Total No. of Questions : 4]

SEAT No. :

P 552

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F.Y. B. Arch. (Semester - I)

BUILDING TECHNOLOGY AND MATERIALS - I

(2015 Pattern)

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

Instructions to the candidates:

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

SECTION - I

Q1) Answer any one of the following : **[20]**

a) Draw at a scale of 1:10 alternate courses in plan and elevation and section upto six courses of a 2m long section of a one and half brick thick wall in Flemish bond.

b) Draw a plan, elevation and section of a 1.5m long part of a stone wall in COURSED SQUARED RUBBLE MASONARY. Scale 1 : 20, Assume height of wall to be 1m and one end to be a stopped end.

Q2) Answer (any three) of the following **[15]**

a) Sketch and explain any one type of composite masonary.

b) Explain with sketches various terminologies related to Earthquakes.

c) Sketch and state purpose of any (04) four masonary tools.

d) Explain with sketches any FOUR structural elements of a building.

e) What is Plastering, What are the materials used in plastering and list any (04) four types of plaster.

P.T.O

SECTION - II

Q3) Answer (any two) of the following **[20]**

a) Sketch elevation of a flat arch and list any (06) six of its terminologies.

b) Sketch and explain any (05) Principles of load bearing construction.

c) Draw plans of alternate courses of a one and a half brick thick detached pier.

Q4) Answer (any three) of the following : **[15]**

a) List advantages and disadvantages of stone in construction.

b) Explain with sketches the concepts of Toothing and Racking back in Brick masonary.

c) List (03) advantages and (03) disadvantages of fly ash bricks.

d) Write a note on cement mortar.

e) What is a lintol? Sketch and explain any (02) two types.

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Total No. of Questions : 8]

SEAT No. :

P 553

[Total No. of Pages : 3

[5464]- 102

F.Y.B. Arch. (Semester - I)

THEORY OF STRUCTURES

(2015 Pattern)

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

Instructions to the candidates:

1) ***Q.1 in Section I and Q. 5 in Section II are compulsory questions.***
2) ***Answer any two questions out of remaining Three in each section.***
3) ***Use of Scientific Calculator is allowed.***
4) ***Marks to the right indicate full marks.***

SECTION - I

Q1) Draw shear force and bending moment diagram for the given beam (figure 1)

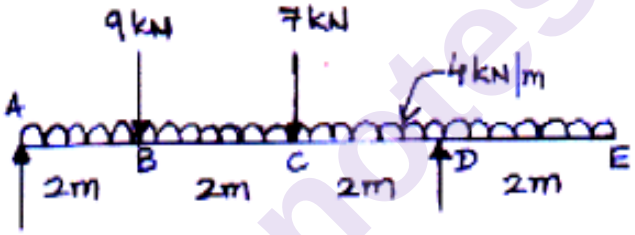

figure 1

Finding reactions **[4]**

Shear force diagram **[4]**

Bending moment diagram **[5]**

Point of contraflexure **[2]**

Q2) a) State and explain : Law of Polygon of forces. **[4]**

b) Draw shear force and bending moment diagram for a simply supported beam having length 'L', withpoint load 'P' at the centre. Indicate maximum values of shear force and bending moment. **[4]**

c) State and explain : Conditions of equilibrium for coplanar concurrent force system. **[2]**

P.T.O.

Q3) a) Find centroidal co-ordinates of lamina given in figure 2. **[6]**

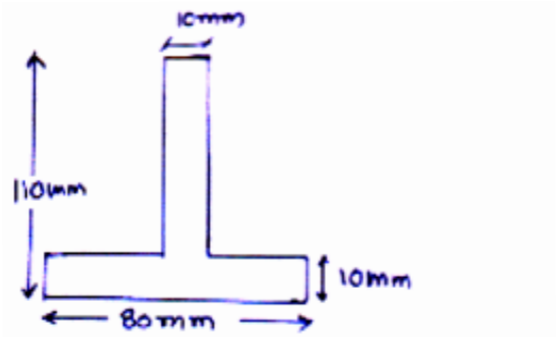

Figure 2

b) For a cable ABC, hanging from ceiling at supports A and C, the angle made with ceiling is 30° at A and 45° at C. If the weight hanging downwards at B is 150 N, find the tension in segments BA and BC. **[4]**

Q4) a) Find resultant of given force system given in figure 3. **[8]**

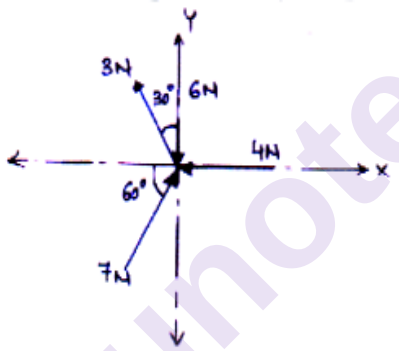

Figure 3

b) What is uniformly distributed load? Give one example. **[2]**

SECTION - II

Q5) Find centroidal x and y co-ordinates with respect to lower left corner. **[6]**

Also find moment of inertia about centroidal xx and yy axis for the lamina shown in figure 4. **[9]**

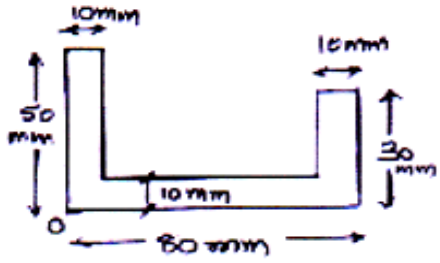

figure 4

Q6) a) Find support reactions for the beam in equilibrium, as shown in figure 5. **[7]**

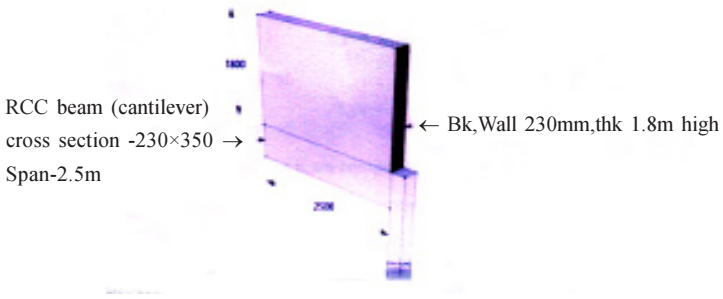

figure 5

b) Write formulae for Moment of Inertia of right angled triangular section of base b and height h, with respect to horizontal axis passing through its centroid, base and top. **[3]**

Q7) a) For a simply supported beamshown in figure 6, find reactions at each end. **[5]**

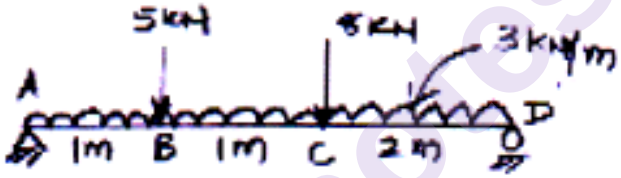

figure 6

b) State and explain : types of beams **[5]**

Q8) a) Explain the importance of Moment of Inertia. State perpendicular axis theorem. **[4]**

b) Explain the difference between resultant force and equilibrant force **[2]**

c) Explain: **[4]**

i) Roller support

ii) Bow's notations

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Total No. of Questions : 4]

SEAT No. :

P 554

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F.Y. B. Arch. (Semester - II)

BUILDING TECHNOLOGY AND MATERIALS - II

(2015 Pattern)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Draw plan, elevation and section through a single timber floor. For a room size of 3.60m×5.00m. at a scale of 1:20 with any three wooden joineries in them at a scale of 1:5. **[20]**

OR

b) Design the suitable roofing system (timber) for a room size of 7.50m×15.00m with details of roofing system and any two joineries at a scale of 1:20 and 1:5 respectively.

Q2) Explain with sketches (any three) **[15]**

a) Any five bearing joints in timber.

b) Closed and open stringer staircase with annotations.

c) Explain any three types of clay roofing tiles.

d) Lean to roof.

e) Containment reinforcement.

P.T.O

SECTION - II

Q3) Explain in detail with sketches (any two) **[20]**

a) Draw a proportionate sketch of an elevation of a T.W. framed and T.W. panelled door of size 1.00 m × 2.10m showing all hardware. Joinery detail between lock rail and style.

b) Draw a section through streight flight timber staircase. of 2.10m height. annotations and dimensioning of elements. Draw any two enlarged details.

c) Draw a section through closed coupled roof showing different elements with annotations any show any two enlarged details.

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

a) Tools used in timber construction/joineries.

b) Different types of vault constructions.

c) What is the need to provide reinforcement in masonary walls.

d) Any three defects in timber.

e) Write short note on Bamboo as a construction material.

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Total No. of Questions : 8]

SEAT No. :

P 555

[Total No. of Pages : 3

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F.Y. B.Arch.

THEORY OF STRUCTURES-II (Theory)

(2015 Pattern)

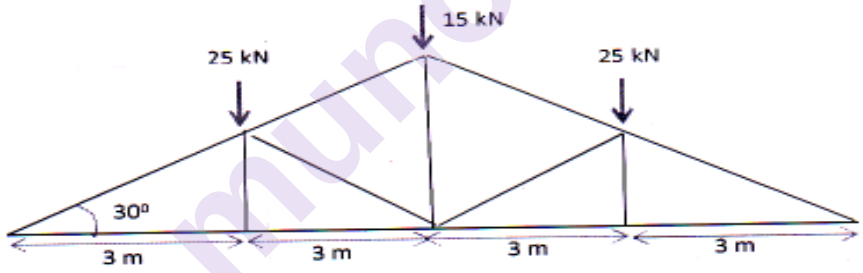
Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***The Q.1 & Q.5 are compulsory.***
2) ***Answer any two questions out of remaining three from each section.***
3) ***Use of Scientific Calculator Allowed.***
4) ***Marks to the right indicate full marks.***
5) ***Assume Suitable data if any.***
6) ***Use separate answer booklet to write Section - I & Section - II.***

SECTION - I

Q1) Analyse the given truss and tabulate forces with their nature in member. **[15]**
Use method of Joint/ Section /Graphical. (Fig.1)

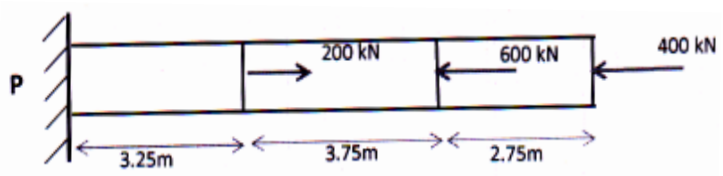


Q2) a) For the member of 230 × 300 mm in section, fixed at one end as per figure below

i) Determine magnitude & direction of force P. **[3]**

ii) Calculate stress in each part of the member **[2]**

iii) Caculate total change in length.
Consider E = 2×10^5 N/mm^2 **[2]**



b) What is Elastic, Plastic and Brittle material and give example of each. **[3]**

P.T.O

Q3) a) A beam of cross section 300 × 500 mm simply supported at ends, carries a udl load of 6 kN/m over the entire span of 5.75 m which is inclusive of self weight. Calculate

i) Calculate bending stresses at tension and compression extreme fibres. **[3]**

ii) Also find stresses at a distance of 75 mm from bottom and 100 mm from top **[2]**

iii) Draw bending stress distribution diagram **[2]**

b) Write Down the Flexural Formula, explaining each variable **[3]**

Q4) Define any Five **[10]**

i) Bulk Modulus

ii) Shear Modulus

iii) Simple Strain

iv) Poission's Ratio

v) Neutral Axis in bending

vi) Permissible Stress

SECTION - II

Q5) a) A chimney of 12 m tall has inside cross sectional dimensions of 1.75m × 1.75m of brickwork having thickness of 0.60m, has density of 20 kN/m^3.

It is subjected to wind pressure of 1.5 kN/m^2. Calculate stresses at the four corners of the chimney. **[12]**

b) For a Column of Size 600 x 900 Draw the core of the column. **[3]**

Q6) a) Find slope and deflection for simply supported beam with a point load of 15kN centrally placed on beam of 5m span. Consider EI = 10^{14} Nmm^2. **[7]**

b) Draw Shear stress distribution diagram for I section. **[3]**

Q7) a) A rectangular beam section with dimension 300 mm × 300 mm having span of 5 m. It carries a Point load of 5 kN at centre and UDL of 4 kN/m over entire span. Find maximum shear stress and draw shear stress diagram. **[7]**

b) Define Eccentricity and give an example in case of RCC column how eccentric load acts. **[3]**

Q8) Attempt any Five **[10]**

a) Draw Stress Strain Curve for M.S. Steel and show important points on curve

b) What is plastic material. Give an example.

c) Explain Perfect Frame

d) Write Flexural Formula

e) Draw sketch showing eccentric loaded column footing and draw pressure diagram

f) Show forces acted upon a hinged base of truss.

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Total No. of Questions : 4]

SEAT No. :

P556

[Total No. of Pages : 2

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S.Y. B. Arch. (Semester - III)

BUILDING TECHNOLOGY AND MATERIALS - III

(2015 Pattern)

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

Instructions to the candidates:

1) ***All the questions are compulsory.***
2) ***Answer to Section I to be drawn on drawing sheets only.***
3) ***Answer to Section II to be written on answer sheets only.***
4) ***Draw neat labelled sketches wherever necessary.***
5) ***Assume suitable data wherever necessary.***
6) ***Figure on right of each question indicate full marks.***

SECTION - I

Q1) Draw plan, section and elevation for a sliding – folding door to be provided for living room of a bungalow, in the opening of size 3.0 m × 2.1 m **[15]**

Draw details of top assembly required at scale 1:5 **[5]**

OR

A small store room of size 4.0 m × 3.0 m is to be constructed in RCC framed structure with 230 mm × 350 mm columns at four corners at 600 mm plinth level. Draw foundation plan with positions of plinth beams and section showing footing and plinth beams with reinforcement details 1:20 **[15]**

Footing detail with reinforcement at 1:10 **[5]**

Q2) Draw neat labelled sketches and explain for the following (Any Three) **[15]**

a) Typical section through rolling shutter
b) Formwork details for casting R.C.C. column
c) Section for water proofing detail above R.C.C. slab
d) Section through R.C.C. isolated footing showing reinforcement details
e) Typical strip foundation detail in masonry construction
f) Hinge detail at side hung M.S. wicket gate to M.S. Post

P.T.O

SECTION - II

Q3) Answer in detail with sketches (Any Two) : **[20]**

a) Explain bay window along with its merits

b) Explain raft foundation

c) Describe classification of soil

d) Explain various types of piles

Q4) Write short notes for the following (Any Three) : **[15]**

a) Significance of pressure bulb in soil investigation

b) Damp Proof Course

c) Slump test of concrete

d) Steel used in R.C.C. construction

e) Process of laying paving blocks

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Total No. of Questions : 8]

SEAT No. :

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[Total No. of Pages : 3

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S.Y.B. Arch. (Semester - III)

THEORY OF STRUCTURES - III

(2015 Pattern)

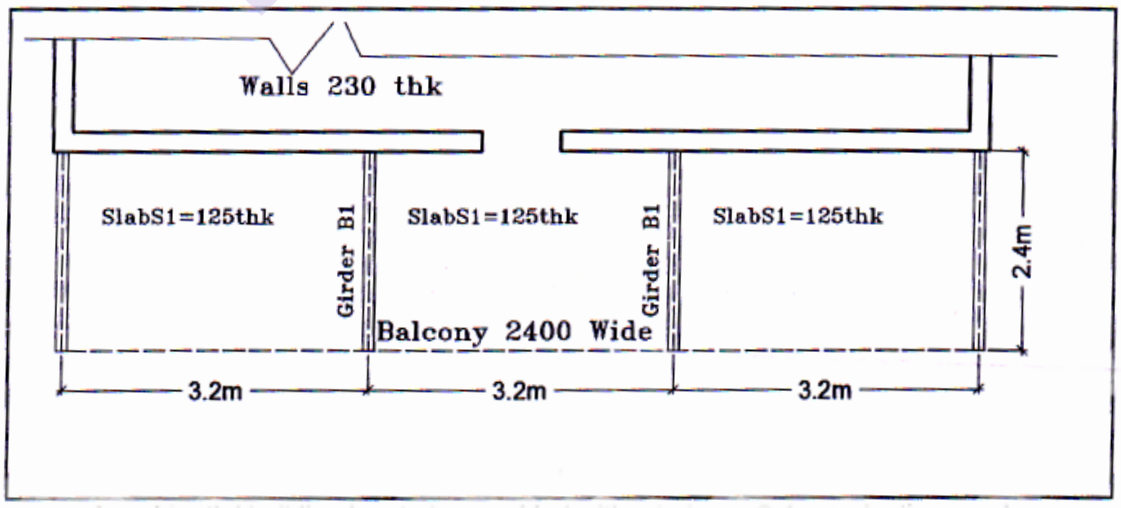
Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1. *Q. No. 1 & 5 are compulsory.*
2. *Solve any Two questions from 2, 3 & 4 and any Two questions from 6, 7 & 8.*
3. *Assume Steel of grade Fe 410 / E250. Yield stress = 250 N/mm^2.*
4. *Use of Non-Programmable Scientific calculator & steel tables is allowed.*
5. *Take the Following Values*

1.	*Permissible Bending Stress in Steel In Compression and Tension = 165N/mm^2*
2.	*Permissible Shear Stress = 100N/mm^2*
3.	*Allowable Deflection for a Simple Supported Beam = Span/300*
4.	*Allowable Deflection for a Cantilever Beam = Span/15O*
5.	*Permissible Weld Stress = 108N/mm^2*
6.	*Permissible Bearing Stress for Bolt = 300N/mm^2*
7.	*Permissible Shear Stress for Bolt = 100N/mm^2*

SECTION - I



P.T.O

Q1) A residential building has to be provided with a balcony 2.4m projecting, made of 125 mm thick R.C.C Slabs supported on I Section girders spaced at 3.2m centre to centre. Girders are supported on 230 mm thick walls as shown. Consider Floor Finish of 1.2kN/m^2.

a) Calculate the Load on the Girder B1 **[4]**

b) Design Girder B1 and check for shear and deflection. **[11]**

Q2) a) What is the Limitation of Euler's Theory **[3]**

b) Design a steel column to carry compressive load of 650 kN. Steel column is having 4.5 m length with both ends fixed. **[7]**

Q3) a) Answer any two of the following **[6]**

i) Explain dead load and live load

ii) Disadvantages of a Steel Structure

iii) List and Explain the factors affecting calculation of wind load.

b) Differentiate Between Load Bearing Construction and Framed Construction w.r.t any two of the following **[4]**

i) Openings

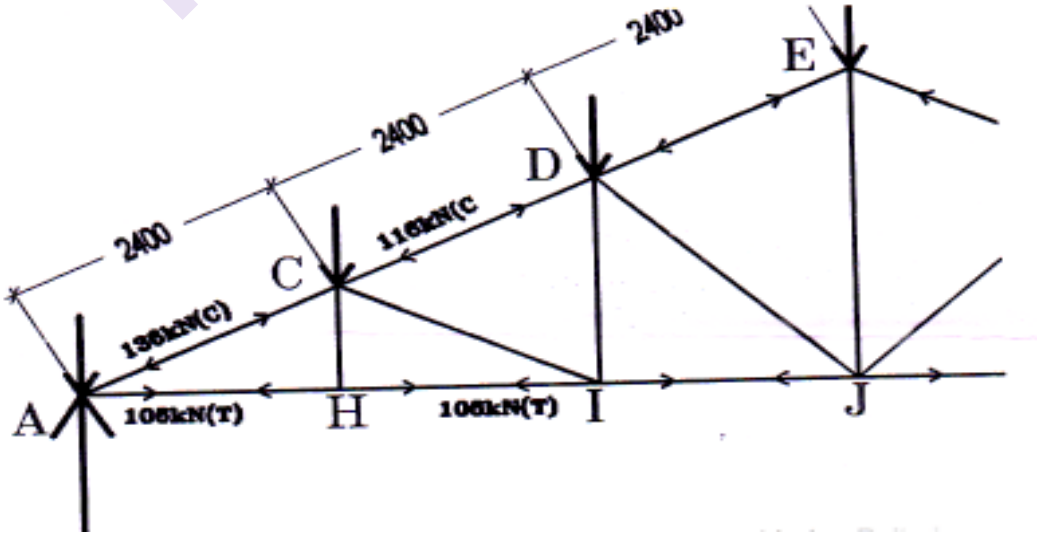
ii) Foundations

iii) Alterations to Be Carried out in Internal Planning

Q4) a) A fixed beam of span 8m. is carrying an UDL of 13 kN/m and a central point load of 22 kN. Analyze the fixed beam and draw shear force and bending moment diagram for the same. **[7]**

b) Write a Short Note on standard steel sections available for beams and columns. **[3]**

SECTION - II



Q5) a) Design Member AC for a compressive load of 136 kN considering Bolted Connection. Use Equal Angle Section **[9]**

b) Design the welded Connection **[4]**

c) Draw a Neat Sketch of the Connection showing Thickness of Gusset Plate **[2]**

Q6) a) An Angle Section 125 × 65 × 8 taking tensile load of 160 kN is to be connected to the Gusset Plate by 20 mm dia bolts. Design the connection and draw a Sketch of the same **[6]**

b) Compare rivetting, bolting and welding. **[4]**

Q7) a) Explain the Advantages and disadvantages of a Continuous Beam **[4]**

b) Answer any two of the following **[6]**

i) Show any **Three** End Conditions of Column and their Effective Lengths

ii) Draw and explain any **Two** cases of load transfer on lintels.

iii) Write a Short Note on Seismic Loading

Q8) a) A Concrete Column of size 230 mm × 450 mm is used as a column with both ends Fixed of height 8 m. If $E = 0.15 \times 10^5 N/mm^2$. Find Failure Load by Rankine's Theory. Crushing Stress in Concrete is $20N/mm^2$ **[8]**

b) Show The Deflection Curve of a Fixed Beam of Length L and Full U.D.L and write down the formula for Deflection Maximum **[2]**

Total No. of Questions : 4]

SEAT No. :

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S.Y. B. Arch.

BUILDING SERVICES - I

(2015 Pattern)

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

Instructions to the candidates:

1) ***Figures to the right indicate max. Marks to respective question.***
2) ***Answers to both units are compulsory.***
3) ***Support the answers with neat sketches wherever necessary.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) Explain with neat sketches Direct and Indirect method of Hot water supply. **[15]**

OR

What are the functions of valves? Explain with sketches any three types of valves used in water supply system.

Q2) Write short notes any four with neat sketches wherever necessary **[20]**

a) Ferrule Connection
b) UGT
c) Calorifier
d) Jointing of pipes used in water supply.(any two)
e) Centrifugal Pumps
f) Specials used in water supply

SECTION - II

Q3) Explain any three types of traps in building sanitation system with neat sketches? **[15]**

OR

What are the different materials used for drainage pipes. Mention their Advantages and Disadvantages?

P.T.O

Q4) Write short notes any four with neat sketches wherever necessary. **[20]**

a) Wash hand basin

b) Flushing Cistern

c) Manhole

d) Ventilation of Drainage

e) Anti siphonage pipe

f) Bottle trap

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Total No. of Questions : 5]

SEAT No. :

P 559

[Total No. of Pages : 2

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S.Y. B. Arch.

BUILDING TECHNOLOGY & MATERIALS - IV

(2015 Pattern)

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

Instructions to the candidates:

1) ***All Questions are compulsory.***
2) ***Answers to Section I must be on the drawing sheets only.***
3) ***Answers to Section II must be written in the answer sheet Booklet only***
4) ***Neat diagrams / sketches must be drawn where ever necessary.***
5) ***Figures to the right Indicate full marks.***
6) ***Assume suitable Data if necessary.***

SECTION - I

Q1) An RCC straight flight staircase is to be built for a bungalow having 3000 mm height .The mid landing slab is at height is 1500 mm with suitable landing space. Analyse the structure as follows : **[20]**

a) Draw Plan of straight flight staircase showing necessary framing & reinforcement to 1:10 scale.

b) Draw Section through straight flight at mid landing showing necessary reinforcement details to scale 1: 10

OR

Q2) RCC slab for clear span of 3000mm × 4000mm supported on RCC beams of size 230 × 450 on all four sides. Draw details at 1:20 of **[20]**

c) Sectional elevation and sectional plan showing all necessary RCC structural elements.

d) Show details of reinforcement.

P.T.O

Q3) Answer with neat labeled sketches on sheet any Three **[15]**

a) RCC beam and column junction for continuous beams along both sides of column.

b) Draw a typical elevator shaft with machine room & label important parts of it.

c) What is tanking to basement. Discuss with sketch.

d) Cantilever slab for an RCC balcony.

SECTION - II

Q4) Answer any Two with neat sketches **[20]**

a) Any two suitable materials used for construction of metal windows. Discuss its advantages and disadvantages.

b) Discuss Precast staircase & its construction.

c) Manufacture of RMC.

d) What are escalators ? Discuss its applications

Q5) Write short notes on any Three of the following : **[15]**

a) What is LWC and discuss its applications.

b) Discuss admixtures in concrete and name those used in RMC.

c) Ferrocement and its application in the building Industry.

d) Lapping of steel bars in RCC columns

e) Laying of reinforcement, casting, and DE shuttering for a Beam.

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Total No. of Questions : 8]

SEAT No. :

P 560

[Total No. of Pages : 3

[5464]- 402

S.Y.B. Arch. (Semester - IV)

THEORY OF STRUCTURES - IV

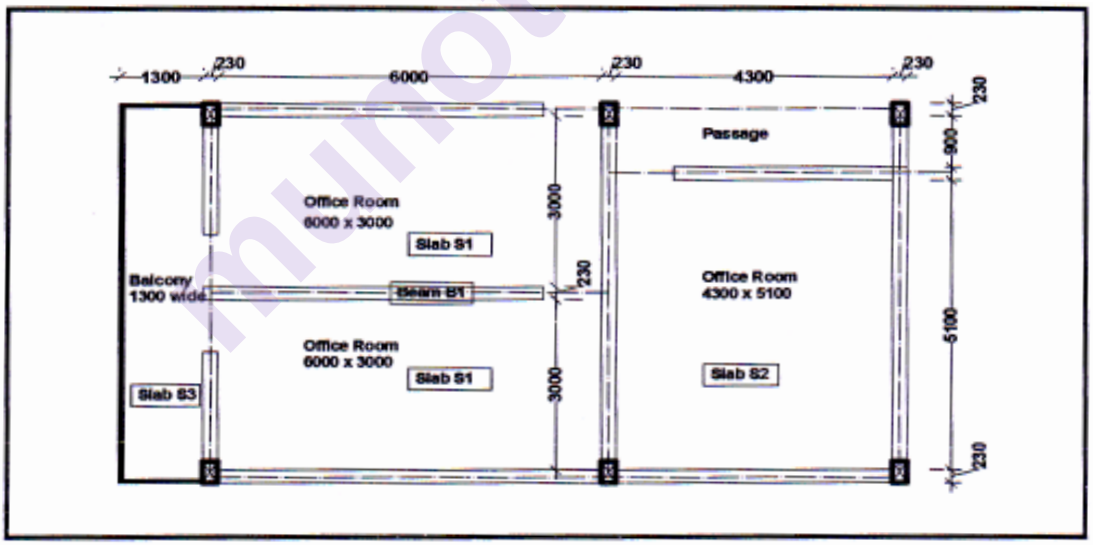
(2015 Pattern)

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

Instructions to the candidates:

1) ***Question No 1 and 5 are compulsory.***
2) ***Answer any two of the remaining three in each section.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data where necessary.***
5) ***Use M 20 Grade concrete and Fe 500 steel.***
6) ***Every R.C.C. Design should be accompanied by relevant Schedule and Reinforcement Sketch.***

SECTION - I



Q1) a) Design Slab S1 of clear room size 6 m × 3 m, Considering Standard Floor Finish. Take Live Load 3 kN/m^2. Make a schedule and draw RCC details of the same. **[13]**

b) Explain Why alternate bars are bent up in any slab **[2]**

P.T.O

Q2) Design a 250 mm wide R.C.C Short Column to take design load of 1000 kN. Use 1% Steel. Make a schedule and draw RCC details. **[10]**

Q3) Write Short Notes on any Three **[10]**

a) Measures of limiting cracks in an RCC section

b) An Under- Reinforced Section and it's strain diagram

c) Grades of concrete and their mix proportions

d) Limit State of collapse

e) Requirement of good quality coarse aggregates used for concrete

Q4) A R.C.C Beam 250 mm × 500 mm is reinforced with 3 no 16mm bars. Find its Moment of Resistance. This beam is to be simple supported for a span of Le effective. Calculate safe span Le if the working load it has to carry is 21kN/m. **[10]**

SECTION - II

Q5) Design Beam B1 considering the following **[15]**

Slab S1 thickness = 120mm, with standard floor finish

Height of brick wall to be supported by Beam B1 is 2.6m and is 230 thick

Design beam for Flexure and Shear Reinforcement. Given Below are Design Shear Strength Values

100Ast/bd	Design Shear Stress For M 20 in N/mm^2
0.15%	0.28
0.25%	0.36
0.50%	0.48
0.75%	0.56
1.00%	0.62

Q6) a) Sketch typical section of a cantilever RCC chhajja with lintel for 600 mm projection, show 8 mm dia main and distribution bars with maximum spacing criteria. Thickness of chhajja 100 mm. **[6]**

b) What is development length? What is bond stress? **[4]**

Q7) Write Short Notes on any three **[10]**

a) Explain: form factor for timber, directional properties of timber

b) design load and design strength for limit state method

c) What is segregation and bleeding in concrete? How can it be avoided?

d) Results and Interpretation of Results of Slump Test

e) Suitability of steel as reinforcing material

Q8) A Wooden cantilever beam for a projected length of span of 1.2m is built in 230 mm wide walls at the fixed end. If udl is 5 kN/m, Permissible Bending Stress is not to exceed 12.16 N/mm^2 and Permissible shear stress is 1.37 N/mm^2, design the beam cross section with depth as three times width of beam. Also Find the actual deflection of the beam and compare it with the Allowable deflection of Span/240.E = $8.93 \times 10^3 N/mm^2$ **[10]**

Total No. of Questions : 4]

SEAT No. :

P 561

[Total No. of Pages : 2

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S.Y. B. Arch. (Semester - IV)

BUILDING SERVICES - II

(2015 Pattern)

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

Instructions to the candidates:

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

SECTION - I

Q1) What is Day lighting? Explain day light factor with its components through Appropriate sketches. **[15]**

OR

Draw an electrical Layout with a schedule of switch boards for a Manager's cabin in an office of size 4M × 3M. Show following electrical points:

a) General and task lighting points
b) Fan/s
c) AIC
d) Telephone point
e) Plug points for equipment used for charging laptop & mobile phone (Draw only proportionate sketch in the regular answer sheet) **[15]**

Q2) Write short notes on (any 4) **[20]**

a) Salient features of AC & DC
b) Transformer
c) Vermicomposting for a residential building.
d) Ambient lighting
e) MCB
f) Classification of Municipal Solid Waste

P.T.O.

SECTION - II

Q3) What is refuse chute? Explain with sketches a refuse chute system for a housing society of G + 6 building. **[15]**

OR

a) A drawing studio in an architecture college needs to be provided with a lighting installation.The studio is 30M × 20M with a required illumination of 300 lux. Find the no. of lamps required if each lamp has a lumen output of 6000 lumens. M.F-0.6, Cu-0.75 **[7]**

b) What is the average illumination level on 1.2 m high workplane in a 12 M × 18M air conditioned office with a 2.7 M height and 12 nos. twin ceiling mounted 40 W fluorescent lamp each emitting 2600 lumens, Cu=0.47 **[8]**

Q4) Write short notes on (any 4) : **[20]**

a) Single Phase supply

b) Incandescent lamp

c) Types of Conduit wiring

d) Direct & indirect Lighting

e) Task Lighting & Mood Lighting

f) PVC Casing and Caping Wiring

ⓘⓘⓘ

Total No. of Questions : 3]

SEAT No. :

P 562

[Total No. of Pages : 2

[5464]- 501

T.Y.B. Arch.

BUILDING TECHNOLOGY & MATERIALS-V

(2015 Pattern)

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

Instructions to the candidates:

1) ***Answers to Section I & Section II should be written in separate books.***
2) ***Use drawing sheets for section I and answer sheets for section II.***
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) Solve Any one: **[30]**

Provide panelled partition of length 3.5 M × 3 M in height for a conference room with an opening of size 1.2m × 2.1 m for door.

Draw plan showing framing and panelling of partition with the door opening. (scale 1:10)

Draw section through the partition to a scale 1:10

Draw details to a suitable scale of: (1:5)

a. Detail of fixing of door.

b. Frame assembly and panel fixing detail.

OR

Draw plan section of T.W. Dining table with glass top of size l.2M × 1.8 M

Draw plan and section 1:10 scale.

Draw any one joinery detail & Glass top fixing to 1:5 scale

Q2) Draw sketches of the following Any One : **[10]**

a) Detail in plan of fixing wardrobe shutter to the side vertical ply.

b) Any two alternatives of fixing glass shelf in a unit.

c) Meeting of wall & suspended ceiling &Light fixing in suspended ceiling.

P.T.O

SECTION - II

Q3) Write short notes with sketches wherever necessary of the following. Any five **[30]**

a. Explain the band beam flooring systems & its advantages.

b. Differentiate between plywood and Particle board.

c. Note on painting on plastered wall.

d. Write in short on post tensioning.

e. Vector active structures

f. Any two types of portal frames

g. Flat slab and waffle slab

Total No. of Questions : 8]

SEAT No. :

P3699

[Total No. of Pages : 4

[5464]-502A

T.Y. B.Arch. (End Semester)

THEORY OF STRUCTURES - V

(2015 Pattern)

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

Instructions to the candidates:

1) ***Solve any 3 questions from each section.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if required. Mention the assumption.***
4) ***Use M20 grade concrete & Fe500 grade steel & Limit state design method for RCC design.***
5) ***Every RCC design shall be accompanied by the relevant schedule & sketch.***
6) ***Use of Non-programmable scientific calculator is allowed.***

SECTION - I

Q1) W.r.t. the attached framing plan, design the beam B2 as a typical 230 wide T-beam. Restrict the beam depth to 650 mm. Assume slab thickness as 140 mm. Take a floor finish load of 1.5 kN/m^2 while a live load of 4 kN/m^2. Design the beam for flexure. Also design the shear stirrups. Conclude the design with a schedule & a sketch of the reinforcement. **[12]**

Design Shear strength of concrete (τ_C) N/mm^2	
100 A_{st}/bd	For M20 grade concrete
≤0.15	0.28
0.25	0.36
0.50	0.48
0.75	0.56
1.00	0.62
1.25	0.67
1.50	0.72
1.75	0.75
2.00	0.79
2.25	0.81
2.50	0.82
2.75	0.82
≥3.00	0.82

P.T.O.

Q2) W.r.t. the attached framing plan, Design the slabs S1, as continuous one way slabs, for the main hall measuring 12.0 m × 7.6 m., supported on 2 nos. 230 wide intermediate T-beams & 2 nos. 230 wide end L-beams. Take a floor finish load of 1.5 kN/m^2 while a live load of 4 kN/m^2. Conclude the design with a schedule & a sketch of the reinforcement. **[11]**

Q3) a) W.r.t. the attached framing plan, make neat & proportionate sketches of both the types of sections, as per the schedule given below. **[6]**

Slab	Depth	Steel @ long span	Steel @ short span	Remark
S4	230	16 Tor @ 150 c/c	8 Tor @ 190 c/c	Waist slab supported on 230 wide beams on outer edges of both landings
S5	160	16 Tor @ 220 c/c	8 Tor @ 270 c/c	Waist slab supported on 230 wide beams on inner edges of both landings

b) Attempt any 2 of the following. Support the explanation with sketches. **[6]**

i) Explain the terms,
   a) Ribbed slab,
   b) Coffered slab &
   c) Waffle slab.

ii) Write a short note on various types of piles and their structural action.

iii) What are the assumptions of Rankine's theory of Earth pressure?

iv) Sketch the BMD of a typical combined footing. Also show the reinforcement details of the same.

Q4) a) A pre-stressed beam of cross section 300 × 750 is carrying an UDL of 40 kN/m inclusive of its self weight, over an effective simply supported span of 9.70 m. It is pre-stressed using tendons placed at 265 mm from the beam bottom, and supplying a pre-stressing force of 2100 kN. Calculate maximum fibre stresses in the beam at, i) Mid span & ii) End supports. **[8]**

b) Explain the concept of pre-stressing. How does post-tensioning method differ from pre-tensioning in pre-stressed concrete.? Sketch the common types of sections used in pre-stressing. **[4]**

SECTION - II

Q5) a) W.r.t. the attached framing plan, due to headroom considerations, the depth of the 230 wide beam B6, is to be restricted to 500 mm. Design the beam as doubly reinforced, to take a load of 35kN/m over the span of 6.30 m. Design for flexure only. Design of shear stirrups not required. Conclude the design with a schedule & a sketch of the reinforcement. **[9]**

	d'/d_e			
	0.05	0.10	0.15	0.20
f_{sc} (N/mm^2) for Fe500	424	412	395	370

b) Explain in what cases, a doubly reinforced beam is required. **[3]**

Q6) a) Check the stability w.r.t. i) Overturning & ii) Sliding of a mass retaining wall, retaining soil on its vertical face, as per the following data.
Wall dimensions. Top width - 1000mm, Height - 5000mm, Bottom width - 0.6 h
Densities : Soil - 16 kN/m^3. Masonry - 24 kN/m^3
Soil data; Angle of repose - 32°, Coefficient of friction -0.60. **[9]**

b) Explain the criteria of safety for maximum & minimum pressure on base of a mass retaining wall. Also sketch an annotated sample pressure diagram on base. **[3]**

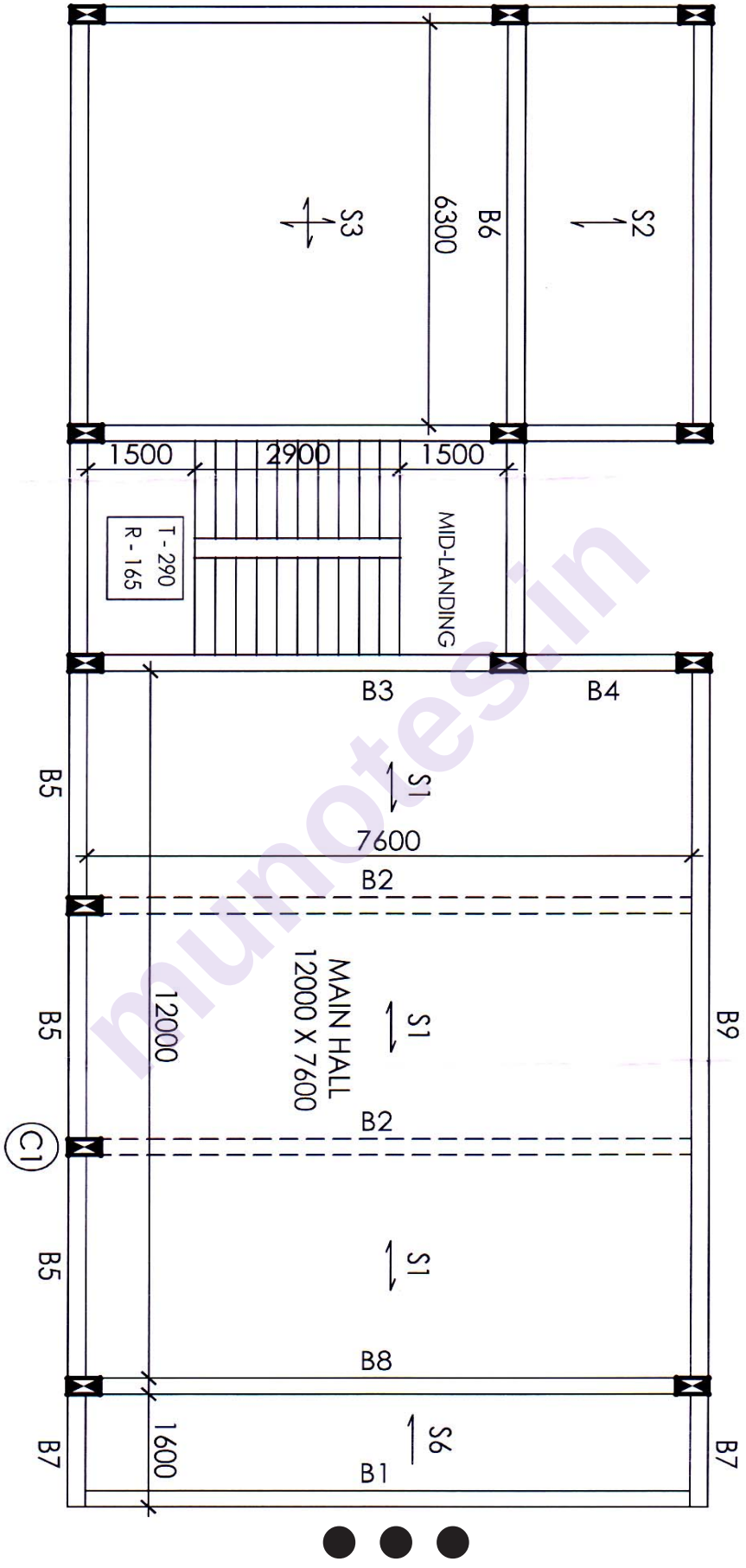
Q7) W.r.t. the attached framing plan, considering the building to be P + 5 floors, calculate the load on the column Cl on every floor. Design the column Cl in the 2nd floor considering 1.5% steel, one side as 230 mm. and also in the 1st floor keeping the same size as that of 2nd floor, but changing steel percentage. Assume load on beam B2 as 33 kN/m, while that on B5 as 28 kN/m. Conclude the designs with a schedule & a sketch of the reinforcement of each. **[12]**

Q8) a) Two columns of size 300 × 300 and 450 × 450 which are spaced apart at a distance of 1.85 m c/c are carrying a load of 1000 kN and 1600 kN respectively. Design the combined footing for the same to be resting on a soil of SBC 230 kN/m^2. Derive the dimensions of the footing in plan only, by taking the length of the footing, as twice its width. **[7]**

b) Explain raft foundation in terms of i) Need, ii) Types. **[4]**

OR

Design an isolated pad footing resting on a soil of SBC 230 kN/m^2 to carry a load of 1300 kN in a column of cross sectional size 300 × 750. Check the footing for single shear only. Sketch the reinforcement detail. **[11]**


S3
6300
B6
S2
1500
2900
1500
T - 290
R - 165
MID-LANDING
B3
B4
B5
S1
7600
B2
MAIN HALL
12000 X 7600
12000
B9
C1
B8
1600
S6
B7
B1

Total No. of Questions : 4]

SEAT No. :

P3700

[Total No. of Pages : 2

[5464] - 503 A
T.Y.B. Arch (Semester - III)
BUILDING SERVICES - III
(2015 Pattern)

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

Instructions to 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 with sketches the types of air distribution system used in Mechanical Ventilation. Describe with sketches Upward draft supply system and Downward draft supply system. **[15]**

OR

Draw and describe the working of a Window Type Air- Conditioner showing the air and refrigerant cycles.

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

a) Necessity of ventilation
b) Sensible heat and latent heat
c) Stack effect
d) Propeller fan
e) Cooling tower
f) Relative humidity

SECTION - II

Q3) Draw and describe Refrigeration Cycle in the process of Air-conditioning. Describe the purpose and function of each of the system component. **[15]**

OR

A classroom with length - 11m, width - 9m & height -3.5m is required to be mechanically ventilated.based either on a supply system or an exhaust system, calculate the number of fans required. Show the position of fans in neatly drawn plan and section. Assume the appropriate air cycles required. You may choose fans from the following :

P.T.O.

	Diameter of fan	Air handling capacity of fan in cu.m/hr
a)	300	2000
b)	380	2300
c)	450	4340

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

a) Filters used in Air Conditioning

b) Conditions of human thermal comfort

c) Wind Catchers

d) A.C. ducting systems and materials used

e) Central DX plant

f) Advantages of Central Air Conditioning units.

Total No. of Questions : 3]

SEAT No. :

P565

[Total No. of Pages : 2

[5464]-601

T.Y. B. Arch.

BUILDING TECHNOLOGY & MATERIALS - VI

(2015 Pattern)

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

Instructions to the candidates:

1) ***Answers to Section I & Section II Should be written in separate books.***
2) ***Use drawing sheets for Section I and answer sheets for section II.***
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) Solve any one : **[30]**

Using RC Precast roofing & flooring system developed by CBRI. Design a small unit with two rooms and a toilet.

Draw Key Plan & section (1:50) **[10]**

Draw detail part plan showing roofing system. (1:10) **[10]**

Draw detail part section. (1:10) **[10]**

OR

A ware house of size 12 M × 25 M × 4 M height at tie lvl is to be constructed using steel truss & stanchion column in an industrial area.

Draw key plan & section of entire arrangement to 1: 100 scale **[10]**

Draw a part plan to scale 1:20 showing truss spacing along with purlins & stanchion column **[10]**

Draw part sectional elevation to scale 1:20 of the truss along with sheet roofing. **[10]**

Q2) Draw sketchesof the following Any one : **[10]**

a) Draw detail section showing the waterproofing treatment for basement

b) Section through Steel stair for a mezzanine at a height of 3 m.

c) Proportion of Mass (Gravity) Retaining wall.

P.T.O

SECTION - II

Q3) Answer in brief with sketches wherever necessary of the following.Any five **[30]**

a. Characteristics of a good sealant.

b. Any two types of glass and their application in building industry.

c. Properties of a good metal

d. Role of shear walls in earthquake resistant structures.

e. Differentiate between buttress and counterfort retaining wall

f. List five advantages and disadvantages of plastics

g. Modular coordination.

Total No. of Questions : 8]

SEAT No. :

P566

[Total No. of Pages : 7

[5464] - 602
T.Y. B.Arch.
THEORY OF STRUCTURES - VI
(2015 Pattern)

Time :3 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. Use of Standard Steel Tables allowed.***
4) ***Use M20 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 fy = 250N/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.***

Section - I

Q1) Make the Framing plan for the Given Ground Floor And First Floor. ***Framing Plan to be shown on Ground Floor Plan Only*** **[11]**

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

Show all Beams. Restrict Depth of Beams to **450mm.** 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** considered and type of Slab. Slab depths to be restricted to **135mm.**

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.

1. Top width of stem - 270 Width of base-3200 S.B.C of soil - 250 kN/m^2
2. Bottom width of stem - 540 thickness of base - 500 Density of soil - 17 kN/m^3
3. Height of stem-5500 Toe projection - 800 Coefficient of friction-0.6
4. Density of Concrete - 25 kN/m^3 Angle of repose - 28°

a) Check the stability of the retaining wall with respect to over turning and sliding. **[8]**

b) Design the Stem Reinforcement. **[4]**

Q3) Answer any 3 of the following. **[12]**

a) Explain the difference between the Structural Action of the Vertical Slab in a R.C.C. Cantilever Retaining Wall and a Counter - Fort Type Retaining Wall and the Reinforcement Detailing.

b) Explain the Structural Action on the walls of a Cylindrical Water Tank With a Flexible Joint at the Base and hence the Reinforcement Detailing.

c) Explain the Various Parts of an Intze Water Tank and its Structural Action.

d) Explain how the load from a One Way Slab, Two Way Slab, and Cantilever Slab gets distributed to the supporting Beams.

e) Explain the basic concept of a Portal Frame and Draw B.M.D of a Three Pin Portal Frame. Draw the detail of a Hinged Joint between the R.C.C Column and Foundation.

Q4) a) Draw the Reinforcement Detailing in a Square Water Tank. **[4]**

b) For the Structural System Worked out for the Staircase Slab (Shown as Detail at B), for Q.No 1, draw Sectional Details. **[4]**

c) Draw the Detailed Plan of Column (Mention Cover). Draw plan and Section of the Footing (Mention Cover) given in the schedule below. **[4]**

ColNo	Footing				Col on Parking Floor		
	Size	Depth	Steel Along Shorter Span	Steel Along Longer Span	Size	Vertical Main Steel	Links
C1	2650×2400	600	16Tor @ 165c/c	17 Tor @ 150c/c	300×600	8 No25 Tor	8Tor@ 300c/c

Section - II

Q5) **A Factory Building is to be Built over a Plinth Area of 14.5m × 35m.[11]** Decide at what **centre to centre** distance you will place the **Stanchions** to support Roof Trusses. Draw a **Key Plan** Showing Stanchions, **Bracing System** Used and Position of Bracing System. You may use a **Howe or Fink Truss.** Draw the **Single Line Elevation** of the Truss Showing important Dimensions. **Show Purlin Spacing.**

Consider Top Chord Members as 2no ISA 80×50×6 as Top Chord Members and Inner Tension and Compression Members as 75×50×6, **Draw any one Joint.** Assume Thickness of Gusset Plate

Q6) a) Explain the concept of Web Buckling. **[3]**

b) **ISMB 500** is welded with **250mm × 18mm** plates on each side of the Flange. Determine the safe **udl** it can carry over a Effective Span of 11.23m. Classify the ISMB Section. Also Check for Actual Deflection against an Allowable Deflection of Span/240 **[9]**

Designation	Zp cm^3	Shape Factor
ISMB 250	465. 71	1.1345
ISMB 300	651. 74	1.1362
ISMB 350	889.57	1.1421
ISMB 400	1176.18	1.1498
ISMB 450	1533.36	1.1500
ISMB 500	2074.67	1.1471
ISMB 550	2711.98	1.1492
ISMB 600	3510.63	1.1471

OR

Design a Simple Supported Beam of effective span 9.23m for a load of 18 kN/m using ISMB. Check for Bending Strength, Shear and Deflection.

Q7) a) What Shapes can be used as Compound Stanchions. Explain the Basic Concept of Compound stanchions. **[3]**

b) Design a Compound Stanchion consisting of 2 no ISMC placed front to front with a **Laced Lateral System** to take a load of 1550kN. Length or Height of the Stanchion is 7.8m, with one end fixed and one end Hinged. Assuming a suitable Lacing System draw a sketch of the same. (Hint: Assume Stress = 200N/mm^2 to start the design process) End Conditions and Effective Lengths Given in Attachments **[9]**

S.R.	Buckling Class a	Buckling Class b	Buckling Class c	Buckling Class d
For Steel of fy = 250N/mm^2				
30	220	216	211	204
40	213	206	198	185
50	205	194	183	167
60	195	181	168	150

Q8) Answer any 3 of the following. **[12]**

a) Explain the I.S. Provisions of a **Battened System.** Draw neat Sketches of the same.

b) Explain a **Gantry Girder** and the various loads acting on it.

c) Explain Various Types of Braced Domes.

d) Explain the Structural Action on a Short and Long Barrel Vaults. Explain the need for Edge Stiffeners for R.C.C Vaults.

e) Explain any two Interior Structural Systems in a High Rise Building.

f) Explain any two Exterior Structural Systems in a High Rise Building.

Classification of Sections into Plastic, Compact, Semi Compact Sections

Table 1. Limits on Width to Thickness Ratio of Plate Elements

Compression element			Ratio	Class of Section		
				Plastic (β_1)	Compact (β_2)	Semi-compact (β_3)
Outstanding element of compression flange		Rolled section	b/*tf*	9.4ε	10.5ε	15.7ε
		Welded section	b/*tf*	8.4ε	9.4ε	13.6ε
		Compression due to bending	b/*tf*	29.3ε	33.5ε	42ε
Internal element of compression flange		Axial compression	b/*tf*	Not applicable		
Web of an I-H-or box Section [c]	Neutral axis at mid-depth		d/t_w	84ε	105ε	126ε
	Generally	If r_1 is negative :	d/t_w	$\frac{84\varepsilon}{1+r_1}$ but ≤ 42ε	$\frac{105.0\varepsilon}{1+r_1}$	$\frac{126.0\varepsilon}{1+2r_2}$ but ≤ 42 ε
		If r_1 is Positive :	d/t_w		$\frac{105.0\varepsilon}{1+1.5r_1}$ but ≤42ε	
	Axial compression		d/t_w	Not applicable		

Note 1 : Section having elements which exceeds semi-compact limits are to be taken as slender cross sections

Note 2 : $\varepsilon = (250/f_y)^{1/2}$

Note 3 : Check webs for shear buckling in accordance when d/t > 67 ε Where, b is the width of the element may be taken as clear distance between lateral supports or between lateral support and free edge, as appropriate, t is the thickness of element, d is the depth of the web, D mean diameter of the element.

Note 4 : Different elements of a cross-section can be in different classes. In such cases the section is classified based on the least favorable classification.

Note 5 : The stress ratio r_1 and r_2 are defined, as

$$r_1 = \frac{actual\ average\ axial\ compressive\ stress}{design\ compressive\ stress\ of\ web\ alone}.\ r_2 = \frac{actual\ average\ axial\ compressive\ stress}{design\ compressive\ stress\ of\ overall\ section}$$

End Conditions and effective lengths for stanchions

a) Both Ends fixed Le = 0.65L

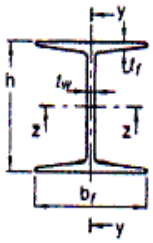
b) One End Fixed other end Hinged Le = 0.8L

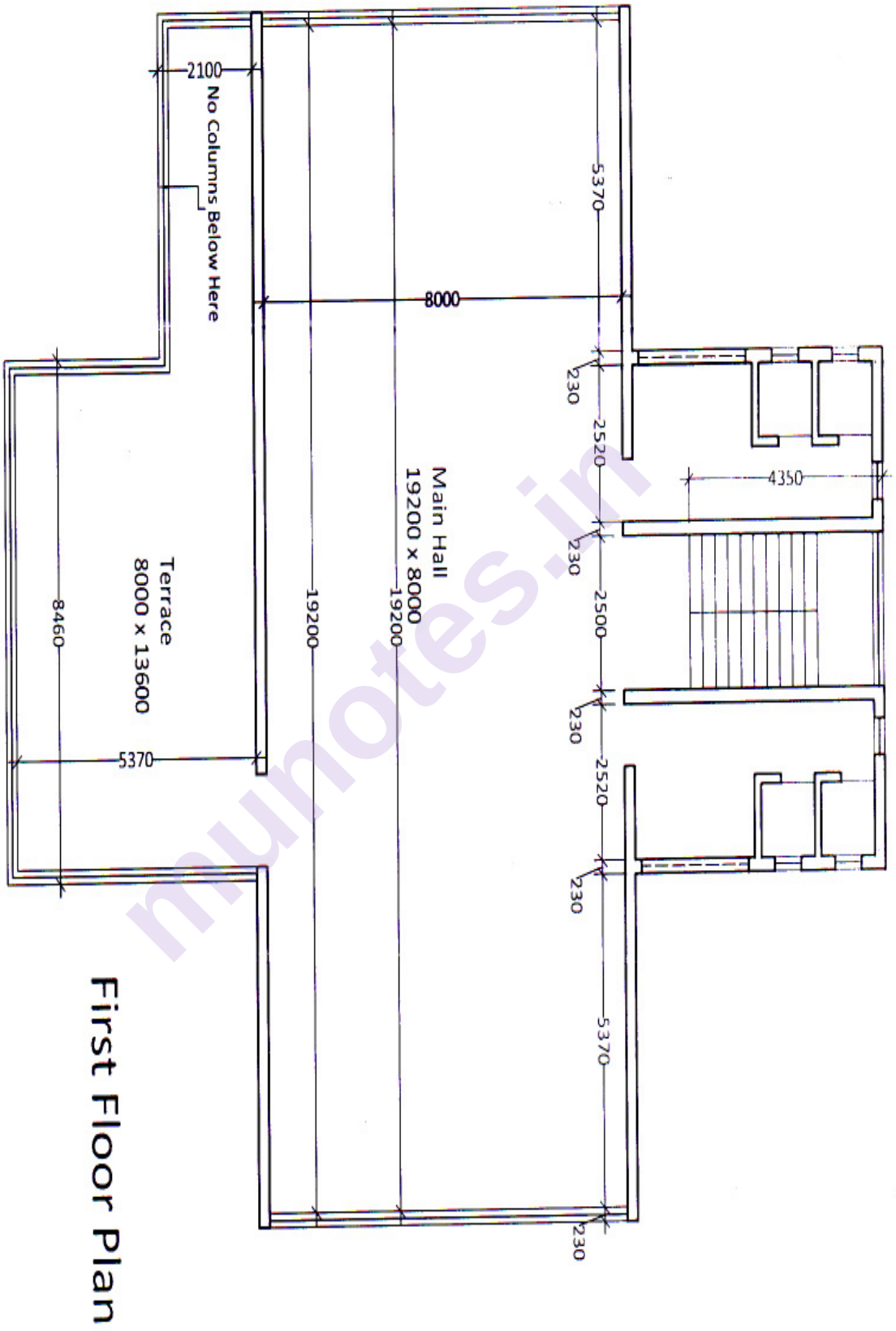
c) Both Ends Hinged = 1.0L

d) One End Fixed One End Free Le = 2L

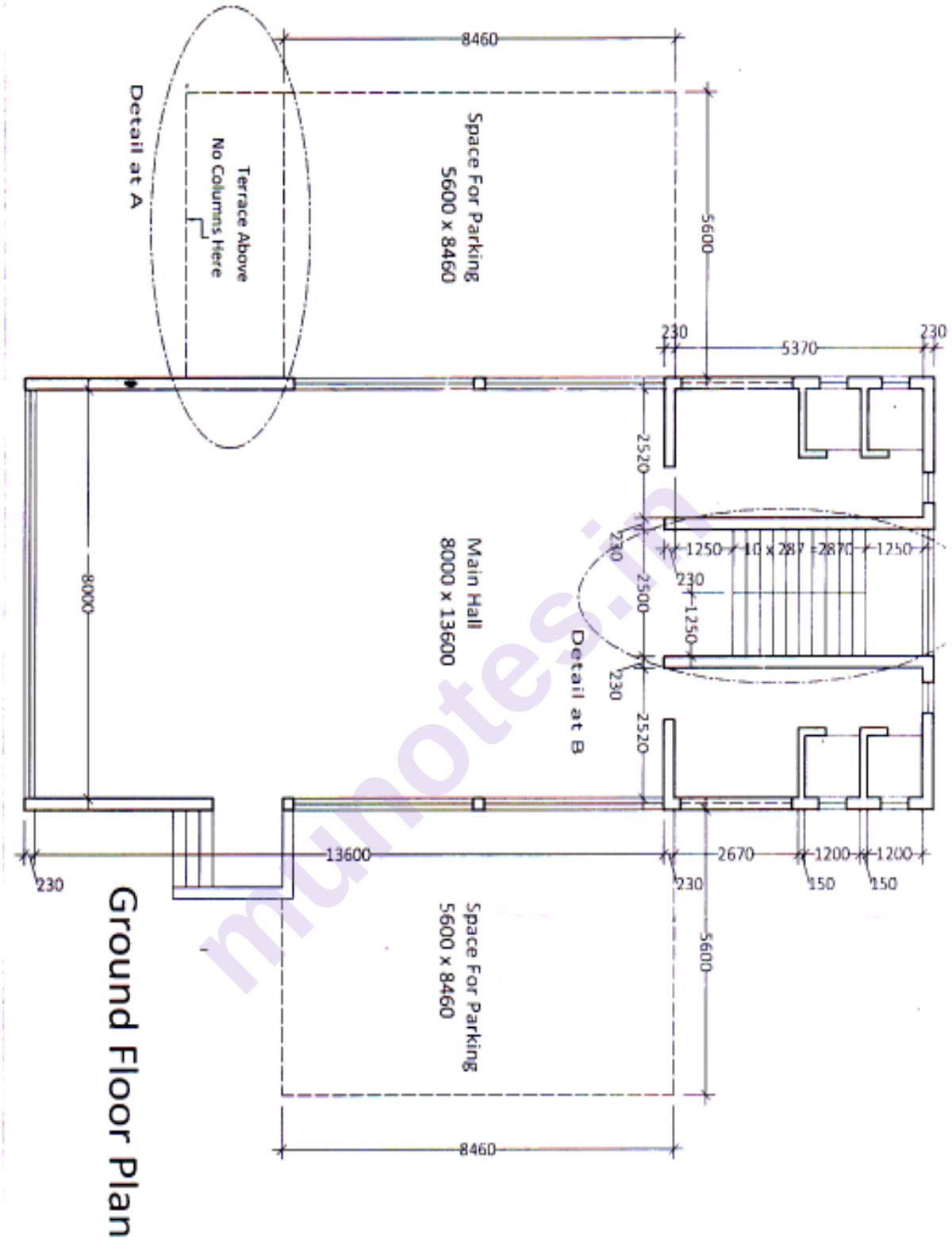
Table 10 Buckling Class of Cross-Sections

IS 800 : 2007 (Clause 7.1.2.2)

Cross-Section (1)	Limits (2)	Buckling About Axis (3)	Buckling Class (4)
Rolled I-Sections 	$h/b_f > 1.2$: $t_f \le 40$ mm	z-z y-y	a b
	$40 \text{ mm} < t_f \le 100$ mm	z-z y-y	b c
	$h/b_f \le 1.2$: $t_f \le 100$ mm	z-z y-y	b c
	$t_f > 100$ mm	z-z y-y	d d
Built-up Member 		Any	c



First Floor Plan


Detail at A
Terrace Above
No Columns Here
Space For Parking
5600 x 8460
8460
5600
230
5370
230
2520
Main Hall
8000 x 13600
8000
230
2500
230
1250
10 x 287 =2870
1250
Detail at B
230
2520
13600
230
2670
1200
1200
150
150
Space For Parking
5600 x 8460
5600
8460
Ground Floor Plan

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Total No. of Questions : 4]

SEAT No. :

P 567

[Total No. of Pages : 2

[5464]- 603

T.Y.B. Arch. (Semester - VI)

BUILDING SERVICES-IV

(2015 Pattern)

Time : 3 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 different types of fire extinguishers used in Fire Fighting with the help of neat sketches. **[15]**

OR

Explain fire sprinkler system & types of sprinklers in detail with the help of appropriate sketches

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

a) Classification of Fire
b) Fire Hydrant
c) Fire Fighting water tank
d) Jockey Pump
e) Dry riser System
f) Fire escape staircase

SECTION - II

Q3) State any four acoustical defects & explain Sabine's formula used in calculating reverberation time to achieve good hearing conditions in an enclosed space**[15]**

OR

Explain the properties of sound absorption material & give its classification according to the use with neat sketches

P.T.O

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

a) Structure Borne Noise

b) Microphone in sound reinforcement system

c) Echo

d) Panel Absorber

e) Sound Shadow

f) Explain terminologies – Amplitude, Frequency

ⓘⓘⓘ

SEAT No. :

P 568 [Total No. of Pages : 3

[5464]- 604

T.Y.B. Arch.

ARCHITECTURAL DESIGN - VI (Enlodge)

(2015 Pattern)

Time : 14 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***The design will be assessed as a whole.***
2) ***Assume suitable data where ever necessary.***
3) ***Line drawings of plan and section at a scale of 1:100 must be submitted at the end of day one. These drawing will not be returned to the students on day two.***
4) ***All the drawing should be neat, clear and self-explanatory.***

HIGHWAY TRANSIT FACILITY

Maharashtra state Road transport corporation (MSRTC) has proposed a transit facility centre on a National Highway. The facility centre would serve as a pause and refreshment point to the passengers on a long distance journey. The centre would be a model of more such facility centers proposed across the state.

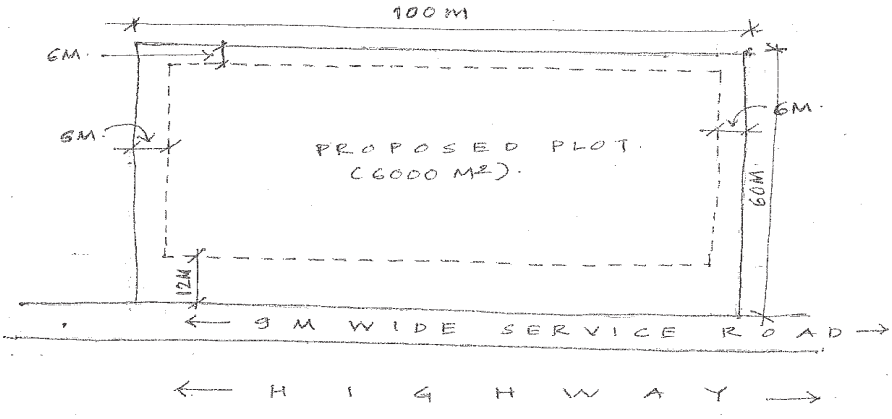
Efficiency of vehicular circulation, safety and rejuvenation of passengers, adherence to universal design guidelines and imagery for the public sector transport organization are the key criterion on which the design will be judged.

SITE :

The Plot area is 6,000 sq. mt. with access from a 9m wide service road on the south side. Other details of the plot are as follows.

1. Area of plot - 60 × 100m (6,000m^2)
2. Set - back from road side - 12 m
3. Set - back from other sides - 6m

The service road has two-way traffic movement.



AREA PROGRAM :

	FACILITY	UNITS	AREA IN SQ.M.	NUMBER OF USERS.
1.	Cafeteria and kitchen	1		
	Seating area		200	100
	Billing/coupon desk		10	
	kitchen		60	
	store		30	
	wash		15	
2.	Packaged food stall	10	10SQM each	
3.	Driver's retiring room	1	20	
4.	First aid room	1	15	
5.	Controller room [with clear view of parking lot and highway]	1	30	
6.	Help desk	1	10	
7.	Staff room	1	20	
8.	Passanger waiting room	1	100	50 seats
9.	Toilets.			

Male - 4WC/ 6 urinals/6WHB
Female - 5WC/ 5WHB.]

1.WC should be wheel chair accessible in each toilet.

10. PARKING
10-BUSES / 30-4 WHEELERS / 20-2WHEELERS.

SUBMISSION REQUIREMENTS :

SR.No.	DESCRIPTION	SCALE
1.	Site - Plan	1:200
2 .	Site sections (min. 1)	1:200
3.	All floor Plans	1:100
4.	Building sections (min - 2)	1:100
5.	Building elevations (min - 2 sides)	1:100
6.	Perspective views (min - 1)	

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Total No. of Questions : 7]

SEAT No. :

P2071

[Total No. of Pages : 4

[5464]-702

Fourth Year B. Arch. (Semester - VII)

QUANTITY SURVEYING AND ESTIMATION

(2015 Pattern)

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

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to Section-I and Section-II must be answered in two separate answer sheets.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data wherever necessary.***

SECTION-I

Q1) Calculate the quantities for items with the help of the accompanying sketch-Fig.1 (Any Three) **[15]**

a) Excavation

b) PCC below foundation

c) 450 thk. RR Masonry in foundation

d) 230 thk. Bk. Masonry

e) 100 thk. RCC Coping band

Q2) Write the units as per IS 1200, for the items listed below: (Any Five) **[5]**

a) Dry Rubble Soling

b) PCC below foundation

c) 12mm. thk. Cement Plaster

d) Half brick wall

e) Wash Basin

f) Kotah Stone Flooring

g) Ashlar Stone Masonry

P.T.O.

Q3) Calculate the quantities for any 3 (three) items with the help of the accompanying sketch: (Any Three) **[15]**

a) RCC Columns in super structure

b) RCC Floor Slab

c) PCC at plinth level

d) Internal Plaster for hall only

e) Flooring for hall only

SECTION-II

Q4) What is the purpose of approximate estimate? **[5]**

Q5) What is an Estimate? What are the factors to be considered during preparation of a detailed Estimate? **[10]**

Q6) Write short notes on : (Any two) **[10]**

a) "An Estimate is never the actual cost of the work" - Explain.

b) What is Revised Estimate?

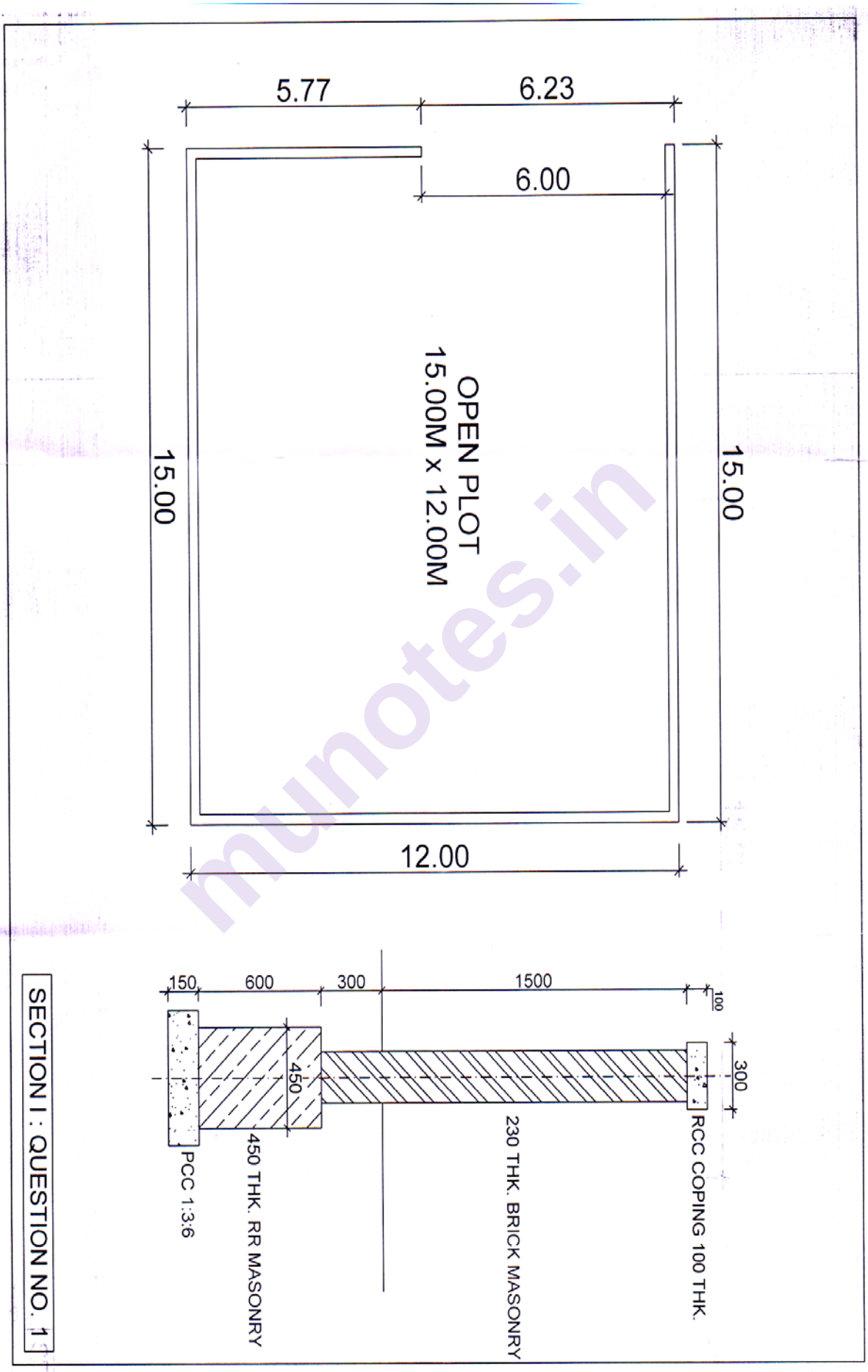
c) Explain Supplementary Items.

Q7) Write the description for an item as described in the schedule of rate (Any two) **[10]**

a) Excavation in soft Murum

b) Brick masonry 230mm. thk.

c) RCC Slab in M-25


5.77
6.23
6.00
15.00
15.00
OPEN PLOT
15.00M x 12.00M
12.00
150
600
300
1500
100
300
450
PCC 1:3:6
450 THK. RR MASONRY
230 THK. BRICK MASONRY
RCC COPING 100 THK.
SECTION I : QUESTION NO. 1

2.00
6.46
11.84
A
A
W1
W2
C1
C2
C3
C4
C5
C6
D1
D2
D3
HALL
8.00M x 6.00M
VERANDAH 2.00M WIDE
TOILET
1.50x2.50
TOILET
1.50x2.50
LOBBY
3.15x3.35
0.60
1.50
0.75
1.00
1.50
4.00
1.20
2.45
2.45
2.00
RCC SLAB 150 THK
2100
1800
500
230
1500
1200
150
500
1500
1200
200
230
SECTION I : QUESTION NO. 3
SCHEDULE OF OPENINGS
D1 : 1.50M x 2.45M
W1 : 1.50M x1.50M
W2 : 0.60M x 0.90M
IMPORTANT NOTES:-
RCC FOOTING 1200x1200
D : 500
d : 200
PCC BELOW FOOTING : 150 THK.
RCC COLUMN : 230 x 500
RCC PLINTH BEAM : 230 x 450
RCC FLOOR BEAM : 230 x 500
RCC SLAB : 150 THK.
SOLING : 250
INTERNAL PLASTER : 12MM. THK.
EXTERNAL SAND FACED PLASTER : 15MM. THK.

Total No. of Questions : 6]

SEAT No. :

P2072

[Total No. of Pages : 2

[5464]-703

Fourth Year B. Arch. (Theory)

SPECIFICATION WRITING

(2015 Pattern)

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

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right side indicate full marks.***
3) ***Answers to two sections to be written in two different answer books.***

SECTION-I

Q1) Define Specification writing. Explain the necessity of specifications for housing projects. **[10]**

OR

Explain open, closed, standard and detailed specifications with examples.

Q2) Write material specifications for bricks .Discuss the application of bricks in various forms in construction. **[10]**

OR

Write detail specifications for rcc slab. Explain the arrangements for storage of cement and mild steel reinforcement.

Q3) Write brief Specifications for (any Three) **[15]**

a) Internal plaster

b) R.C.C. columns

c) Vitrified tile Flooring

d) External brick wall

e) Murum filling

P.T.O.

SECTION-II

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

a) Methods of demolition

b) Tools and equipment for demolition work

c) Ways of protection of adjoining structures during demolition in congested area.

d) Dismantling and demolition

e) Types of formwork

f) Materials for formwork

g) Removal of formwork

h) Lead and lift

Q5) Explain the function of (any two) **[10]**

a) Manufacturer's brochures

b) Safety nets and helmets at site

c) Formwork

d) Shuttering for slab

e) Signage at construction site

Q6) Write names of manufacturer for the materials (any ten) **[10]**

a) Internal paint

b) Manglore tiles

c) Stainless steel sink

d) Electric cables

e) Modular switches

f) Orissa pan

g) Waterproofing compound

h) Adhesives for furniture

i) waterproof cement paint

j) Light weight Doors

k) Ceiling fans

l) Wash Basin