Total No. of Questions : 3]

SEAT No. :

P256

[Total No. of Pages : 2

[5257]-301

T.Y. B.Arch.

BUILDING TECHNOLOGY & MATERIALS - III

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

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]**

a) Draw plan & section showing Reinforcement detail of cantilever type staircase of flight width of 1000mm and floor height of 3150mm to the scale 1:10.

Draw detail of tread reinforcement to the scale 1:5

Draw detail at landing with railing fixing detail.

b) Design a single bed of Plan size 900mm × 2000mm in timber.

Draw plan and sections of the bed to scale 1:20.

Draw framing and bearing joinery details.

Draw isometric sketch.

Q2) Draw details of the following Any 3: **[30]**

a) Bay-window in wood.

b) Ridge and eaves/gutter fixing details for a steel truss roof with GI.

P.T.O.

c) Modular co-ordination by C.B.R.I.

d) Single Basement construction with external tanking.

e) Cantilever balcony slab in RCC

SECTION - II

Q3) Write short notes with sketches any five of the following : **[40]**

a) Guiniting.

b) Use of glass in building industry.

c) PVC door & Window.

d) Cavity walls.

e) Explain with sketch RCC pile cap and column.

f) Use of steel in building industry.

g) Castellated beam.

h) Raft Foundation.

Total No. of Questions : 8]

SEAT No. :

P257

[Total No. of Pages : 4

[5257]-302

T.Y. B.Arch.

THEORY OF STRUCTURES - III

(Bridge Course) (2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answer any 3 questions from each section.***
2) ***Answer should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicates full marks.***
5) ***Use of non programmable calculators and steel tables allowed.***
6) ***Assume suitable data if necessary.***
7) ***Use Fe 415 steel and M20 grade concrete.***

SECTION - I

Q1) Write short notes on any four : **[16]**

a) Weep Holes - Need and Provisions.

b) Shear Key - Need - Placement - Reinforcement Detailing.

c) Bulb of Pressure.

d) Effect of Eccentricity of Loading on a Column Stresses.

e) Reinforcement detailing of a Folded Plate Staircase.

f) Raft Foundations.

Q2) A rectangular column of size 300 × 750 is subjected to a load of 1800 kN and rests on a soil of S.B.C of 260 kN/m^2

Design the base of the footing. **[3]**

Find the depth of the Footing and Calculate Area of steel in both directions. **[6]**

Draw a sketch of the reinforcement in plan and section and Make a schedule of the footing. **[4]**

P.T.O.

Check for one way shear. τc against percentage of steel as follows. **[4]**

Ast/bd	Shear Stress in N/mm^2 τc.
0.15	0.28
0.25	0.36
0.50	0.48
0.75	0.56

Q3) Design a R.C.C doglegged staircase for an Residential building for the following data : **[16]**

a) Width of the flight - 1350

b) Floor to floor height - 3000

c) Tread - 300mm, Number of treads are 9 in each flight

d) The staircase is supported on 230 mm wide beams on outer edges of landings

Q4) A Retaining wall is proportioned as follows :

Retained earth is on the vertical face of the stem.

Density of retained earth 18 kN/m^3

Angle of repose - 30^o

Coefficient of friction - 0.6

S.B.C of soil - 250 kN/m^2

Density of Concrete - 25 kN/m^3

Top Width of stem - 220mm

Bottom width of stem - 560 mm

Height of stem - 5400 mm

Width of base - 3400mm

Toe Projection - 700 mm

Depth of Base - 560 mm

a) Check the Stability of the Retaining Wall with respect to Sliding and Over-Turning. **[11]**

b) Find Max and Minimum Pressure at base. **[6]**

SECTION - II

Q5) a) Explain the concept of Prestressing. Explain the process of Pre Tensioning. **[6]**

b) A prestressed concrete beam of overall size 300 × 900 is simply supported over a span of 9.0 m. The beam carries an udl of 28 kN/m over its entire span exclusive of its self weight.The prestressing tendons are located at a distance of 350 from the bottom and provides a prestressing force of 1400 kN. **[10]**

Calculate the extreme fibre stresses at Mid Span and at End Span.

Q6) a) Two column of size 400 × 400 and 450 × 450 carry loads of 1600 and 1900 kN respectively and are spaced 2.0 m apart centre to centre and rest in a soil of S.B.C of 200 kN/m^2. Find the plan dimensions of the combined footing. Draw a sketch of the plan. **[9]**

b) Write short notes on any two : **[8]**

i) Stress Block Diagram for Ultimate Load Method for R.C.C.

ii) Steps in the design of a Combined Footing.

iii) Gantry Girder.

iv) Foundation in Soils of Low S.B.C.

Q7) A Compound Stanchion is made of 2 number ISMC 300 placed back to back and these are to be Laced

Find the distance between the two so that they take maximum load. **[3]**

Explain the reasons for the above. **[3]**

Find the maximum load it can carry if the stanchion is Fixed at one end and Hinged at the other and has a height of 5.4m. Multiply the S.R by 1.1 for battened connections and by 1.05 for Laced connections. **[4]**

Design the Lacing System and Draw a sketch of the same. **[7]**

S.R (λ)	Stresses in N/mm^2
20	210
30	204
40	198
50	183
60	168
70	152

Q8) Write short notes on any four with neat sketches : **[16]**

a) Concept of Portal Frame and B.M.D of a 2 hinged portal frame.

b) Discuss the Structural Elements to make the structure Earthquake Resistant.

c) Plate Girder - Need, Application and Parts.

d) Measures to be taken to make Water Tank Walls Crack Free.

e) Connection Details in a Concrete Portal Frame.

f) A Circular Water Tank free to rotate at the base - Reinforcement Detailing and Structural Action.

Total No. of Questions : 5]

SEAT No. :

P258

[Total No. of Pages : 2

[5257]-303

T.Y. B.Arch.

BUILDING SERVICES - II

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

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 mechanical ventilation & explain different systems of mechanical ventilation in detail with appropriate sketches. **[15]**

OR

Explain Direct Stack effect & Reverse stack Effect in Natural Ventilation with the help of neat sketches.

Q2) Explain refrigeration cycle process, components with neat & appropriate sketches. **[15]**

OR

Explain the components & functioning of Split Air Conditioning system.

Q3) Write short notes on any FOUR of the following: **[20]**

a) Any two types of filter.
b) Cooling Tower.
c) Air Handling Unit.
d) Refrigerants in air conditioning.
e) Window A.C unit.
f) Wind Catcher.

P.T.O.

SECTION - II

Q4) Explain the properties of sound absorption material & give its classification according to the use with neat sketches. **[20]**

OR

Explain different types of fire extinguishers used in Fire Fighting system with the help of neat sketches.

Q5) Write short notes on any SIX of the following : **[30]**

a) Structure Borne Noise.

b) Fire escape Staircase.

c) Reverberation Time.

d) Sound Echo.

e) Panel Absorber in acoustics.

f) Fire Sprinkler.

g) External noise control.

h) Refuge Area.

SEAT No. :

P259 [Total No. of Pages : 4

[5257]-304

Third Year B.Arch.

ARCHITECTURAL DESIGN - III

(2008 Pattern)

Time : 12 Hours] (Enlodge) *[Max. Marks : 100*

Instructions to the candidates:

1) ***The design will be valued as a WHOLE.***

2) ***Candidates to assume suitable data wherever necessary and mention the same.***

3) ***Candidates MUST submit the single line drawings as specified which shall not be returned to them on day two, therefore they should keep due record of the design scheme for reference and further work on day two.***

4) ***Candidates should refrain from making major deviations from the sketches/ scheme submitted on day one.***

5) ***The drawings should be self- explanatory in all aspects mentioned.***

6) ***The orientation of all the plans/layout must be maintained.***

A PolyClinic, Pune.

A residential locality in Pune has a piece of land reserved for a commercial purpose. It has been decided that it is necessary to provide a poly clinic in this area.

The rectangular piece of land which is 1200 sq.m (30 m × 40 m) is amidst low rise residential buildings and has main road situated to the south.

A family doctor is a basic requirement for all people for minor health issues and minor surgery/dressing. A number of specialists have risen but the G.P. is very much required prior any specialist treatment. Two doctors have come together to open such a facility, one is an allopathic doctor and the other a homeopathy doctor. A small diagnostic centre and a physiotherapist also provides a facility for patients.

P.T.O.

Requirements		Area
1.	Entrance lobby , waiting area and reception desk	100 sq.m
2.	Administration/ office (3 people) with attached toilet	35 sq.m
3.	Allopathic doctor's cabin - 2 nos. (with attached toilet)	50 sq.m
4.	Homeopathy doctor's cabin - 2 nos.(attached toilet)	50 sq.m
5.	Physiotherapy room - 1 no.	50 sq.m
6.	Emergency treatment room - 1 no.	20 sq.m.
7.	X-Ray Room	25 sq.m
8.	Ultra-sound Room	20 sq.m.
9.	Pathology laboratory (Blood, urine sample collection) with attached toilet	40 sq.m.
10.	Medical Store	25 sq.m.
11.	Toilets (Ladies, Gents 10 sq. m each)	20 sq.m
12.	Store (furniture, equipment)	20 sq.m
13.	Pantry + store	15 sq.m
14.	Elevator	1 no.
15.	Circulation spaces, stairways, ramps, etc. as per design	
	Total Built up area 470 sq. m + 25 % circulation ie. 587.5 sq. m = 590 sq.m	

Outdoor areas

1. Hard and soft landscaped areas as required.
2. Parking – 1 Ambulance, 10 four wheelers and 40 two wheelers.

SITE PARAMETERS

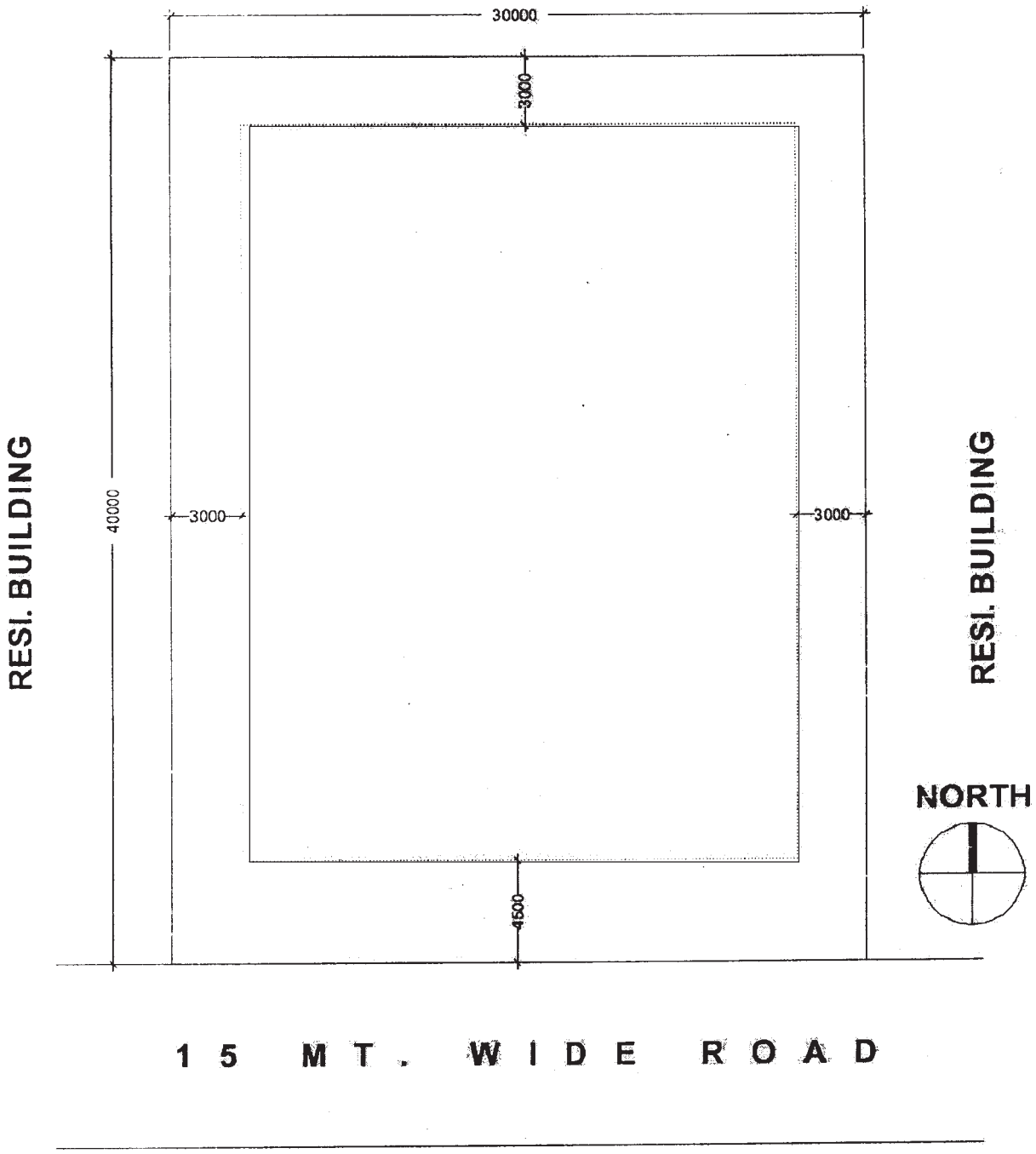
Mandatory setbacks

From road side - 4.5 m

From all other sides - 3.0 m

Maximum ground coverage 30% of the plot area Maximum ground plus one upper floor.

DRAWING REQUIREMENTS-DAY ONE:		**Scale**
1.	Single line site layout	1:200
2.	Single line floor plans with at least one schematic section	1:100
FINAL DRAWING REQUIREMENTS:		**Scale**
1.	Site plan with roof and all the site features such as landscape elements, parking, gate, driveways, pathways, etc.	1:200
2.	Site section Minimum one	1:200
3.	All floor plans with correct wall thicknesses, openings, levels, etc.	1:100
4.	Building Section Minimum two	1:100
5.	Building Elevations Minimum two	1:100
6.	Sketch view	


30000
3000
40000
3000
3000
4500
RESI. BUILDING
RESI. BUILDING
NORTH
15 MT. WIDE ROAD

* * *

Total No. of Questions : 10]

SEAT No. :

P260

[Total No. of Pages : 2

[5257]-401

Fourth Year B.Arch.

TOWN PLANNING

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Que: 1 and Que: 6 are compulsory.***
2) ***Answer ANYTHREE questions from EACH SECTION from the remaining.***
3) ***Answers to the TWO SECTIONS should be written in separate books.***
4) ***Draw neat diagrams or sketches wherever necessary.***
5) ***Assume suitable data if required.***

SECTION - I

Q1) Write a note on Indus Valley civilization. Explain one example with respect to Town planning aspects. **[14]**

Q2) State contribution of Kevin Lynch in town planning and Urban Design. **[12]**

Q3) Write Note on (Any 3) : **[12]**

a) Housing Need and Housing Demand.

b) Neighborhood Planning.

c) Garden city Concept.

d) Growth of Towns.

Q4) Explain the concept of Satellite town. Also state its characteristics with example. **[12]**

P.T.O.

Q5) Describe various types of Surveys in Town planning. Explain importance of surveys in planning process. **[12]**

SECTION - II

Q6) What are the various land uses in Development Plan? State the percentage of these land uses. What role amenities and open spaces play in Development Plan? **[14]**

Q7) Write notes on (Any 3) : **[12]**

a) Development Control Rules.

b) Types of Road Junctions.

c) 73rd and 74th Amendment of Constitution, 1992.

d) Principles of Urban design.

Q8) Explain the importance of M.R. & T. P. Act 1966. **[12]**

Q9) Describe the features of Land Acquisition Act. **[12]**

Q10) Explain the term Town planning Scheme and state its importance in Town planning. **[12]**

Total No. of Questions : 10]

SEAT No. :

P261

[Total No. of Pages : 3

[5257]-402

Fourth Year B.Arch.

PROFESSIONAL PRACTICE

(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two Sections - I & II - must be written on SEPARATE Answer Books.***
2) ***Answers to Q.1 from Section-I, and Q.6 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

Q1) Write a comprehensive note on an ARCHITECTS WORK. Describe a typical Administrative structure and Layout of an Architects OFFICE. **[20]**

Answer any TWO of the following :

Q2) Write a detailed note on The Indian Institute of Architects, its History in brief, and its Role and Activities as an Institution of Architects. **[15]**

Q3) What is the Council of Architecture ? What is ts composition, and what is its function and role in the Architectural Profession in India? **[15]**

Q4) Define ANY THREE of the following (5 Marks Each) : **[15]**

a) Contract.

b) Easements.

c) Market Value.

d) Power of Attorney.

e) Arbitrator.

f) Sinking Fund.

P.T.O.

Q5) Write short Notes on ANY THREE of the following (5 Marks Each) : **[15]**

a) Architectural supervision of construction work.

b) Professional Fees for Architectural services.

c) Composition and Layout of an Architects Office.

d) Professional Liabilities of Architects.

e) Architects Agreements with allied Consultants.

f) Stages of Architects work from Design to Completion.

SECTION - II

Q6) Write a comprehensive note on TENDERING, highlighting various types of Tenders, Systems of Tendering and their advantages and disadvantages.**[20]**

Answer ANY TWO of the following :

Q7) Write a comprehensive note on ARCHITECTURAL COMPETITIONS, giving the types and procedure with advantages and disadvantages if any.**[15]**

Q8) The Council of Architecture has prescribed a CODE OF CONDUCT for Architects. What are the provisions of the Architects (Professional Conduct) Regulations?

Q9) Write short Notes on ANY THREE of the following (5 marks each) : **[15]**

a) Tender Scrutiny Report.

b) Virtual Completion.

c) Professional Negligence.

d) Distress Sale.

e) Defects Liability Period.

f) Running Account Bills.

Q10) Compare and Contrast ANY THREE of the following (5 marks each): **[15]**

a) Bonus Clause and Penalty Clause in Tenders.

b) Proprietory and Partnership Practice.

c) Freehold and Leasehold Land Tenures.

d) Earnest Money Deposit and Security Deposit.

e) Cost, Price and Value.

f) Open and invitedTender.

Total No. of Questions : 6]

SEAT No. :

P262

[Total No. of Pages : 4

[5257]-403

Fourth Year B.Arch.

QUANTITY SURVEYING AND ESTIMATING

(2008 Pattern) (2008 Bridge Course) (Theory)

Time : 3 Hours] *[Max. Marks : 100*

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 the right indicate full marks.***
5) ***Assume suitable data, if necessary.***
6) ***Use of logarithmic tables, slide rules, Mollier charts, electronic pocket calculator & steel tables is allowed.***

SECTION - I

Q1) Work out the quantities of the following items for the structure attached (Fig.1) based on the data provided (Any eight) : **[40]**

a) Excavation for footings.

b) RCC Footings (Without reinforcement).

c) Internal Plaster.

d) Flooring (without Skirting).

e) RCC beams (Without reinforcement).

f) RCC Slab (Without reinforcement).

g) Oil bound distemper Painting only for ceiling.

h) Brick Masonry in super structure.

i) Oil paint for doors & Windows.

j) PCC at Plinth level.

P.T.O.

Data :

*RCC Footings 1800 mm × 2400mm, D: 600mm

*RCC Beams – 230mm × 600mm

*Cill Level – 1000mm

*Hard Strata at 1500mm

*Floor to Floor height – 4.50M

*RCC Columns – 230 × 600

*Lintel Level – 2400mm

*RCC Slab thickness – 150mm

Q2) State the Units of measurement as per IS code (Any Ten) : **[10]**

a) M.S. Windows

b) Wash Basin

c) Inspection Chamber

d) PCC under footings and foundation

e) M.S. Gate

f) Back Filling in excavation

g) Steel Reinforcement

h) Pointing

i) Internal Plaster

j) Waterproofing on terrace

k) 100mm wide skirting

l) Roofing Sheets

SECTION - II

Q3) Write short notes on the method of estimating for the following (Any Three) : **[15]**

a) Earthwork in excavation.

b) RCC beams and slabs.

c) Painting.

d) 230 thk. Brick masonry in super structure.

Q4) Prepare rate analysis for the following (Any Three) : **[15]**

a) RCC beam l:2:4

b) Cement Pointing 1:2

c) White wash

d) 20mm thk. DPC with cement mortar 1:2

Material Rates	Labour Rates
Cement : Rs. 300/- per Bag	RCC : Rs. 2500/- per cu.m
Sand : Rs. 1500/- per cu.m	Pointing : Rs. 60 per sq.m
Aggregate (Metal) : Rs. 2000/- per cu.m	White Wash : Rs. 7/- per sq.m.
Sealant Compound : Rs. 50/- per kg	DPC : Rs. 40/- per sq.m

Q5) Describe the following items of work as described in the bill of quantities (Any Two) : **[10]**

a) Excavation in Hard Murum.

b) RCC Column.

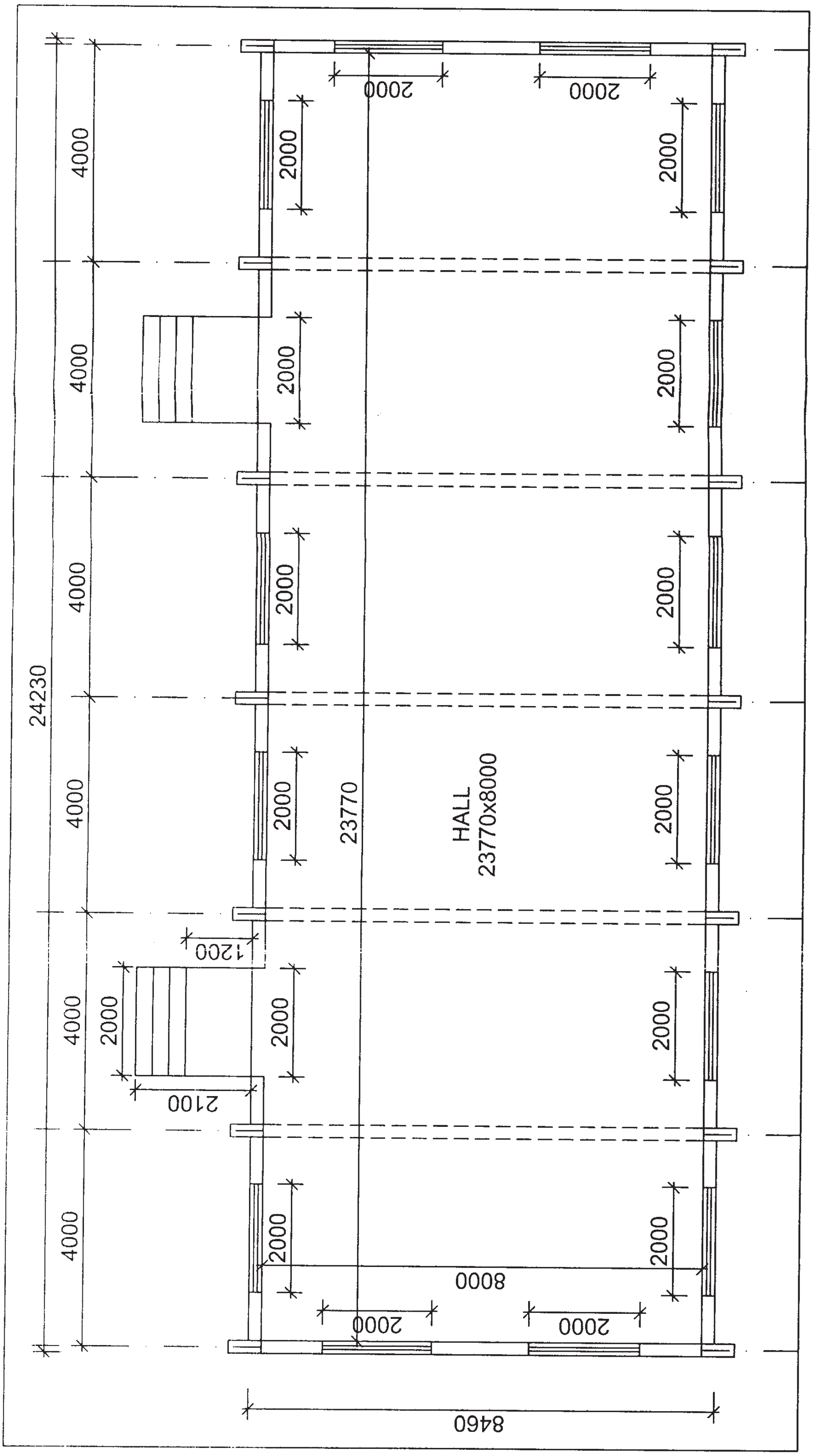
c) European WC Pan.

Q6) Prepare the indent of material for following items of work (Any Two) : **[10]**

a) Glazed tile dado for 18.0 sq.m.

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

c) 15mm Cement Plaster for 56.0 sq.m.



PLAN (FIG NO. 1)

* * *

Total No. of Questions : 6]

SEAT No. : ____

P263

[Total No. of Pages : 3

[5257]-404

Fourth Year B.Arch.

SPECIFICATION WRITING

(2008 Pattern)

Time : 3 Hours] ***[Max. Marks : 100***

Instructions to the candidates:

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

SECTION - I

Q1) Discuss the language of Specification writing in tender documents. Discuss the necessity of including specifications in tender documents. **[15]**

OR

Explain with examples how to write brief specifications & detailed specifications. Write the applications of brief and detailed specifications in construction works. **[15]**

Q2) Write brief Specifications for (any Three) : **[15]**

a) RCC Overhead water tank.

b) Double coat plaster.

c) Brick bat Waterproofing.

d) IPS flooring.

e) Stone Compound Wall.

P.T.O.

Q3) Write Material Specifications for (any four) : **[20]**

a) Fly Ash Bricks.

b) Fine aggregate.

c) Sand.

d) Timber.

e) Oil Paints.

f) Stone.

SECTION - II

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

a) Ramp designed for differently abled persons.

b) Windmills.

c) Ferrule Connection.

d) Soundproof Partitions.

e) Sprinkler systems.

Q5) Explain the function & Application of (any four) **[20]**

a) Cooling tower.

b) Gully trap.

c) Transformers.

d) Compressors.

e) Float valve.

f) Shoring & Strutting.

g) Knotting & Stopping.

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

a) Toughened Glass.

b) Waterproofing Chemical.

c) Wash Basin.

d) Cement.

e) Ceramic tiles.

f) Bath Tub.

g) Sunscreen Film.

h) Aluminium Windows.

i) Interlocking blocks.

j) Mangalore Tiles.

k) MS doors.

✷ ✷ ✷