2.5. Calculate maximum height using Euler's formula. E = 2×10^5 N/mm^2. **[8]**

b) What are the assumptions of Euler's theory of Buckling? **[3]**

Q6) a) A simply supported beam of size 300 mm × 640 mm carries a load of 22kN/m over the entire span of 7m. If E = 0.25×10^5 N/mm^2. Calculate maximum deflection at mid of the span and end of the span. **[8]**

b) Explain the Limitation of Euler's Theory. **[4]**

Q7) a) Find the stress at all four corners of the column shown below subjected to an eccentric load of 1000KN placed as shown. Draw the stress diagram. Dimensions shown are in mm. **[8]**



b) Explain the core or Kernel of a Column. **[4]**

Q8) a) Draw various end conditions of column and show their effective height. **[4]**

b) Write a formula of maximum slope and deflection for simply supported beam with UDL over the entire span. **[4]**

c) Explain Rankine's formula with each term in detail. **[4]**

Total No. of Questions : 4]

SEAT No. :

PC5037

[Total No. of Pages : 2

[6357]-103

First Year 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 350mm thick random rubble masonry compound wall as follows :

a) Draw plan and elevation of a stopped compound wall of height 1800mm at scale 1:10 **[10]**

b) Cross section from foundation to coping at scale 1:10 assuming hard strata depth as 1200mm **[10]**

All the necessary annotation and dimensions have to be given for the plan and section of stone foundation

OR

Draw 1 and ½ bk. Thick wall in Flemish bond (Scale 1:10)

a) Plan of alternate course. **[10]**

b) Elevation of six courses. **[10]**

P.T.O.

Q2) Draw Neat labeled sketches only for following (any 3) **[15]**

a) Draw any five elements of building

b) Draw any five bamboo joineries

c) Any five types of special bricks

d) Any five equipments used in masonry work

e) Draw any three types of Coping

SECTION - II

Q3) Answer any two. **[20]**

a) Explain advantages and Disadvantages of Bamboo as construction materials

b) What are the good qualities of bricks and stone as masonry unit?

c) Explain properties of cement mortar and uses of cement mortar.

d) Explain shallow foundation. Explain strip foundation with sketches

Q4) Write short notes on (any 3). **[15]**

a) Difference between Load bearing and Framed structure

b) What is plastering? Advantages of plastering

c) Difference between English bond and Flemish bond

d) What are the advantages of bamboo?

e) Explain is quick setting cement and its mention it's application.

Total No. of Questions : 8]

SEAT No. : ____

PC5038

[Total No. of Pages : 3

[6357]-104

First Year B.Architecture

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

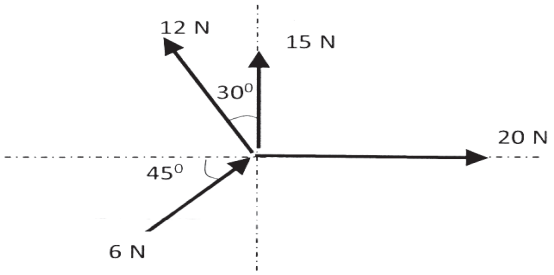
Q1) Compulsory **[13]**

a) Answer the following.

i) State and explain Lami's Theorem. **[3]**

ii) State and explain Varignon's theorem with sketch. **[3]**

b) Find Resultant Force both in Magnitude and Direction for a given system. **[7]**



Q2) a) A circular R.C.C. column of 400 mm diameter is reinforced with 8 no. of 16 mm diameter steel bars. If the load carried by column is 1100 kN. Calculate the stress in each material and load carried by each material. Modulus of elasticity for steel and concrete are Es = 2×10^5 N/mm^2. Econ = 0.18×10^5 N/mm^2. **[9]**

b) Explain the terms **[2]**

i) Poisson's ratio

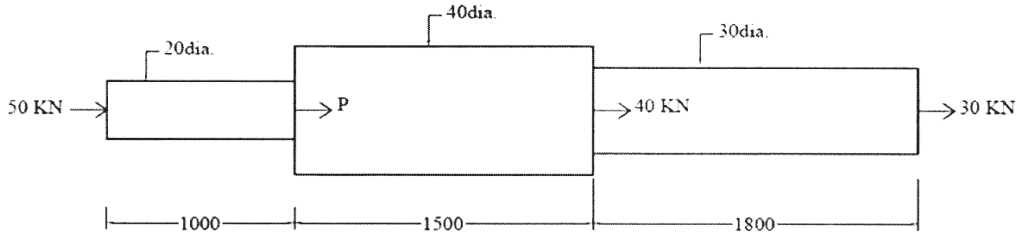
ii) Bulk Modulus

P.T.O.

Q3) a) A Steel bar of square sections as shown is subjected to axial load along its length and it is in equilibrium. If E = 2 ×105 N/mm^2

i) Find P in magnitude for equilibrium

ii) Find stresses in each part of the bar. **[7]**



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

Q4) a) A 350 mm thick brick wall is to be provided with a P.C.C Strip Bed at a depth of about 0.75m. The load of the Super Structure is 180 kN. Assume 10% Load of Sub Structure and design the Foundation for a S.B.C of 250 kN/m^2 using 230 × 110 × 75 sized bricks. **[8]**

b) Guidelines (any three) to improve Seismic Resistance of Load Bearing structures. **[3]**

SECTION - II

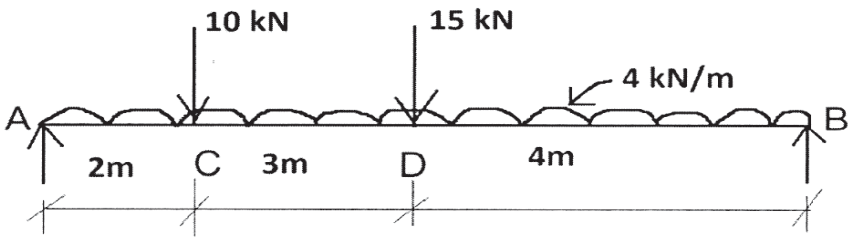
Q5) a) Draw Shear Force Diagram and Bending Moment Diagram for the given beam figure. **[11]**

i) Find support reactions

ii) Draw Shear force diagram with point of zero shear (if any)

iii) Draw Bending moment diagram

iv) Find Maximum bending moment

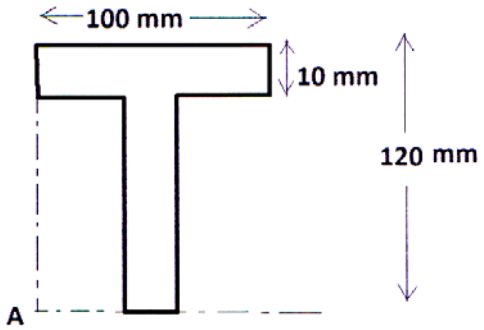


b) Explain in brief sign convention of Shear force. **[2]**

Q6) a) Draw Shear Force and Bending Moment diagram for a Cantilever beam having a length of L metres with uniformly distributed load w kN/m. Indicate maximum values of shear force and bending moment diagram. **[4]**

b) Find the support reaction of Simple supported R.C.C. beam of 230 × 450 mm, carrying the load of brick wall, having 230 mm thickness and 2.5 m height, above it. Centre to centre length of beam is 4.5 m. **[7]**

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



Q8) a) Explain: **[3]**

i) Hinged support

ii) Like Parallel forces

iii) Coplanar concurrent forces

b) For a hollow circular lamina having outer diameter 100 mm and thickness 5 mm, what is the moment of inertia Ixx and Iyy? **[4]**

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

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Total No. of Questions : 4]

SEAT No. : ____

PC-1983

[Total No. of Pages : 2

[6357]-201
S.Y. B.Arch.
BUILDING CONSTRUCTION AND MATERIALS - III
(2019 Pattern) (Semester - III) (2201918)

Time : 2½ Hour] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***All Questions are compulsory (Section 1 & II)***
2) ***Answer to section-I to be drawn on drawing sheets only.***
3) ***Answer to section-Il to be drawn on answer sheets only.***
4) ***Draw neat labeled sketches wherever necessary.***
5) ***Assume suitable data if necessary.***
6) ***Figures to the right indicate full marks.***

SECTION - I

Q1) An RCC slab is to be constructed for a store room. The dimensions of a store room are 5.00m × 3.50 × 3.0 m (Height).

Draw following details at the scale of 1:20

a) Draw RCC plan of a slab showing all reinforcement details and all RCC elements. **[10]**

b) Draw one Longitudinal section showing all reinforcement details of a slab and all RCC elements. **[5]**

c) Draw reinforcement of a corner junction of column and beam **[5]**

OR

A site office of 2.7m x 3.6m x 3.0 m height is to be designed in RCC frame structure. Plinth level is 0.45 m from existing ground level.

Draw the following details at the scale of 1:10.

a) Draw the plan of office showing all RCC elements. **[7]**

b) Draw detail section through plinth showing RCC footing. plinth beam and steps built in brick masonry **[8]**

c) Draw an isometric view of Column and plinth beam junction showing its reinforcement details. **[5]**

P.T.O.

Q2) **Answer with neat labelled sketches on drawing sheet. (Any 3)** **[15]**

a) Reinforcement details at mid junction of RCC Column to RCC beam at slab level.

b) Draw section showing working mechanism of three track aluminum sliding window.

c) Slump test for concrete testing.

d) RCC Eccentric footing.

e) Development length and Lap length in RCC structure

SECTION - II

Q3) **Answer the following (Any 2)** **[20]**

a) Write any 2 types of flooring and paving material with its applications. Draw section of fixing of vitrified tile fiooring

b) Explain the formwork for concreting and removal of formwork.

c) Sketch and explain any two types of shallow foundation and its application in construction.

d) Explain the manual process of concreting on site.

Q4) **Write Short notes on any three of the following (any 3)** **[15]**

a) Write any two types of concrete mixes and their application in construction.

b) Write any four types of soil and explain bearing capacity of soil

c) What is water cement ratio. write any two types of cement and its uses.

d) Difference between One-way slab and Two-way slab.

e) Methods of Soil Investigation

Total No. of Questions : 8]

SEAT No. : ____

PC-1984

[Total No. of Pages : 3

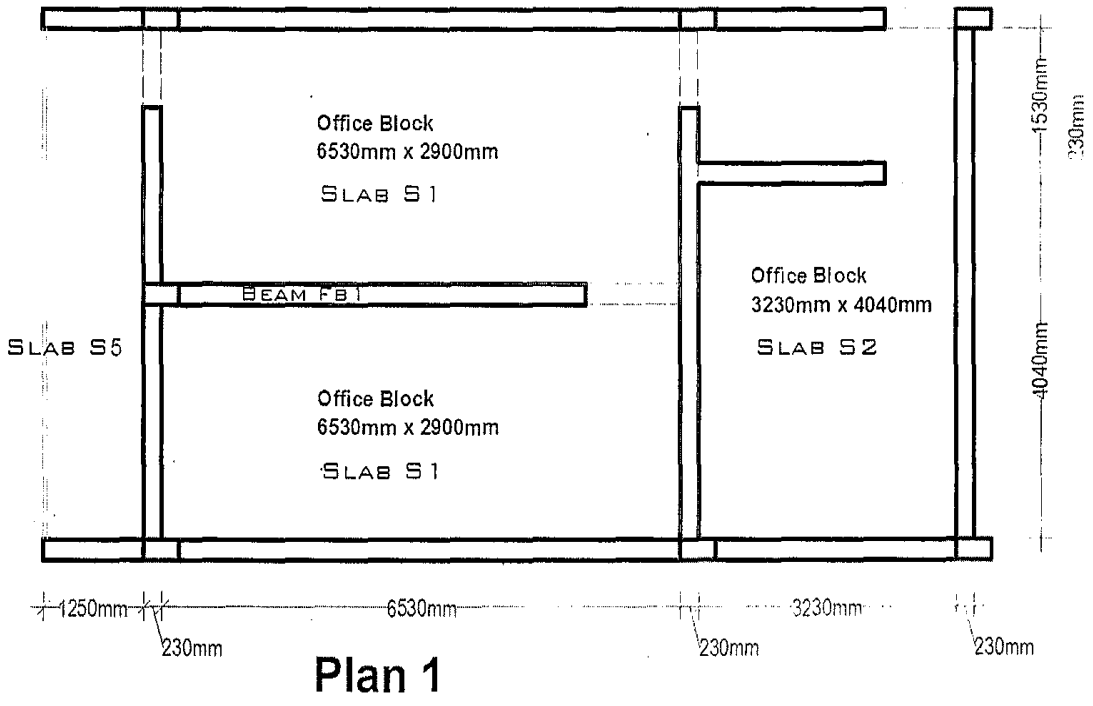
[6357]-202
S.Y. B.Arch.
THEORY OF STRUCTURES - III
(2019 Pattern) (Semester - III) (2201920)

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 Q. 2,3,4 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



Plan 1

Q1) Design Slab S1 from the Sketch. It is supported on all four sides by 230mm wide R.C.C. Beams. 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 7m,carrying a UDL of 20kN/m over its entire span. It is also carrying a point load of 25kN at distance of 2m 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 120mm thick. Assume wall l50thk and 2.5m high. Live Load on slab S1 and Floor Finish are 4kN/m^2 and 1.25kN/m^2. Design for Flexure only. Reinforcement Section not expected. Design for Shear not expected. **[12]**

Q4) Write Short Notes On : **[12]**

a) Cover: Functions and Covers for Different RCC Elements

b) Mixing, Transporting and Placing of Concrete

c) Water Cement Ratio

d) Advantages and Disadvantages of Continuous Beams

e) Two Cases of Torsion in Building Elements.

SECTION - II

Q5) For a short axially loaded RCC column subjected to Service Load of l000kN having one dimension 230mm, Design the Column. Consider 1.0% 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 2.4m c/c cantilevering out for a span of 1.5m, The Flooring is of Indian Oak Boards 36mm thick with floor finish of 1.25kN/m^2. 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 Shear. **[12]**

Q7) Design Slab S5 from the Sketch above. Use 10mm dia steel bars as main steel and 8mm dia for distribution. Use Floor Finish as 2.5kN/m^2 and Live Load as 5kN/m^2. Make Schedule and Draw Sketch of Reinforcement. **[12]**

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

a) Explain w.r.t Wooden Beams Minimum Width, Bearing and Notches and Holes.

b) Explain any 4 Advantages of Wood as a Structural Material.

c) Explain in detail the load distribution in a two way slab.

d) Write a short note on Limit State of Deflection and Span to Depth Ratios.

e) List the various Limit States and their Sub States.

♦ ♦ ♦

Total No. of Questions : 4]

SEAT No. : ____

PC-1985

[Total No. of Pages : 2

[6357] - 203
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) Explain in the detail the Steps in Water Purification Process. **[15]**

OR

Calculate the capacity of UGWT & OHWT for a building of 3 floors with 2 flats of 4 BHK on each floor having intermittent water supply. Draw with neatly labelled sketches of the UGWT & OHWT for the calculated capacity. (Consider 6 people per flat and assume water demand of 135lit/person/ day) **[15]**

Q2) **Write short notes with sketches wherever necessary (ANY FOUR) :[20]**

a) Septic tank

b) Ferrule connection

c) Gully Trap

d) P and S traps

e) Differentiate between single stack and double stack system.

f) Any two types of Water Closets (WC)

P.T.O.

SECTION - II

Q3) a) Explain in detail Direct supply system and Overhead tank system of water supply with sketches. **[15]**

OR

b) Explain with sketches Solar water heater and its working. **[15]**

Q4) **Write short notes with sketches wherever necessary (ANY FOUR) :[20]**

a) In-Direct system of hot water supply

b) Grease Trap

c) Rain water harvesting system

d) Ball valve and its application in water supply

e) Wash Hand Basin

f) Grid Iron system and Radial system of water supply

Total No. of Questions : 4]

SEAT No. : ____

PC1986

[Total No. of Pages : 2

[6357]-204

S.Y. 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 diagram 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 3000×4000 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

Draw following details for a timber sliding folding door of size 2400mm width and 2100mm height. **[20]**

a) Plan, elevation and section of door to a scale of 1:20

b) Detials of sliding mechanism at top and bottom of door to a scale of 1:10

Q2) Answer the following (Any Three) **[15]**

a) Draw a sketch showing section through lift shaft showing the various parts and terms used in a lift.

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) Explain with sketch Ferro concrete and its applications.

P.T.O.

SECTION - II

Q3) Explain with sketch (Any Three) **[15]**

a) Waist slab

b) Open well and quarter landing

c) Bent up bar in slab.

d) Distribution steel in slab

e) Reinforcement in folded slab stair

f) Detail at junction of waist slab and mid landing (scissor reinforcement)

Q4) Answer the following (Any Four) **[20]**

a) What are the advantages of using Bay Window?

b) Draw sketch showing detail section of Brick Bat water proofing for terrace.

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 Hydraulic elevator.

f) Explain any two methods of damp proofing.

Total No. of Questions : 8]

SEAT No. :

PC1987

[Total No. of Pages : 3

[6357]-205
S.Y.B.Arch.
THEORY OF STRUCTURES-IV
(2019 Pattern) (Semester-IV) (2201929)

Time : 2½ Hours] *[Max. Marks :70*

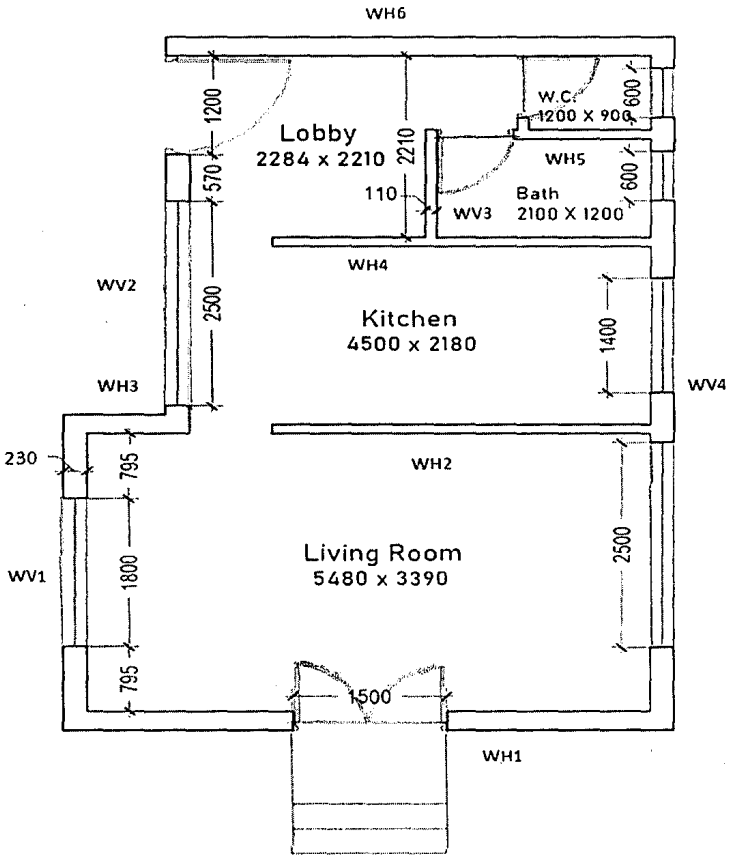
Instructions to the candidates:

1) *Question No 1 and 5 are Compulsory. Any two out of Q. 2,3,4 in section 1 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.



All Dimensions are in mm

P.T.O.

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

a) Building is an office building.

b) 10 Treads in each Flight of 300 each and Riser is 150 mm.

c) The width of Landing = Width of Flight = 1200mm.

d) The Staircase is supported on 230mm wide beams at the outer edges of the Landing.

e) Consider Live Load = 4 kN/m^2 & Floor Finish = 1.25kN/m^2.

f) Use 12 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.

Q3) Design a Steel Girder using ISMB for a Clear Span of 9.0 m, UDL (service load) of 22 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 230mm × 500mm and is Reinforced with 4 no 20 mm bars in one row. Calculate its Moment of Resistance.

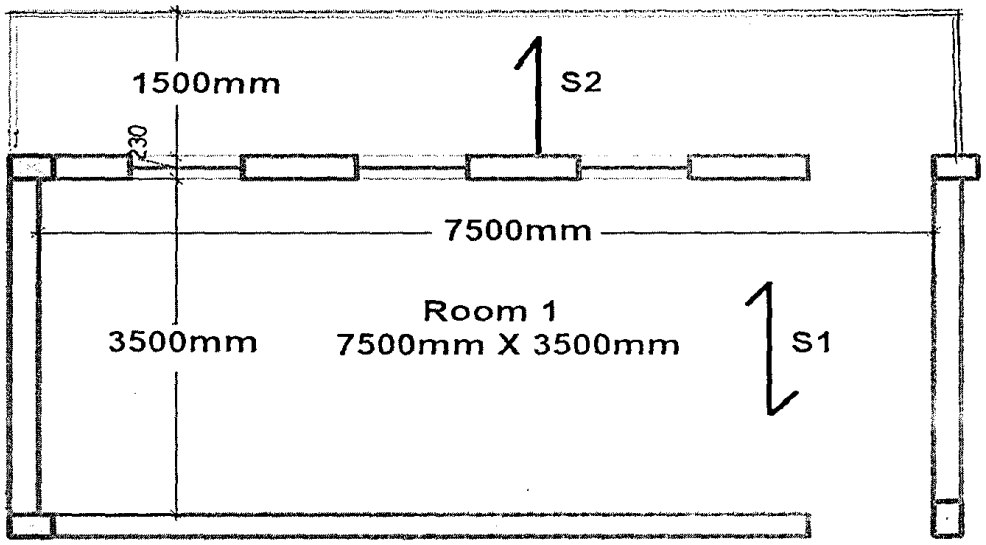
c) Draw Bending Moment Diagram for three span one way continuous slab showing the bending moment coefficient at support and mid span.

d) Explain why I.S.456 recommend the use of Under-Reinforced Sections.

SECTION-II

Q5) Design rectangular RCC Cantilever Beam of clear overhang length 2.1m. This Beam is subjected to working loads of 12 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 = 4kN/m^2 and Floor Finish = 2.5 kN/m^2 on a water Proofing of Brick Bat Coba 75mm Thick. Use 10 mm diameter bars as main steel, clear cover of 25mm. Draw reinforcement details for the same. No need to make a Schedule. **[13]** Figure 2.



Q7) Design a steel stanchion using ISHB sections for a compressive service load of 450 kN. Height of column is 5.5m with one end hinged and other end fixed. Assume the design compressive stress (fcd) as 120 N/mm^2 to begin with.**[13]**

Q8) Answer any three of the following: **[13]**

a) List the different loads acting on a Steel Structure as per IS 800 2007.

b) What are the different types of rolled steel sections available in the market.

c) Explain Plastic Moment Capacity and Section Modulus Plastic.

d) Explain any 4 Disadvantages of Steel Structures over Concrete Structures.

Total No. of Questions : 4]

SEAT No. : ____

PC1988

[Total No. of Pages : 2

[6357]-206

Second Year 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 if necessary.***

SECTION - I

Q1) What is Artificial Lighting? **[20]**

Explain Lumen Method with a suitable example.

Calculate and Design a lighting layout for a Office Space considering the following and draw a neat suitable sketch plan for the same:

- An office area has length: 25 meter; width: 15 meter; height: 3 meter.
- The ceiling to desk height is 2.5 meters.
- The area is to be illuminated to a general level of 250 lux using twin lamp 20-watt CFL luminaires with a SHR of 1.25.
- Each lamp has an initial output (Efficiency) of 85 lumen per watt.
- The lamps Maintenance factor (MF) is 0.63, Utilization Factor is 0.69 and Space Height Ratio (SHR) is 1.25

OR

What is waste? Types of waste? What is waste disposal? **[20]**

Explain any two methods of garbage disposal at a town level amongst the following

a) Aerobic Composting and Anaerobic Digestion

b) Biogas Technology

c) Reuse and Recycling of Non-Biodegradable Solid waste

d) Land Filling

P.T.O.

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

a) Day Light and Day Light Factor with sketches

b) Explain Liquid Waste and types of liquid wastes

c) Explain the Tungsten Bulb with a suitable sketch

d) Differentiate between Direct and Indirect Lighting

e) Vermicomposting for a Residential Building

SECTION - II

Q3) Answer the following (ANY Three) **[15]**

a) Explain Biogas and its anyone types.

b) Diffusers in the Lighting System

c) Glare and its types.

d) Manure Pit at Household Level

e) Explain the Low Voltage Systems used in Building Premises.

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

a) Visual Acuity

b) Classification of Solid Waste

c) Tubular Daylight Devices

d) Fuses and its types

e) Explain Refuse chute with neat sketches

f) Circuit Breaker

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Total No. of Questions : 3]

SEAT No. : ____

PC-1989

[Total No. of Pages : 2

[6357]-301

T.Y. B.Arch.

BUILDING CONSTRUCTION & MATERIALS - V

(2019 Pattern) (Semester - V) (3201936)

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

(To be solved on drawing sheets only)

Q1) Draw reflected plan & section of suspended ceiling for an office working area of size 3.60 M × 4.20 M. Draw Plan & section to 1:20 scale.

Draw enlarged light fixing detail and fan fixing detail to suitable scale. **[20]**

OR

Draw plan, elevation & section of an acoustical partition (proprietary or non-proprietary system) proposed for a meeting room. Size of partition of 3.20M in length & 3.00 M in height with a glass window of size 1.20 M × 1.20 M located at center at a sill level of 0.90M.

a) Draw a plan to the scale of 1:10.

b) Draw elevation and section to the scale of 1: 10.

c) Draw any two enlarged details.

Q2) Draw sketches of the following : (Any **three**) **[15]**

a) Details of fixing drawer in any furniture unit. **[5]**

b) Two joinery details constructed in hardwood. **[5]**

c) Any 2 details in Master Bed unit joinery. **[5]**

d) Metal Partition with 1 enlarged detail. **[5]**

P.T.O.

SECTION - II

(To be solved in answer books only)

Q3) Answer **any Seven** of the following with necessary sketches if required.

[7 × 5 = 35]

a) Any 2-hardware used in furniture work.

b) Write short note on any 2 timber derivatives.

c) Concept of deep foundation.

d) Post tensioned slab.

e) Any 2 types of Retaining wall.

f) External tanking treatment in basement construction.

g) Concept of flat slab.

h) Any 2 types of paints.

i) MDF & plywood.

▽▽▽▽

Total No. of Questions : 8]

SEAT No. :

PC-1990

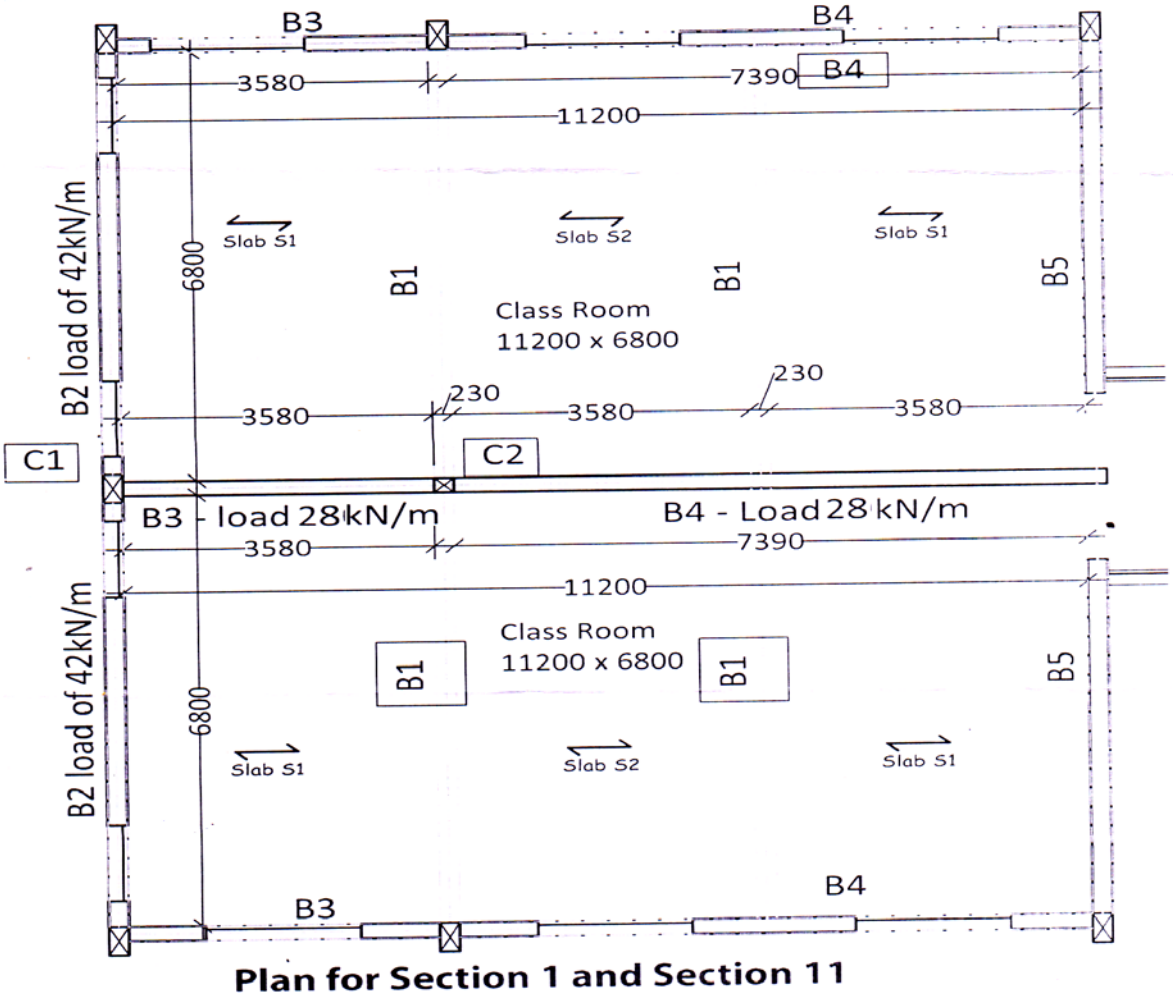
[Total No. of Pages : 4

[6357]-302
T.Y. B.Arch.
THEORY OF STRUCTURES - V
(2019 Pattern) (Semester - V) (3201938)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

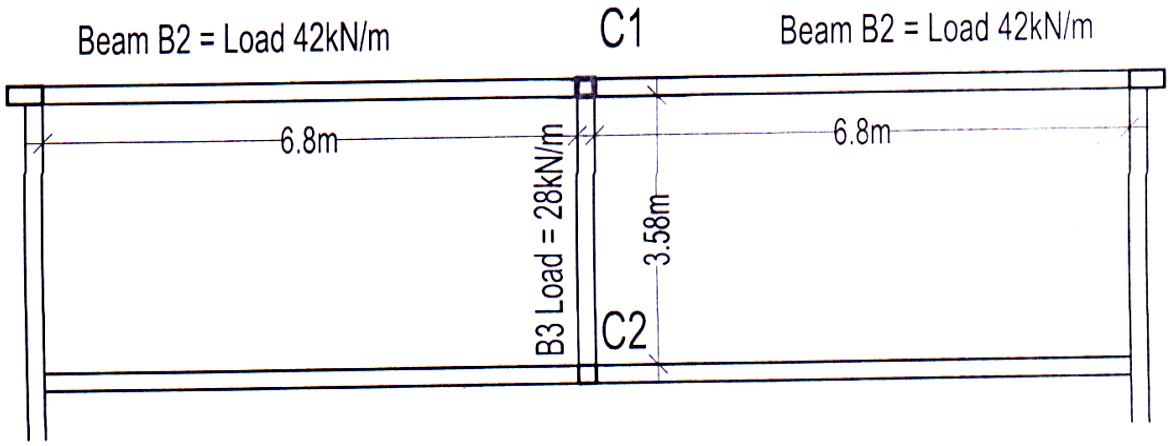
1) ***Question No 1 and 5 are Compulsory in each Section.***
2) ***The plan given below appliers to questions in Both sections.***
3) ***Figures to the right indicate full marks***
4) ***Assume suitable data where necessary only***
5) ***Use M 25 Grade concrete and Fe 500 grade steel***
6) ***Every R.C.C.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



Plan for Section 1 and Section 11

P.T.O.

SECTION - I



Q1) Find the Load acting on column Cl per floor. Assume Load on B2 to be 42kN/m and Load on B3 to be 28kN/m. Calculate Load on every Floor considering Parking + 5 Floors. Design Column of 230mm width on First Floor using 3%steel and M25 Grade Concrete. Keep the Size same and Design Column on Parking 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

Q2) a) Design the Beam B1 as a T Beam. Take the overall depth to 450mm. Assume Slab Depth = 150mm of Slab S1 & S2 Take Live Load as 5kN/m^2. Design or Flexure only. Assume N.A Position within Flange **[8]**

b) Explain a 3 situations in which reversal of Stresses in Beams leads to Doubly Reinforcing it **[3]**

Q3) a) Design Beam B4 as a Doubly Reinforced Beam of Clear Span 7.39m to carry an u.d.l of 28kN/m. Restrict the Overall depth to 450mm. Design for flexure only. Consider 2 rows of 20mm bars in Tension **[8]**

b) Explain why Flanged Beams for a Cantilever will be at the top of the slab and not at bottom **[3]**

Q4) a) Write Short Notes on any two of the Following drawing sketches wherever necessary **[8]**

i) Raft Foundations - Need and Types

ii) Coffered Slab Construction - Structural Action and Appications

iii) Proportioning of a Flat Slab

iv) Situations where eccentricity of Loading Develops in a Column

b) Explain the Situations in which a Combined Footing needs to be provided **[3]**

SECTION - II

Q5) Beam B4 of span 7.39m and service Load of 28kN/m is to be replaced by ISMB 300 with Zp = 651700mm^3. Calculate the thickness of 180mm wide Flange Plates to be welded to each flange. Check the Built Up Section for Bending Strength ony. lzz of ISMB 300 = 98210000mm^4. No need to Classify the Section or Check for Shear and Deflection **[13]**

OR

a) Column Cl carrying Service Load of 2200kN is of ISHB 350 of Area = 8591mm^2 with 16mm thick flange plates on either side. Calculate the width of the Flange Plates. Consider Length of 6460mm with Both Ends Fixed along Y direction which is the Governing Axis. Iyy of Bare Section = 2451 × 10^{4}mm^4. Design Compressive Stress forS.R of 40,50 and 60 is 198,183 and 168N/mm^2 respectively. (Hint Assume Compressive Strength to begin Design Process = 180N/mm^2) **[8]**

b) Write a Short Note on the Advantages of Plate Girders - Need and Parts **[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 = l7kN/m^3, Density of Masonary = 25kN/m^3

Top Width of Wall = 1.3m, Take Bottom Width of wall = 0.6h

Height of Wall = 5.0m = h

Angle of Repose = 25°, Coefficient of Friction μ. = 0.6, S.B.C of Soil = 225kN/m^2

Calculate Maximum and Minimum Pressure at Base and Comment

b) What are the Assumptions in Rankine's Theory of Earth Pressures? **[3]**

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

b) A Pre- stressed beam of size 230mm x 450mm is used as Beam B4 It carries an udl of 28kN/m over its entire span of 7.39m inclusive of its self-weight. It is pre-stressed by tendons supplying l400kN 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 × 650mm C1 to carry a load of Service Load of 1750kN in a Soil of S.B.C 250kN/m^2. Assume 0.25% Steel and Design Shear Stress as 0.36 N/mm^2 for the assumed % of Steel. Do not Design or Check for Double Shear. No Need to Draw Reinforcement Diagram. **[11]**

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Total No. of Questions : 4]

SEAT No. :

PC1991

[Total No. of Pages : 2

[6357]-303

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) ***Answer all questions.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) State the advantages and drawbacks of Natural ventilation. With the help of neat sketches explain the various factors that affect the natural ventilation of buildings. **[15]**

OR

b) With the help of neat sketches explain the three different types of Mechanical ventilation. Common application of each type.

Q2) Write short notes on any FOUR of the following. Add relevant sketches wherever required. **[15]**

a) Cross Ventilation.

b) Stack effect.

c) Parameters associated to human thermal comfort (Any 4).

d) Centrifugal fan.

e) Wind catchers of arid zones.

f) Evaporative cooling.

P.T.O.

SECTION - II

Q3) a) Draw a neat, labelled diagram to explain the working of Centralized Chilled Water Air-Conditioning system, explaining the role of each component involved in it. **[15]**

OR

b) What is Fan Coil Unit? With the help of a diagram explain its working mentioning the components involved. State its applications and suitability with respect to the type of AC system it is used for.

Q4) Write short notes on any FOUR of the following. Add relevant sketches wherever required. **[20]**

a) Two types of Diffusers used in ducted AC system.

b) Shell and tube type of Heat exchanger.

c) Refrigeration Cycle with sketch.

d) Any two Dampers and their applications.

e) Split Air-conditioner.

f) AHU (Air handling Unit).

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Total No. of Questions: 8]

SEAT No. :

PC1992

[Total No. of Pages : 6

[6357]-304
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 Strcutural Steel Use Steel Fe410 (E250)whose*** **fy=250N/mm²**. ***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

QNo.1 Compulsory. Answer any 2 from QNo 2, 3 and 4.

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

Show columns only on Ground Floor, Size cloud 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 500mm.

Show spans of all slabs. Indicate Depth and span to depth ratio considered and type of slab. Slab depth to be restricted to 120 mm including staircase slab.

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 - 300mm Width of base - 3100mm S.B.C of soil - 230 kN/m^2

b) Bottom width of stem - 600mm thickness of base - 600mm Density of soil - 16 kN/m^3

c) Height of stem - 5200mm Toe projection - 700mm Coefficient of friction - 0.62

d) Density of Concrete - 25 kN/m^3 Angle of repose - 30^o

Angle of repose = ϕ = 30, 3. Density of backfill = w = 16, 4. Density of concrete = 25, 5. Coefficient of friction = μ = 0.62. Soil bearing capacity (SBC) = 230.

Q3) a) Distances to be observed for Plate Tearing Failure in a Bolted Connection. **[3]**

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

i) Spacing of Trusses = 4.25m, Span of Truss = 15m and Height of Truss = 2.5m

ii) Roof Covering = G.I. Sheets

iii) Spacing of Purlins = 1.35m

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) Draw and explain the various parts with their structural action in an INTZE tank.

b) Write a short note on guidelines for Lacing systems based on IS800.

c) Explain the structural need of Bracings in a Trussed Steel Building and their locations in the trussed roof. Enlist the different sections used.

d) Structural Action in the Stem of a R.C.C. Counterfort Retaining Wall and its reinforcement details.

SECTION-II

QNo.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 15.5m x 33m. **[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 2 no ISMC placed front to front with a Battened Lateral system to take a load of l500kN. Height of the Stanchion is 7.5m, with both ends fixed in both directions. (Hint: Assume Stress = 200N/mm^2). Assume End Battens of Size 200mm × 8mm and Intermediate Battens 150mm × 8mm wide. Draw Sketch. **[10]**

Q7) Attempt Any Two. **[10]**

a) Write a Short Note on Structural Action of Folded Plate structures.

b) Write a Short Note on Dia Grid Systems used in High Rise Buildings.

c) Write a Short Note on Structural Action of Barrel Vaults.

OR

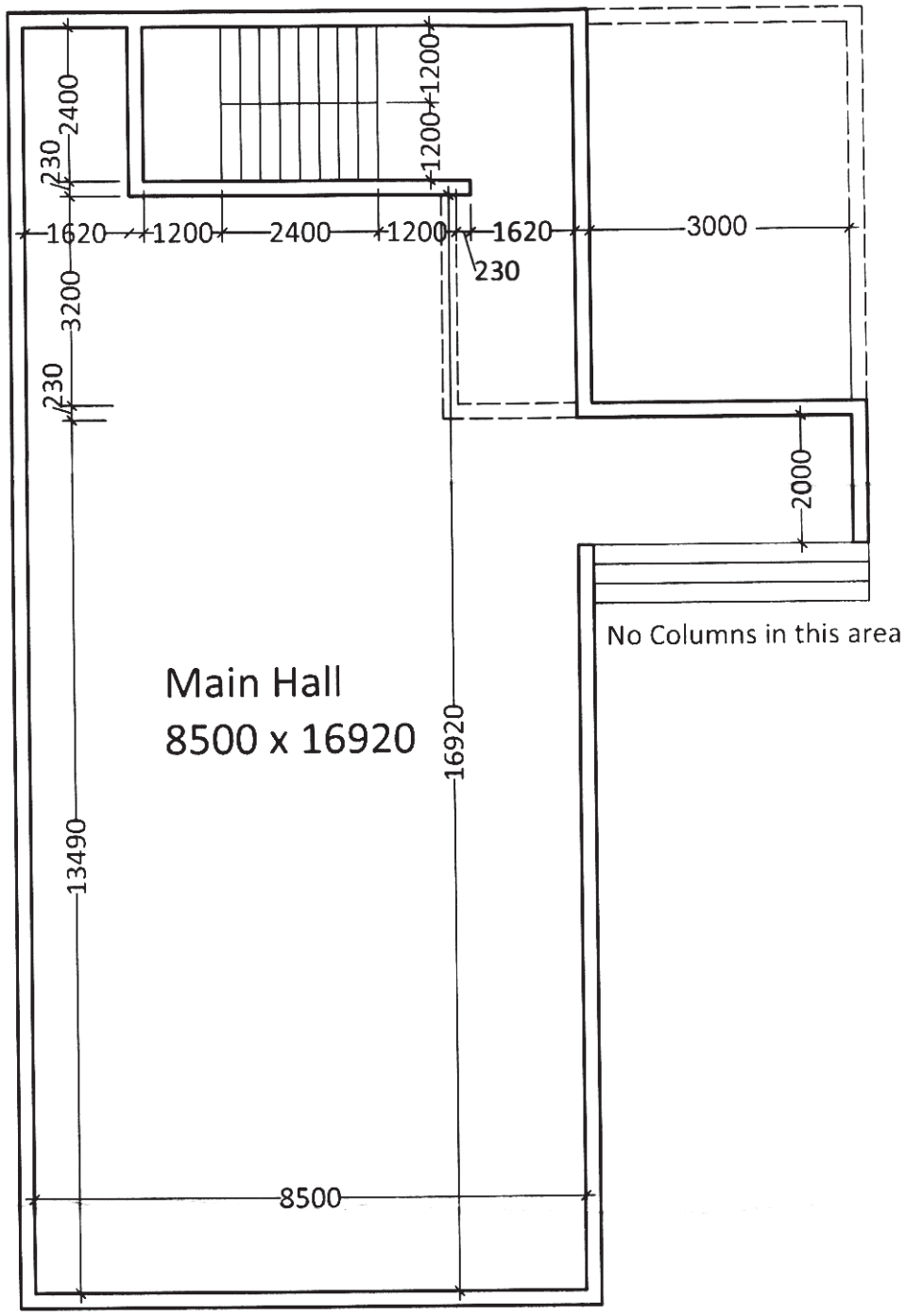
Design a Tension Member to take a Service load of l20kN. It is to be bolted with 20mm Bolts Design the Bolted. Connection. Use $\beta = 1.08$ **[10]**

Q8) Calculate Design equivalent static wind forces on an R.C.C Multistory building having size 12m × 20m × 30m located in Pune in a flat land Average storey height is 3m and frames are spaced at 4m c/c both directions. The building is oriented with smaller dimension facing the wind. **[10]**

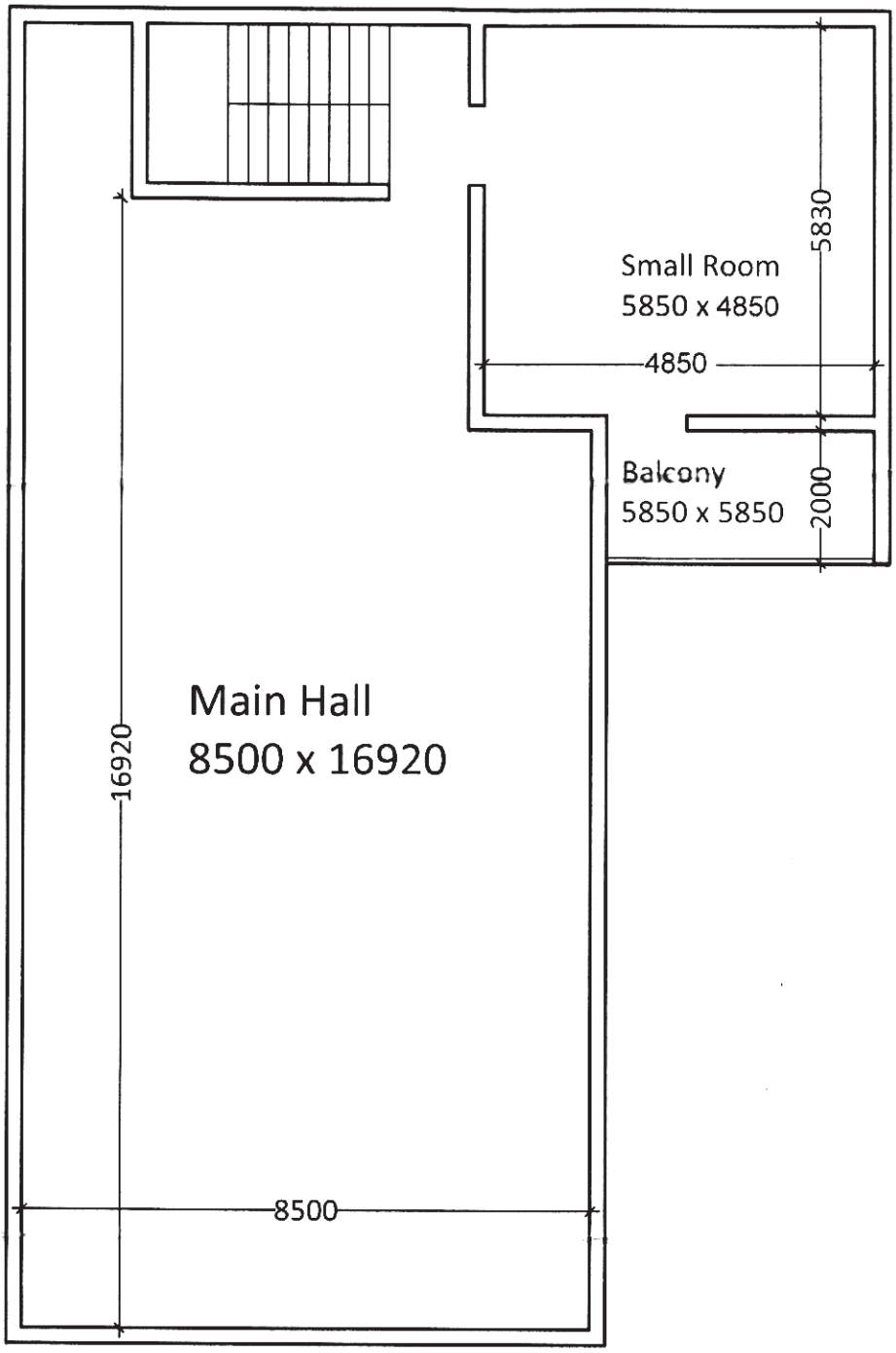
vb = 39m/s, k1 = 1, k3 = 1, k4 = 1, kd = 0.9, ka=0.9, kc = 0.95, cf =1.35. k2 as per following table

k2 = 0.91, 0.97, 1.01, 1.06 at height of l0m, 15m, 20m, 30m

Calculate the Design Nodal Wind Load on all floors.



Ground Floor Plan



FIRST Floor Plan

Total No. of Questions : 4]

SEAT No. : ____

PC1993

[Total No. of Pages : 2

[6357]-305

T.Y.B.Arch.

BUILDING SERVICES - IV

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

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) What is classification of fire? Explain with sketches any three types of fire extinguishers used in firefighting. **[15]**

OR

List the various sprinkler systems used for firefighting in buildings. Explain with sketches any 3 sprinkler systems used.

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

a) Smoke detectors

b) Fire rating - List fire rating for 4 common construction assemblies/ components

c) Two types of fire hydrants

d) Fire door

e) Refuge area

f) Fire triangle

P.T.O.

SECTION - II

Q3) What is Reverberation and Reverberation Time? Explain the method of Calculating the Reverberation time. What are the important factors for reducing the RT of an Auditorium. **[15]**

OR

Explain Air borne and Structure borne noise. And the way of controlling Air borne and Structure borne noise with neat sketches.

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

a) Defects of sound

b) Methods of cutting off air-borne noise

c) Relation Between Frequency, Velocity and Wavelength of sound

d) Acoustical materials

e) Factors affecting Acoustics

f) Sound foci and dead spot

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SEAT No. :

PC-1994 [Total No. of Pages : 3

[6357]-306

T.Y. B. Arch.

ARCHITECTURAL DESIGN - V

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

Time : 12 Hours (6 hrs. per day × 2 days)] ***[Max. Marks : 100***

Instructions to the candidates :

1) ***The design will be valued as whole.***
2) ***Line drawings of plan and section at 1:100 scale must be submitted at the end of the first day. This drawing will not be returned the next day. No major deviation shall be allowed.***
3) ***Draw neat sketches where necessary.***
4) ***Assume and mention suitable data where necessary.***
5) ***All drawings should be clear and self-explanatory.***
6) ***Assume suitable data if necessary.***

A Community Library for a Town in Konkan.

In the recent years it has been observed that the use of mobiles has increased and reading books has decreased. Audio -visual content is more prevalent and actual reading a physical book has decreased amongst people of all ages. This is not only seen in the cities but also our towns and villages. Studies have shown that print books can help readers absorb more information and remember more details compared to reading digital text. It also benefits comprehension skills.

To increase and encourage the habit of reading it was suggested that a small community library could be built in a residential locality in a small Konkani town. It would cater to primary school going children to senior citizens of this area. It would have Marathi , Hindi and English books both fictional and nonfictional. Also some magazines and daily newspapers would be kept.

The books would be arranged in categories in an open book stack system, magazines and newspapers at one area. One part of the library would be exclusively a children's book section. It would also have a computer for accessing and finding the books. Adequate tables and chairs would be provided preferably placed in naturally well-lit areas.

P.T.O.

One librarian and would be seated at the issue and return desk , one assistant would be employed to help the visitors and one watchman would be at the baggage counter.The locality has a piece of land reserved for a commercial purpose, the residents have approached the local authorities to provide one. The building must be climate responsive and well suited for all seasons. The rectangular piece of land which is 2400 sq.m (40m × 60m) is amidst low rise residential buildings and has 6.0 m wide road situated to the east. (Please refer to the attached plan).

Requirements		**Area**
1.	Entrance lobby + Baggage counter (1 person)	20 sq.m
2.	Librarians desk (1 person)	20 sq.m
3.	Computer for accessing titles	8 sq.m
4.	Library - stack area	200 sq.m
5.	Library - reading area (30 people)	75 sq.m
6.	Library - magazine +newspapers	25 sq.m
7.	Children's library (10 people)	75 sq.m
8.	Toilets (Ladies, Gents 25 sq.m each)	50 sq.m
9.	Store (furniture, equipment)	25 sq.m

Total Built up area 498 sq. m + 30 % circulation ie. 150 sq. m = 648 sq.m

= 650 sq.m

Outdoor areas

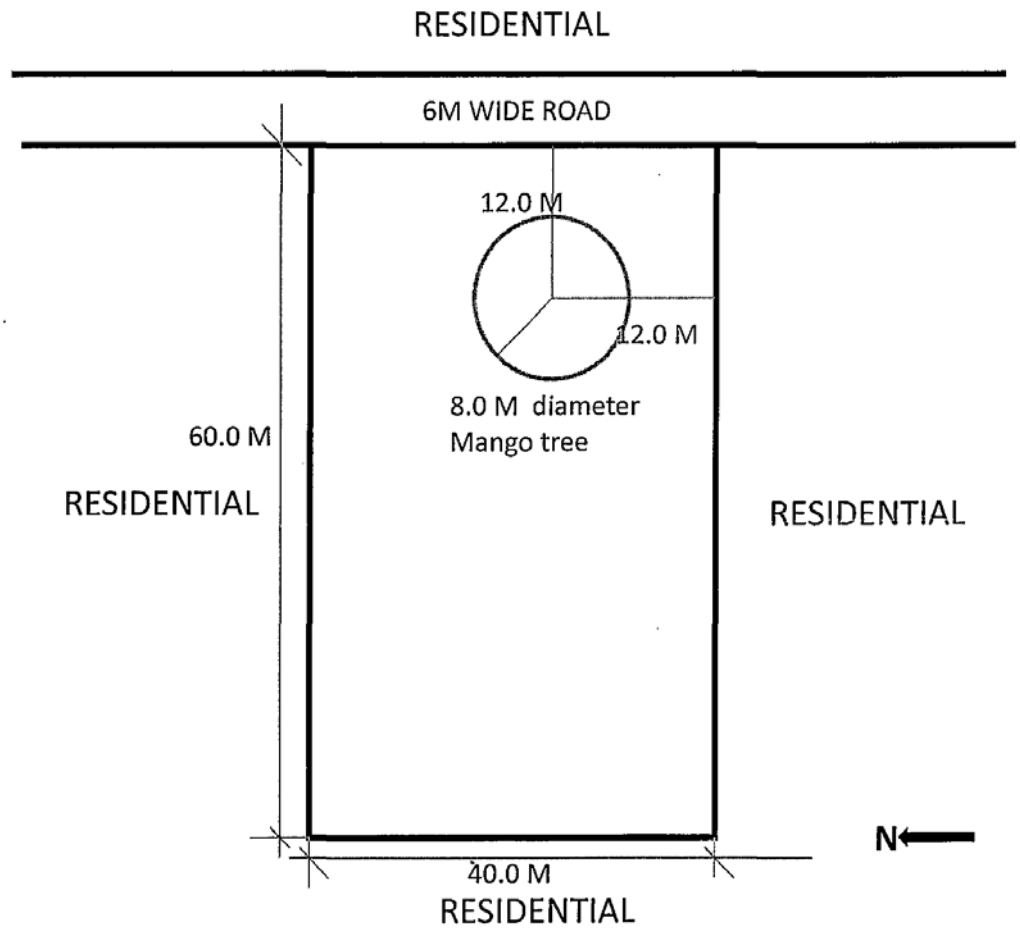
1. Hard and soft landscaped areas as required
2. Walking track around the plot
3. Outdoor seating areas
4. Parking — 02 four wheelers and 20 two wheelers.

Site parameters-

- Plot size — 40 m × 60 m
- Plot Area — 2400 sqm
- Set back from road — 4.5 m front & 3.0 m from all sides
- Maximum Ground coverage — 35% of plot area
- Permissible FSI — 1.00

Drawing requirements

1. Site Plan with roof plan of structure and landscape, roads, parking and pathways. 1 :200
2. Ground floor plan with all furniture 1: 100
3. Two sections or sectional elevations 1: 100
4. Two elevations 1: 100
5. Structural plan showing column and beam positions 1: 100
6. View



Site for A Community Library for a Town in Konkan.

Plan is not to scale please refer to written dimensions

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Total No. of Questions : 6]

SEAT No. : ____

PC-1995

[Total No. of Pages : 4

[6357]-401

Fourth Year B.Arch.

QUANTITY SURVEYING & SPECIFICATION WRITING I

(2019 Pattern) (4201958) (Semester - VII)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Section - 1 and Section - 2 must be solved in separate answer books.***
3) ***Assume suitable data if not provided.***
4) ***All dimensions in figures are in meters.***
5) ***Figures on the right side shows the maximum marks***

Section - 1

Q1) **(Any 3)** **[3 × 5 = 15]**

a) Explain the importance of Quantity Surveying in project planning.

b) What is Schedule of Rates and how it is useful.

c) Explain what documents are required for carrying out the quantity survey and estimate of an project.

d) What qualities are essential for a Quantity Surveyor / Estimator.

e) Explain the purpose of Measurement Sheet along with format of the same.

Q2) **[1 × 10 = 10]**

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

OR

b) Types and classification of Specifications.

Q3) **Find out quantities of the items below (Any 2) :** **[2 × 5 = 10]**

Refer Drawing A :

a) PCC below foundation

b) Soling in the plinth

c) UCR masonry in the ground

d) Murum filling in plinth

P.T.O.

Section - 2

Q4) **Find out quantities of the items below (Any 3) :** **[3 × 5 = 15]**

Refer Drawing B :

a) RCC in columns up to plinth level

b) RCC in Plinth Beams

c) Flooring in all rooms

d) Skirting in all rooms

e) RCC in footings of columns type C-2

Q5) **(Any 3) :** **[3 × 5 = 15]**

a) Explain the importance of “IS-1200 Mode of Measurements”.

b) Explain what is “Lift” and “Lead” as related to excavation

c) Explain the importance of “Trial Pit Data”

d) Write detailed specification for “Excavation in Soil”

e) Explain the difference between “Brief Specifications and Detailed Specifications”

Q6) **(Any 5) :** **[5 × 1 = 5]**

Write mode of measurements for items of building work as per IS-1200

a) Plastering on walls

b) 120mm high skirting to walls

c) Excavation in Murum

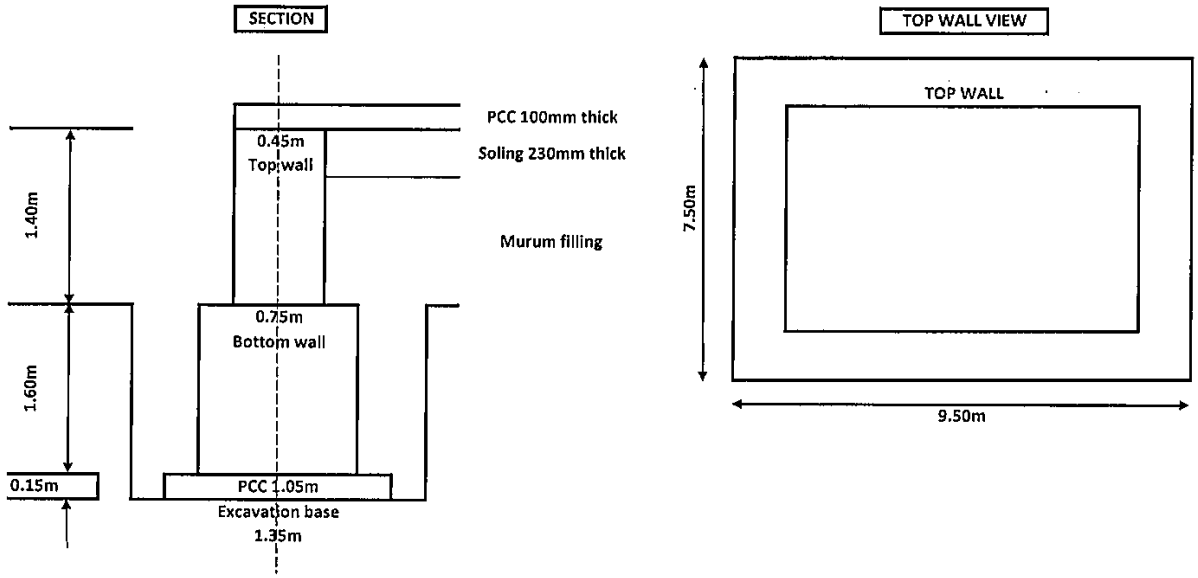
d) RCC in columns

e) PCC in foundation

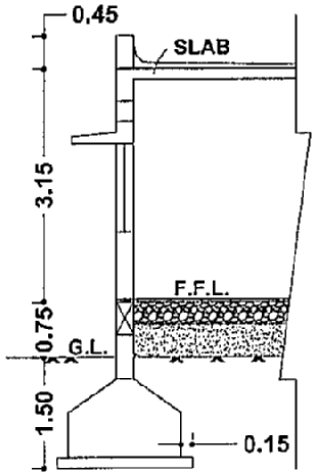
f) 350mm thick Brick Walls

g) 15mm diaGipipes

h) 12mm dia Reinforcement steel


SECTION
PCC 100mm thick
Soling 230mm thick
Murum filling
0.45m
Top wall
1.40m
0.75m
Bottom wall
1.60m
0.15m
PCC 1.05m
Excavation base
1.35m
TOP WALL VIEW
TOP WALL
7.50m
9.50m

DRAWING 'A'

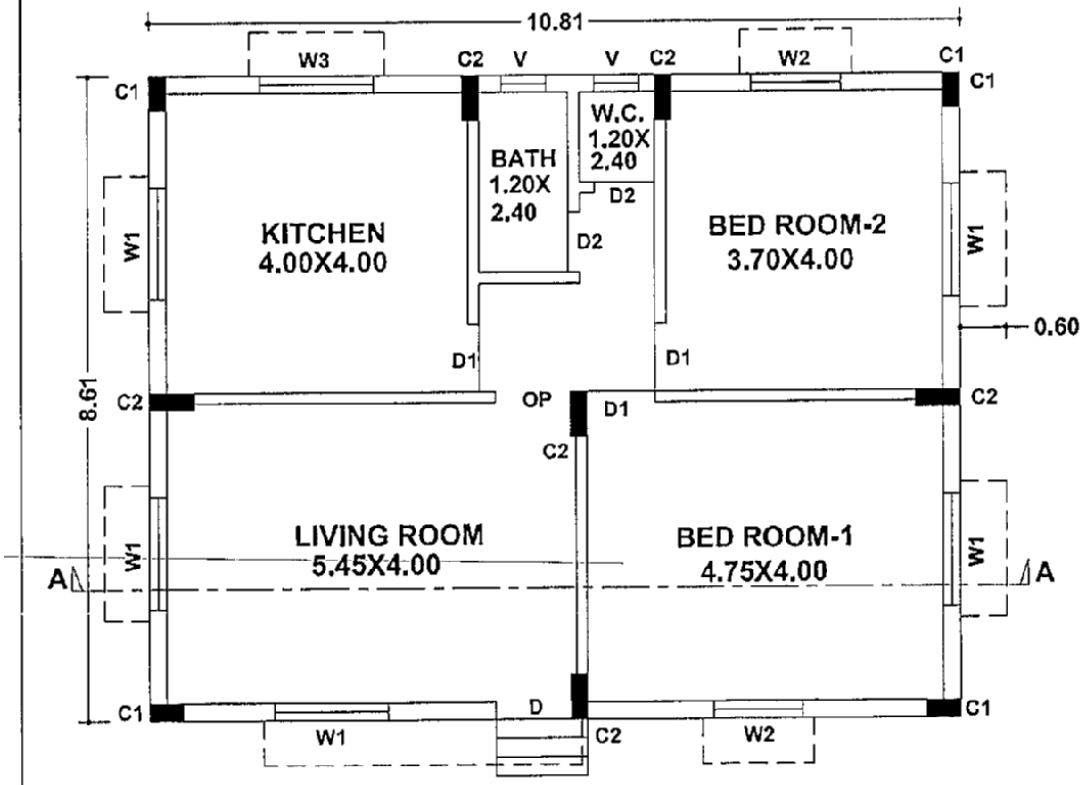


TYPICAL SECTION

SCHEDULE OF OPENING	
D = 1.00 X 2.10	W1 = 1.50 X 1.20
D1 = 0.90 X 2.10	W2 = 1.20 X 1.20
D2 = 0.80 X 2.10	W3 = 1.50 X 0.90
OP = 1.00 X 2.10	V = 0.60 X 0.90

SPECIFICATIONS:-

PCC IN FOUNDATION M15 GRADE 150 m.m. Thick.
RCC FOOTING - C1 - 1.25 X 1.25 , D - 0.45 / d - 0.15.
C2 - 1.50 X 1.50 , D - 0.60 / d - 0.20.
RCC COLUMN - C1 - 0.23 X 0.45 , C2 - 0.23 X 0.60.
RCC FLOOR BEAM - 230 X 450 m.m.
RCC SLAB - 125 m.m. Thick.
RCC LINTEL BEAM - 230 X 300 m.m.
RCC CHAJJA - 100 m.m. Thick.
PCC AT PLINTH TOP M10 GRADE 100 m.m. Thick.
ALL EXTERNAL WALLS - 230 m.m. Thick.
ALL INTERNAL WALLS - 150 m.m. Thick.
230 Thick RUBBLE SOLING IN PLINTH.
INTERNAL NERU FINISH PLASTER TO WALL & CELING.
EXTERNAL SAND FACED PLASTER.



GROUND FLOOR PLAN

FIG - B

Total No. of Questions : 8]

SEAT No. :

PC-1996

[Total No. of Pages : 2

[6357]-402
Fourth Year B.Arch.
PROFESSIONAL PRACTICE
(2019 Pattern) (4201959) (Semester - VII)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answers to the two Sections - I & II - must be written in 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) **Write a comprehensive note on THE ARCHITECTS ACT of 1972, highlighting its salient features, and comment on its impact on Architects Profession.** **[11]**

Answer any TWO of the following:

Q2) What are the main functions of the Council of Architecture? Who are the Members of the Council of Architecture, and how are they appointed? **[12]**

Q3) Write a comprehensive note on The Indian Institute of Architects, giving its history in brief, and its Role and Activities as an Institution of Architects.**[12]**

Q4) Write a short note on the following topics : **[12]**

a) Architects professional Fees

b) Civic and Social activism by Architects

c) Professional misconduct

P.T.O.

Section - II

Compulsory Question :

Q5) **Write a comprehensive note on the SCALE OF ARCHITECTS PROFESSIONAL FEES and the Stages of Payment.** **[11]**

Answer any TWO of the following:

Q6) Write a note on the PROFESSIONAL LIABILITIES of Architects. **[12]**

Q7) Compare and Contrast the following (4 marks each) : **[12]**

a) Income Tax and Goods and Service Tax

b) Savings Account and Current Account

c) Proprietary and Partnership Practice

Q8) State the Full form and 2 salient Features of each of the following organization. **[12]**

a) IIA

b) ISOLA

c) ITPI

d) IID

Total No. of Questions : 6]

SEAT No. : ____

PC-1997

[Total No. of Pages : 4

[6357]-403

Fourth Year B.Arch.

QUANTITY SURVEYING & SPECIFICATION WRITING - II

(2019 Pattern) (4201965) (Semester - VIII)

Time : 2½ Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Solve section 1 and 2 in separate answer books.***
3) ***Figure on the right hand side shows the maximum Marks for the question.***
4) ***Assume suitable data wherever 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 - 1

Q1) **[1 × 10 = 10]**

A) What are various factors affecting the rate of any item of work. Explain anyone indetail.

OR

B) Differentiate between direct cost and indirect cost.

Answer the following :

Q2) A) Prepare rate analysis for the following (any 2) : **[2 × 5 = 10]**

i) UCR stone masonry in CM 1:6
ii) 12mm cement plaster in CM 1:4
iii) Filling in plinth
iv) Vitrified tile flooring.

Material Rates

1. Cement - Rs. 320/- per Bag
2. Crush Sand - Rs, 1150/-per Cu.M
3. Stone Metal - Rs. 1050/-per Cu.M
4. Stone - Rs. 650/- per Cu.M.
5. Murum - Rs. 600/- per Cu. M
6. River Sand - Rs. 3175/- per Cu. M
7. Vitrfied Tile - Rs, 700/- per Sq.M

P.T.O.

Labour Rates

1. PCC -Rs. 1800/- per Cu.M
2. Stone Masonary - Rs. 900/-per Cu.M
3. Plaster - Rs. 300/- per Sq.M
4. Tile Flooring - Rs. 375/-per Sq.M
5. Skilled worker - Rs. 800/- per day
6. Un skilled worker - Rs. 600/- per day

B) Prepare Indent of materials (any 1) : **[1 × 5 = 5]**

i) RCC beam 1:2:4 for $20M^3$
ii) 18mm cement plaster 1:4 mortar for $200M^3$
iii) PCC below foundation in 1:4:8 for $50M^3$

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

a) Define overhead charges in detail.
b) Define daywork, Taskwork & piece work.
c) Define checklist and its relevance with respect to type of work.
d) State importance of checklist.

Section - 2

Q4) Workout Quantities of the following items from the Fig.-1 attached (Any 3) **[3 × 5 = 15]**

a) Ridge cap
b) GI roofing sheet
c) Tie members
d) Purlins
e) Principle rafters

Q5) **Answer the following (Any 2)** **[2 × 5 = 10]**

Write specifications for

a) HVAC installation
b) Drainage in a bungalow
c) Electrification for a Mall.
d) Acoustics for drama theatre.

Q6) Write names of the manufacturers of the following. **[10 × 1 = 10]**

a) Elevator

b) Escalator

c) Electrical Cables

d) GI - Roofing sheets

e) Taps

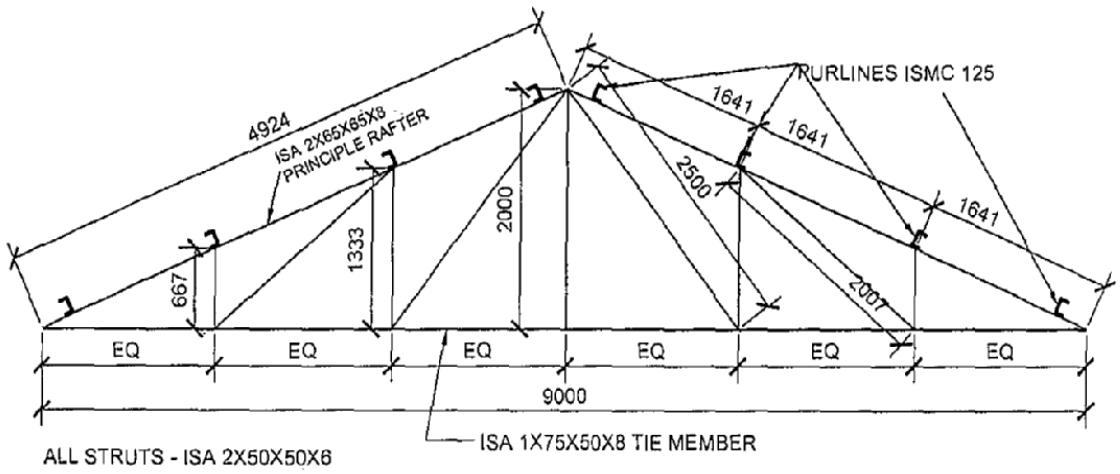
f) Plumbing Pipes

g) Light fittings

h) Air conditioners

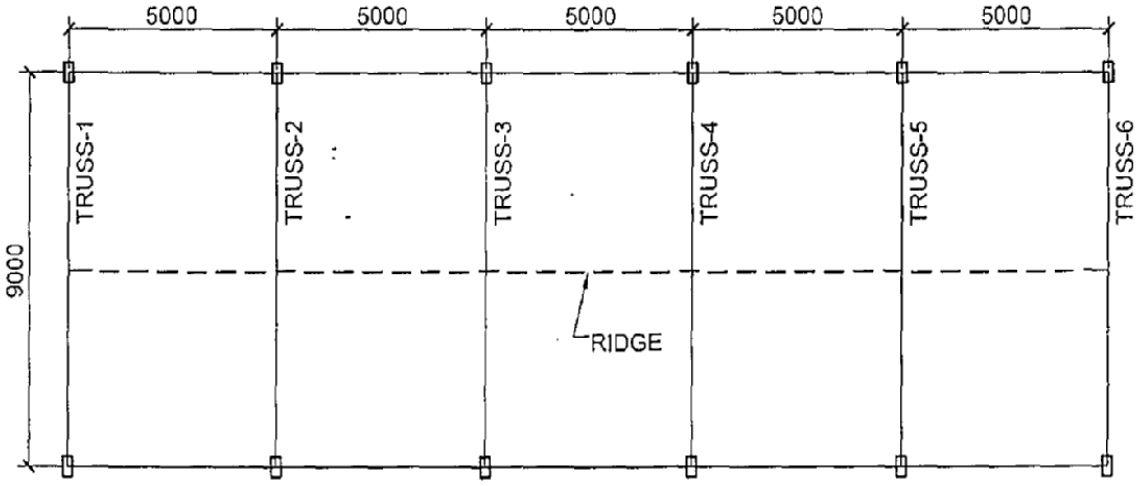
i) Drainage pipes

j) W.C. fittings



ELEVATION OF THE TRUSS

WEIGHT PER RMT FOR STEEL MEMBERS
1. 75X50X8 = 7.40 kg/mt
2. 65X65X8 = 7.70 kg/mt
3. 50X50X6 = 4.50 kg/mT
4. PURLINES - ISMC 125 = 13.10 kg/mt



SCHEMATIC PLAN OF THE FACTORY SHED

FIG. - 1

Total No. of Questions : 8]

SEAT No. :

PC1998

[Total No. of Pages : 3

[6357]-404

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) Define Project Management? What is Project Environment? Explain about Internal and External Project Environment. **[11]**

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

a) 5Ms of Project Management

b) Importance of a Project Manager

c) Policy, Processes and Procedures

d) Explain with example what you understand by Portfolio

e) Traditional Project Management vs Modern Project Management

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

a) What are the different stages in the life cycle of a Project.

b) Explain in detail about the difference between Project Management and Construction Management.

c) Write a note on S.M.A.R.T goals and C.L.E.A.R goals

d) How to create a Feasibility Study?

P.T.O.

Q4) Answer any 2. **[12]**

a) Write a note on Project Integration Management and Project Scope Management.

b) Elaborate on Project Schedule Management.

c) Explain the importance of Project Cost Management. Write about different types of costs.

SECTION-II

Q5) What is a Tender? Compare between different types of Tenders. **[11]**

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

a) Security Deposit Amount

b) Clerk of Works

c) Contract and Contract drawings

d) E-Tendering

e) Explain Interim or R. A bill

Q7) Answer any 3 of the Following. **[12]**

a) Write about Project Resource Management.

b) What do you understand about the Knowledge Area of Project Communication Management?

c) Write a note on Risk Management.

d) Explain about the Project Management Software. What are the benefits of PM Software?

Q8) Explain any 3 of the Following. **[12]**

a) What do you understand by Safety Management? Elaborate on importance of safety management.

b) Write about the functions of a Facility Manager? Explain about the Facilities Management Organizational Structure.

c) Explain the roles of Design Management? Also write about the levels of Corporate Hierarchy of Design Management.

d) What is Finance Management? Elaborate on functions of Financial Management.

Total No. of Questions : 3]

SEAT No. :

PC-4986

[Total No. of Pages : 2

[6357]-405

Third Year B.Architecture

BUILDING TECHNOLOGY AND MATERIALS - VI

(2015 Pattern) (3201547) (Semester - VI)

Time : 3 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

(To be solved on drawing sheets only)

Q1) A exhibition pavilion of floor of size 15m × 28m × 4.5m height at the tie level is to be constructed using steel truss and stanchion columns. **[20]**

a) Draw key plan and section to a scale of 1:100

b) Draw pan plan to a scale of 1:20 showing truss spacing with purlins.

c) Draw part sectional elevation to a scale of 1:20 of the truss along with sheet roofing.

OR

Design and Draft a small library of two rooms and a toilet using RC precast flooring and roofing system developed by CBRI

a) Draw key plan and section to a scale of 1:50

b) Draw detailed plan showing flooring and roofing systems to a scale of 1:10

c) Draw detailed section showing flooring and roofing systems to a scale of 1:10

P.T.O.

Q2) Draw sketches of **any three** of the following : **[15]**

a) Draw a detailed section of the internal tanking treatment for a basement

b) Draw Counterfort retaining wall and mass/gravity retaining all

c) Floor and roof diaphragm in earthquake resistant structures.

d) Patent glazing in North light truss

SECTION - II

(To be solved in answer books only)

Q3) Write short notes of the following with neat sketches wherever necessary (Any Seven) : **[35]**

a) Difference between Adhesives and sealants with respect to their application

b) Characteristics and uses of plastic in building industry

c) Any two types of glass used in exterior application of building

d) Role of shear walls in earthquake resistant structures

e) Properties and application of ferrous metals

f) Concept of Modular Coordination for buildings

g) Base Isolation method

h) Flat slab and flat-plate slab

i) Castellated beam

Total No. of Questions : 8]

SEAT No. :

PC-4987

[Total No. of Pages : 2

[6357]-406
F.Y. B.Arch.
PROFESSIONAL PRACTICE - II
(2015 Pattern) (Semester - VIII) (4201564)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Answers to the two sections – I and II must be written on separate answer books.***
2) ***Answers to Question no 1 from Section I and Question no 5 from Section II are compulsory.***
3) ***Attempt any Two out of the remaining questions in each Section.***
4) ***Figures in brackets to the right indicate full marks.***

SECTION - I

Q1) **Compulsory Question** **[15]**

Define tender & explain the purpose of tendering.

Explain the System, Applications, Advantages and Disadvantages of the following tenders :

a) Two envelope open tender

b) Tender by invitation

Answer any two of the following

Q2) Explain Project Management in Brief. What are the essential differences between Construction Management and Project Management? **[10]**

Q3) Write short notes on : (Any 2) - (5 marks each) **[10]**

a) Mobilization advance

b) Defects liability period

c) Virtual completion certificate

d) Escalation clause

Q4) Explain the Site Visit Report'? What is its role in architectural practice during supervising a construction site? **[10]**

P.T.O.

SECTION - II

Q5) **Compulsory Question** **[15]**

- Define Valuation.
- What are the various purposes of it?
- Explain any methods of valuation.

Answer any two of the following

Q6) Write short notes on : (Any 2) - (5 marks each) **[10]**

a) Arbitration

b) Monitoring time in Project Management

c) Sinking Fund

d) Advantages & disadvantages of Direct assignment to the Contractor

Q7) What are the Primary Objectives Achieved by 'National Building Code' of India? Explain the role of Bureau of Indian Standards in creation of National Building code. **[10]**

Q8) Compare & contrast between the following: (Any 2) - (5 marks each) **[10]**

a) Cost, Price & Value

b) Bonus Clause & Penalty Clause

c) Earnest Money Deposit & Security Deposit

d) Interim bills & Final bill in contract

♦ ♦ ♦

Total No. of Questions : 7]

SEAT No. : ____

PC-4989

[Total No. of Pages : 3

[6357]-407

Fourth Year B.Architecture

QUANTITY SURVEYING AND ESTIMATING - II

(2015 Pattern) (Semester - VIII) (4201567)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to the two sections must be written in separate books.***
3) ***Neat sketches must be drawn wherever necessary.***
4) ***Figures to right indicate full marks.***
5) ***Assume suitable data wherever necessary.***

SECTION - I

Q1) Calculate the quantities for items with the help of Fig. 1. (any four): **[20]**

a) Principal rafters for all truss

b) Cleats for purlins for all truss

c) Gusset plate 8mm thick

d) GI corrugated roofing

e) Ridge cap

f) Rain water gutter

Q2) State the unit for the following (any five) : **[5]**

a) Gully trap

b) Bib cock

c) Tub- bath

d) Wash basins

e) G.I. pipes

f) Inspection chambers

g) Dado

P.T.O.

Q3) What is direct and indirect cost? Explain with example. **[5]**

Q4) List out the fittings and fixtures required for providing and fixing a wash basin. **[5]**

SECTION - II

Q5) State the importance and essentials of Rate analysis. **[5]**

Q6) Calculate the rate analysis for items listed below (any three) : **[15]**

a) RCC beam 1:2:4

b) Cement pointing 1:2

c) White wash

d) 20mmthk DPC with cement mortar 1:2

Q7) Calculate the indent for the items listed below (any three) : **[15]**

a) Glazed tile dado for 180 sq. m.

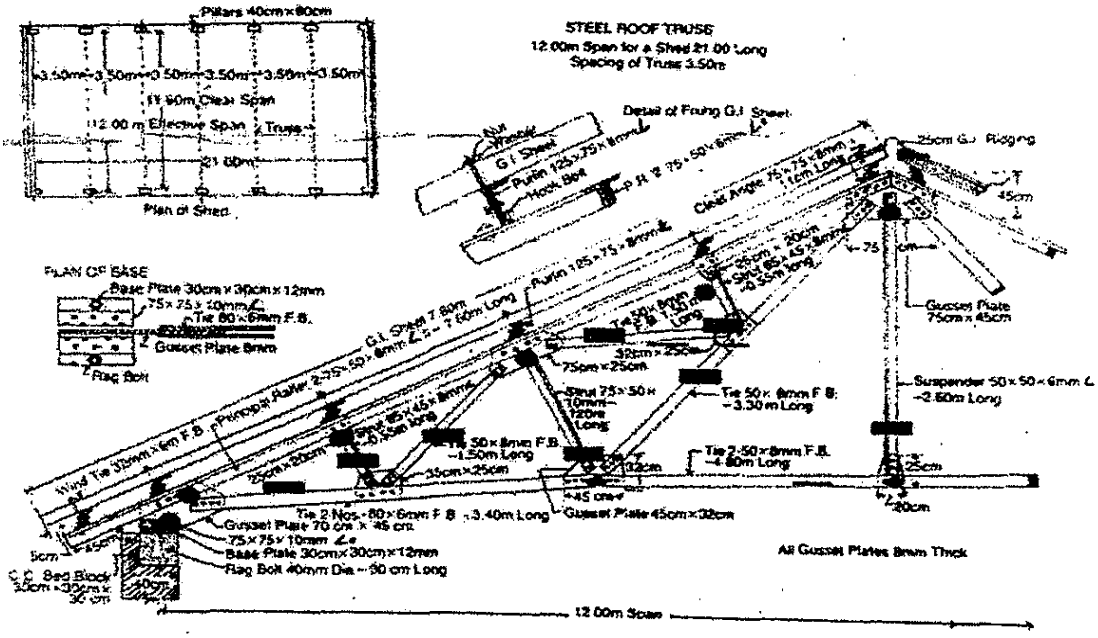
b) UCR masonry wall in CM 1:6 for 25.0 cu.m.

c) 15mm cement plaster for 56.0 cu.m.

d) PCC under foundation in 1:4:8 for 240.0 cu.m.

Material Rates	Labour Rates
Cement : Rs. 450/- per bag	RCC : Rs. 2500/- per cu.m
Sand : Rs. 2500/- per cu.m.	Pointing : Rs. 60 per sq. m.
Aggregate (metal) : Rs. 800/- per cu.m.	White wash Rs. 10/- per sq. m.
Sealant compound : Rs. 50/- per kg	DPC : Rs. 50/- per sq. m.

Figure 1.


Pillars 40cm×80cm
3.50m 3.50m 3.50m 3.50m 3.50m 3.50m
11.60m Clear Span
12.00 m Effective Span
21.00m
Plan of Shed
STEEL ROOF TRUSS
12.00m Span for a Shed 21.00 Long
Spacing of Truss 3.50m
Detail of Fixing G.I. Sheet
G.I. Sheet
Purlin 125×75×
Hook Bolt
Cleat Angle 75×75×
25cm G.I. Flashing
45cm
PLAN OF BASE
Base Plate 30cm×30cm×12mm
75×75×10mm ∠
Tie 80×6mm F.B.
Gusset Plate 8mm
Z Flag Bolt
G.I. Sheet 7.80m
Purlin 125×75×8mm
Principal Rafter 2-75×50×8mm ∠s
Wind Tie 50mm×6m F.B.
Strut 65×45×8mm
Tie 50×8mm F.B.
1.50m Long
75cm×20cm
35cm×25cm
Strut 75×50×
10mm
120cm
Long
75cm×25cm
32cm×25cm
Tie 50×8mm F.B.
3.30 m Long
Tie 2-50×8mm F.B.
4.80m Long
Suspender 50×50×6mm ∠
2.60m Long
Gusset Plate
75cm×45cm
25cm
20cm
45° one
Tie 2 Nos.-80×6mm F.B. 3.40m Long
Gusset Plate 45cm×32cm
Gusset Plate 70 cm × 45 cm
75×75×10mm ∠s
Base Plate 30cm×30cm×12mm
Flag Bolt 40mm Dia – 90 cm Long
5cm
C.C. Bed Block
All Gusset Plates 8mm Thick
12.00m Span

Total No. of Questions : 6]

SEAT No. : ____

PC-4990

[Total No. of Pages : 2

[6357]-408
Fourth Year B.Architecture
SPECIFICATION WRITING - II
(2015 Pattern) (Semester - VIII) (4201568)

Time : 3 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) ***Neat sketches must be drawn wherever necessary.***
4) ***Figures to right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) Write checklist for following construction items (any Two) **[10]**

a) Excavation in soft murum

b) External plaster

c) Ceramic tile flooring

d) Internal brickwork

Q2) List different building trades. Explain in detail the scope of 3 of them. **[10]**

OR

Discuss broad outline specifications for WBM

Q3) Write brief specifications for (Any Three) : **[3 × 5 = 15]**

a) SPLIT AC

b) Any one type of water proofing.

c) Drainage line in site.

d) Acoustical panels in ceiling.

e) Readymade water tank.

P.T.O.

SECTION - II

Q4) Write short notes on (Any Three) : **[3 × 5 = 15]**

a) Skilled and unskilled labour

b) Ramp design for disabled person

c) Curbing for edge of pathway

d) Types of Elevators

Q5) Write short notes / Explain the following (Any Two) : **[2 × 5 = 10]**

a) Types of air conditioning systems.

b) Acoustical treatment for wall.

c) Transformers.

d) Earthing system..

Q6) Write names 2 of manufacturer for the materials (Any five) : **[10]**

a) Split AC

b) Paver blocks

c) Water supply pipes

d) Elevators

e) Drainage pipes

f) Readymade water tanks

g) Cement

h) Escalators