Total No. of Questions : 4]

SEAT No. :

P2073

[Total No. of Pages : 2

[5464]-1

T. Y. B. Arch.

BUILDING TECHNOLOGY & MATERIALS - III

(2008 Pattern)

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

Instructions to the candidates:

1) ***Answer Section I should be solved on drawing sheets only & Section II should be written in separate answer book.***
2) ***Solve any 2 questions from section 1 and Question 4 is compulsory.***
3) ***Neat diagram with dimensions must be drawn whenever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data if necessary.***

SECTION-I

Q1) Draw plan elevation & section for sliding folding door between terrace & living hall in an apartment. Opening size is 2800 × 2100 mm (H)

Draw A plan to scale of 1:10 **[10]**

Draw Elevation & Section to scale of 1: 10 **[10]**

Draw any Two Details at enlarged scale for installation of Door shutter. **[10]**

Q2) Draw plan & section of a RCC staircase showing detail reinforcement for a residential building of floor to floor clear height is 3 M and flight width is 1.2 M

Draw Plan & section to 1:20 scale Showing reinforcement **[20]**

Draw enlarge railing fixing & tread finishing detail to suitable scale **[10]**

Q3) Answer any three of following : **[30]**

a) For a steel truss Draw Ridge & eaves gutter detail.

b) Draw plan & section through Bay window in wood.

c) Draw any four Built up section in steel.

P.T.O.

d) Sketch & Explain End bearing pile & Frication pile foundation.

e) Draw enlarged Section through cantilever balcony along shorter span of room.

f) Sketch a cantilever retaining wall & show schematic reinforcement in detail.

SECTION-II

Q4) Answer any five of following : **[40]**

a) What are the advantages of light weight concrete & Ready mix concrete in Building industry.

b) Write a note on reinforce brick work.

c) What is raft foundation & List the types of raft foundation.

d) Sketch a section through lift shaft.

e) Castellated Beam

f) Explain use of Aluminum in building industry.

g) Explain the process of painting for wood work.

h) Draw neat sketches of external tanking for a basement.

Total No. of Questions : 8]

SEAT No. :

P2074

[Total No. of Pages : 4

[5464]-2
T. Y. B. Arch.
THEORY OF STRUCTURES - III
(2008 & Bridge 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) S.B.C of soil. List of Different Types of Soil and their S.B.C.

b) Foundation Problems at Site.

c) Reinforcement Detailing in a Folded Plate Staircase.

d) Reinforcement Detailing in a Central Stringer Beam and Cantilever Treads Staircase.

e) Reasons for Eccentricity of Loading on a Column and I.S.456 Provisions for same.

f) Counter- Fort Type Retaining Wall.

Q2) A rectangular column of size 250 × 550 is subjected to a load of 1300kN and rests on a soil of S.B.C of 240kN/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 is 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 a school building for the following data. **[16]**

a) Width of the flight - 1500

b) Floor to floor height - 3100

c) Tread - 275mm, Number of treads - 9 in each flight

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

Q4) A Cantilever R.C.C. Retaining wall is as follows :

Retained earth is on the vertical face of the stem.

Density of retained earth $17KN/m^3$

Angle of repose - 28°

Coefficient of friction - 0.65

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

Density of Concrete - $25\ kN/m^3$

Top Width of stem - 250mm

Bottom width of stem - 520mm

Height of stem - 5000mm

Width of base - 3100mm

Toe Projection - 700mm

Depth of Base - 550mm

a) Check the Stability of the Retaining Wall with respect to Sliding and Over-Turning. Comment on same. **[10]**

b) Design the Stem Reinforcement. Draw sketch of same. **[7]**

SECTION-II

Q5) a) Explain Advantages pf Pre-Stressing over Conventional R.C.C Constructions. **[6]**

b) A prestressed concrete beam of overall size 300 × 900 is simply supported over a span of 12m. The beam carries an udl of 35kN/m over its entire span exclusive of its self weight. The prestressing tendons are located at a distance of 350 from the base and provides a prestressing force of 2500 kN.

Calculate the extreme fibre stresses at Mid Span and at End Span **[10]**

Q6) a) Two column of size 300 × 300 and 450 × 450 carry loads of 1200 and 1500 kN respectively and are spaced 2.1m apart centre to centre and rest in a soil of S.B.C of 225kN/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]**

a) Ultimate Load Method and Its Failings

b) Castellated Girder - Construction and Need

c) Castellated Girder - Advantages

d) Raft Foundations

Q7) A Compound Stanchion is made of 2 number ISMC 400 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 both ends and has a height of 8m. 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	224
30	211
40	198
50	183

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

a) Basic Concept of a Portal Frame and B.M.D of a Two Pin Portal Frame.

b) Reinforcement Detailing for Beams and Columns in Earthquake Resistant Structures.

c) Reinforcement Detailing for a Cylindrical Walled Water Tank with a Flexible Connection at the Base.

d) Different Shapes of Compound Stanchions.

e) Gantry Girder.

f) Piles - Need, Type and Application.

SEAT No. :

P2075

[Total No. of Pages : 4

[5464]-3
Third Year B. Arch.
ARCHITECTURAL DESIGN - III (Enlodge)
(2008 Pattern)

Time : 13 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Do not write anything on question paper except Seat No.***
2) ***Your Designs will be valued as a whole.***
3) ***Assume suitable data, if necessary.***
4) ***At the end of the first day, candidate will submit drawings of the site, floor plans, and a schematic section at 1:200 scale of entire scheme. These sketches shall not be returned to the candidates, therefore due records of the same should be kept for reference on the subsequent day. Candidates should refrain from making serious deviations from the sketch design submitted on the first day.***
5) ***The drawings should be self explanatory with structural clarity in the drawings.***

A Kindergarten and Creche

In a residential sector of a sub urban area of a city in hot dry climate, a kindergarten and creche is proposed. The plot of land admeasures 70mts × 50mts (For details refer the site plan attached herewith). The Kindergarten would have three levels of Classes viz : Playgroup (entry age 3½ years). Junior kg (entry age 4½ years) and senior kg (entry age 5½ years). Each level will have 2 classes of 25 children each, thus making a school of total strength of 150. There would be about 10 teachers, 1 principal and 10 non teaching staff members.

The teaching timings (Classes) of the school are about 9:30 am to 12:30 pm while the staff timings are 9:00 am to 3:00 pm. A creche is proposed to house about 30 children from age 3 to 8 years of age, timings for which are from 9:00 am to 5:00 pm. There would be about 6 lady staff members for the creche.

The designers have to take into account the scale of the children to design the spaces to make learning an interesting experience. Also due consideration for climate is to be given while designing of buildings and landscape. The detailed requirements of the buildings are as follows : (Carpet area is mentioned)

P.T.O.

A. THE KINDERGARTEN

A1.	Entry boyer / lobby and waiting launge for 10 persons	- 30.00 sq.m
A2.	Visitor's Toilet	- adequate area
	(1 WC, 1 W.H.B) - Ladies	
	(1 WC, 1 urinal, 1 WHB) - gents	
A3.	Principal's office with attached toilet	15.00 sq.m
A4.	Administrative office	20.00 sq.m
A5.	Staffroom with pantry and 2 attached toilets	40.00 sq.m
A6.	Classrooms 6. nos (50 sq.m each)	300.00 sq.m
	(Classrooms should have store rack for	
	Tiffins and bags)	
A7.	Children's toilets : Boys - 2 Baths,	- As reqd.
	2 WCS, 4 urinals, 4 Basins	
	Girls - 2 Baths, 4 WCS, 4 Basis	
A8.	Sick room with 2 Beds and toilet	- 20.00 sq.m
A9.	Store room	- 20 sq.m
A10.	Music room/Book room	30.00 sqm
A11.	Outdoor spaces	

a) Paved open spaces as extensions for classrooms

b) Areas with varied textures for play such as lawn, clay, water pool, sand etc.

A12.	Parking for 4 cars, 20 two wheelers and	
	5 Autorickshaws	- As reqd.

B. THE CRECHE

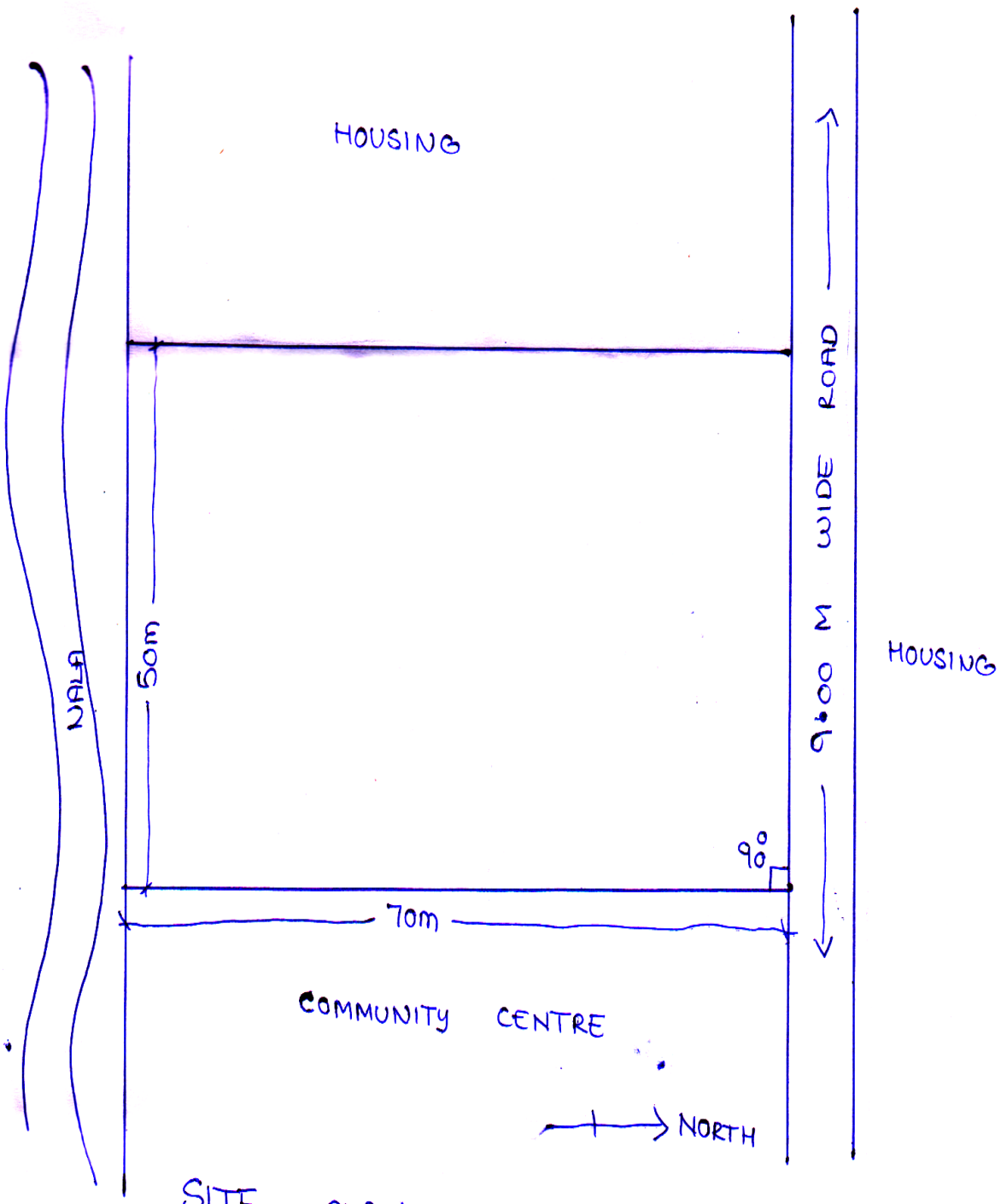
B1.	Entrance lobby and waiting for 10 persons and one attached toilet	25.00 sq.m
B2.	Sleeping room for children 1.no.	30.00 sq.m
B3.	Play cum eating room	50.00 sq.m
B4.	Kitchen, Pantry, Washing area and store	30.00 sq.m
B5.	Office room with store	20.00 sq.m
B6.	Staffroom with toilet	20.00 sq.m
B7.	Toilets : Boys - 2 Baths, 2 WCS, 4 urinals, 4 Basins Girls - 2 Baths, 4 WCS, 4 Basins	- As reqd.
B8.	Outdoor play area for childrens	As reqd.
B9.	Parking for 2 cars, 10 two wheelers	

NOTES :

1. Road side setback for building - 4.5 mts. All other setbacks - 3:00 mts.
2. No restriction on building height and farm.
3. Building and landscape design should be climate responsive and also responsive to children anthropometry and psychology.
4. Designers have the flexibility of combining the Kindergarten and the creche in one building as have seperate buildings, but care should be taken to avoid interference of the two in one another.

Drawing Requirements :

1.	Site Plan with ground floor plan with furniture and landscape layout	1:100
2.	Other floor plans	1:100
3.	Two sections including the site and the building	1:100
4.	Perspective sketch of the building	
5.	Road side elevation and any other relevant side elevation	1:100



SITE PLAN FOR KINDERGARTEN AND CRECHE

Total No. of Questions : 6]

SEAT No. :

P2076

[Total No. of Pages : 4

[5464]-4

Fourth Year B. Arch. (Theory)

QUANTITY SURVEYING AND ESTIMATING

(2008 Pattern) (Revised)

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

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 the right indicate full marks***
5) ***Assume suitable data wherever necessary.***

SECTION-I

Q1) Work out quantities for the following items of work based on the details given in the accompanying diagram (Fig.) (Any eight) **[40]**

a) P.C.C. below footing

b) R.C.C. Lintels

c) Dado tiles only for Bath room up to 2.1 m height

d) T. W. Door Frame for "D" - need to consider bearing for head member and anchoring for post members

e) Excavation for Column footings

f) 150mm ht. skirting in Bed room only

g) Internal Plaster for walls and ceiling - Bed room only

h) Area of Windows and Ventilators

i) RCC (1:2:3) columns in superstructure (from FFL to FFL) FFL- finished floor level

j) Flooring in Bed room & Study Room

P.T.O.

Q2) State the unit of measurement as per IS Code 1200 **[10]**

a) Soft Soil Excavation

b) External Painting Work

c) R.C.C. Staircase in 1:2:4

d) T. W. door Frame

e) Dado tiles in toilets

f) WC in toilet

g) G. I. Pipe 50mm dia.

h) Bk. Bat water proofing for Terrace

i) Rubble soiling in plinth

j) UCR Masonry in Foundation

SECTION-II

Q3) Write short notes on : (Any two) **[10]**

a) Contingencies & Spot Items

b) Bill of Quantities

c) DSR

d) Penultimate certificate

Q4) Prepare rate analysis for unit quantity. (any three) **[15]**

a) 1:4:8 PCC below footing

b) 450mm Stone Mas. In 1:6 cement mortar

c) 12mm thick Cement Plaster in 1:6 cement mortar

d) 1:2:4 R.C.C. work in column

Material rates:

Stone - 1500/- per cum

Cement - 400/- per bag

Sand - 4000/- per cu m

Aggregate - 610/- per cu m

Labour rates:

P.C.C. Work - 2,500/- per cu m

R.C.C. Work - 6,650/- per cu m

Stone. Mas. Work - 4,500 /- per cum

Cement Plaster - 375/- per sq m

Q5) Prepare indent of material for following. (Any three) **[15]**

a) P.C.C. below foundation in 1:3:6 for l7cum

b) 20 mm thick cement plaster in 1:6 mortar for 475sqm

c) 230mm thick BB Masonry in 1:4 cement mortar for 68 cum

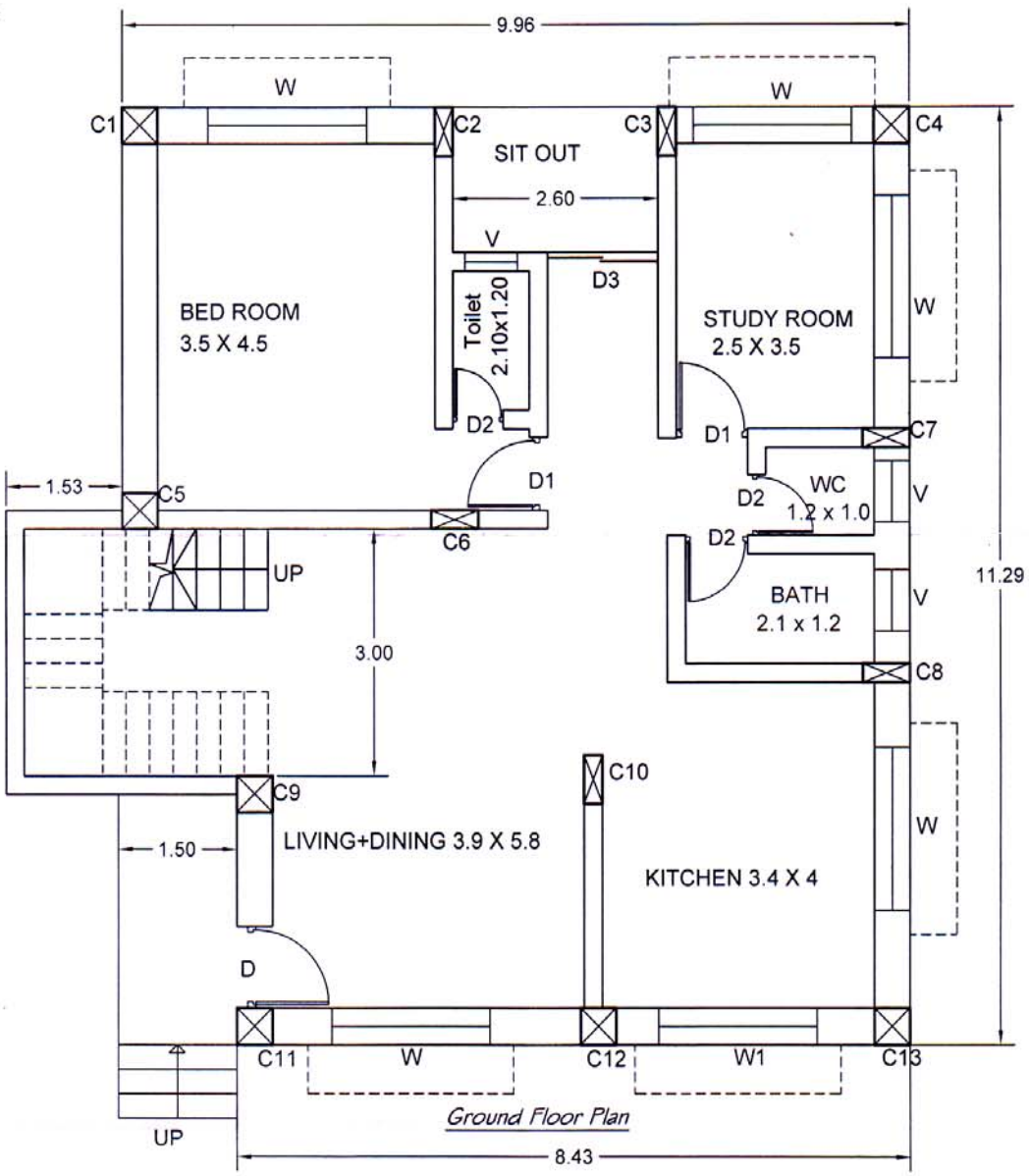
d) R.C.C, lintels in 1:2:3 for 18 cum

Q6) Explain in detail the following. (Any two) **[10]**

a) Describe any two items as Bill of Quantities for Q. 1 A

b) Explain types of estimates (any two)

c) Explain the long wall & short wall method in quantity calculation?



**** All dimensions are in meter.

1. Bearing for lintels is 0.3m on each side
2. Floor to floor height 3.150 m
3. RCC column sizes are 0.45m x 0.45m and 0.23m x 0.45m
4. RCC slab 110mm thick
5. External 450 mm thick Stone Masonry work
6. Internal 230 mm thick Brick Masonry work
7. PCC thickness below flooring 100 mm thick
8. PCC thickness below footing 150 mm thick
9. Window sill level is 0.9 m for all except W1 & V
10. For W1 & V sill level is 1.2 m
11. Lintel level is 2.1 m from finished floor level
12. Size of Lintels are 0.45m x 0.15m & 0.23m x 0.15m
13. PCC below all columns 1.5m x 1.5m
14. Plinth level is 0.6m
15 Excavation depth for columns from ground level is 1.2m
16. Frame size for "D" = 75mm x 125mm

Schedule of Openings

W - 2.0 x 1.2
W1 - 2.0 x 0.9
V - 0.6 x 0.9
D - 1.2 x 2.1
D1 - 0.9 x 2.1
D2 - 0.75 x 2.1
D3 - 1.17 x 2.1

Q no. 1 DWG.

Total No. of Questions : 7]

SEAT No. :

P2077

[Total No. of Pages : 3

[5464]-5
Fourth Year B. Arch. (Theory)
SPECIFICATION WRITING
(2008 Pattern) (Revised)

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) ***Figures to the right indicate full marks.***

SECTION-I

Q1) Explain types of specification giving example of one of the types. Explain what you mean by restricted specifications. **[10]**

OR

What aspects are considered in writing detailed specifications? Write detailed specifications for Reinforced Brick wall.

Q2) Write Material Specification on. (Any four) **[20]**

a) Brick

b) Reinforcement

c) Timber

d) Coarse Aggregate

e) Cement

Q3) Write Brief specification on. (Any four) **[20]**

a) Internal brick wall

b) External cement plaster

c) Random rubble masonry

d) RCC slab

e) European water closet

P.T.O.

SECTION-II

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

a) Types of Staircases

b) Transformers

c) Accoustical partitions

d) Renewable Energy resources

e) Types of Fire Detectors

Q5) Write detailed Specification for following. (Any three) **[15]**

a) Fireproof Doors

b) Specification for ramp for disabled person

c) Gypsum Ceiling

d) Stone Compound wall

Q6) Explain functions of (Any two) **[10]**

a) Earthing

b) Cooling tower

c) Ferrule connection

d) Manhole

Q7) Write manufacturers name for following products. (Any ten) **[10]**

a) Laminates

b) Aluminum windows

c) Cement Paint

d) Plywood

e) White Cement

f) Ceramic Tiles

g) Doors

h) Faucets

i) Escalators

j) Electrical Switches

k) Glass

l) Urinals

m) G.I. sheets

n) Wash hand Basins

o) Lift

Total No. of Questions : 10]

SEAT No. :

P2078

[Total No. of Pages : 2

[5464]-6
Fourth Year B. Arch.
TOWN PLANNING
(2008 Pattern)

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

Instructions to the candidates:

1) ***Question 1 and Question 6 are compulsory.***
2) ***Answer ANY THREE 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.***
6) ***Figures to the right indicate marks.***

SECTION-I

Q1) What do you mean by the term 'Town Planning' and explain its importance of learning for an architect. Support your answer with appropriate examples. **[14]**

Q2) Explain the concept of Neighbourhood by Clarence Perry and its characteristics. **[12]**

Q3) What are the different types of Housing? Describe with sketches stating the advantages and disadvantages of each type. **[12]**

Q4) Write a note on any one of the planned cities in India. **[12]**

Q5) What is the relation of Urban Design with respect to Urban Planning and Architecture? **[12]**

SECTION-II

Q6) What is the necessity of a Development Plan? How does it help in achieving orderly city development? **[14]**

P.T.O.

Q7) What is the importance of Development Control Regulations? **[12]**

Q8) Write a note on the MRTP: Maharashtra Regional and Town Planning Act 1966**.** **[12]**

Q9) Describe the different types of surveys used in the process of planning. **[12]**

Q10) What are the problems faced by Indian cities in the Transportation sector? **[12]**

Total No. of Questions : 10]

SEAT No. :

P2079

[Total No. of Pages : 3

[5464]-7
Fourth Year B. Arch. (Theory)
PROFESSIONAL PRACTICE
(2008 Pattern)

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

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 6 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) Explain the role of an Architect in the Architectural Profession in detail. Highlight his/her specific duties, liabilities, professional conduct & image in society.**[20]**

Answer any two of the following :

Q2) What is Indian Institute of Architects (IIA)? How, when and where was it established? What is the role and activities of lIA with respect to Architectural Profession? **[15]**

Q3) Write short notes on : (Any 3) (5marks each) **[15]**

a) Architect Act 1972

b) Architect's duties towards fellow Architects

c) Architecture as a Profession, neither trade nor business

d) Architect's duties towards his/ her own staff & consultants

e) Typical layout of an Architect's office

f) Role of allied / specialized consultants in Architectural Profession

P.T.O.

Q4) Write a comprehensive note on Architectural Competitions in India, as per guidelines laid down by Council of Architecture. Explain the types and procedures, advantages and disadvantages of it. **[15]**

Q5) What is Professional remuneration recommended by Council of Architecture for Architects? Describe the various stages of payment of Architectural fees in a Residential bungalow project. **[15]**

SECTION-II

Q6) What are the advantages and disadvantages of Tendering system? Explain the nature & types of tenders, also elaborate the system of tendering. **[20]**

Answer any two of the following :

Q7) What is Arbitration? What are its advantages and disadvantages and what is the procedure prescribed for conducting Arbitrations? **[15]**

Q8) Write short notes on : (Any 3) (5 Marks each) **[15]**

a) Eligibility of an Arbitrator

b) Running account bills (R.A. Bills)

c) Demolition Tender

d) Articles of Agreement

e) Interim certificate for R.A. Bills

f) Minutes of Site Meeting

Q9) What is the role of an Architect in a construction contract? Describe the Contract Document & its content by highlighting the general & special conditions of contract. **[15]**

Q10) Explain the salient differences between the following : (Any 3) (5 Marks each) **[15]**

a) Mediation & Arbitration

b) Cost, Price and Value

c) Mobilization fund & Material Advance Payment

d) Security deposit & Earnest money deposit

e) Bonus clause and Penalty clause

f) Defect liability period & extended period

Total No. of Questions : 5]

SEAT No. :

P2080

[Total No. of Pages : 2

[5464]-8
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) Calculate the no. of exhaust fans required for a library, measuring **[15]**

10 m × 12 m × 3.5 m. Show the positions of the fans in plan and section.

Assume the appropriate air cycles required for a kitchen.

You may choose fans from the following:

	Diameter of fan	Air handling capacity of fan in m^3/hr
a)	305 mm	1900
b)	380 mm	4000
c)	457 mm	6800
d)	610 mm	7900

OR

What is mechanical ventilation & explain different systems of mechanical ventilation in detail with appropriate sketches.

Q2) Explain with neat sketches the working of a Split type air-conditioner. **[15]**

OR

Explain with neat sketches, stack effect, wind towers and cross ventilation.

P.T.O.

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

a) Compressors

b) Types of filters used in air conditioning

c) Evaporators

d) Condensers

e) Cooling towers

f) Conditions of human thermal comfort

g) Natural Ventilation

SECTION-II

Q4) Explain in detail Air borne sound and Structure borne sound and way of controlling them. **[20]**

OR

Explain with neat sketches the principles of auditorium acoustics.

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

a) Sabine's formula

b) Smoke Detector

c) Fire hydrants

d) Defects of Sound

e) NBC regulations for any 3 passive fire fighting measures in a building

f) Acoustical Material

g) Fire extinguishers

h) Refuge Area.

Total No. of Questions : 3] **SEAT No. :**

P3698 **[Total No. of Pages : 2**

[5464]-11A

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]**

Provide a partition to divide the area equally between an air-conditioned conference room and open office along the shorter side. Size of hall is 8m ×5 m.

Draw plan showing framing and skin of partition. (Scale 1:20)

Draw section to a scale 1:20 and

Draw details to a suitable scale of:

a) Joinery between the stud and nogging

b) Fixing of shutter in the partition

OR

A RCC cantilever balcony is to be provided along the longer side of the room having one way floor slab. Balcony projection is 1.2 m Draw plan and section at 1:20 scale of balcony showing reinforcement detail. Draw railing detail showing reinforcement at 1:20

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

a) Detail Plan of aluminium sliding Window for Opening size 1.2 M × 1.2 M (H).

b) Modular co-ordination.

c) Single Basement construction with Internal tanking.

d) Cantilever retaining wall showing reinforcement detail.

e) Fixing of steel truss to steel stanchion.

P.T.O.

SECTION - II

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

a) Guniting.

b) Use of any two metals in building industry.

c) Cavity walls

d) Explain with sketch end bearing and friction piles.

e) Any two types of glass and its application in building industry

f) Castellated beam

g) Raft Foundation

Total No. of Questions : 8]

SEAT No. :

P2082

[Total No. of Pages : 4

[5464]-12
T. Y. B. Arch.
THEORY OF STRUCTURES - III
(2008 & Bridge 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) Stresses in an eccentrically loaded column and I.S provisions for the same.

b) Combined Footing - Strip Foundation - Raft Foundation.

c) Weep Holes in a Retaining wall.

d) Rankine's Theory of Earth Pressures.

e) Reinforcement detailing of a folded plate staircase.

f) S.B.C of soil. List of Different Types of Soil and their S.B,C.

Q2) A rectangular column of size 250 × 600 is subjected to a load of 1075kN and rests on a soil of S.B.C of 260kN/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]**

Check for two way shear. **[4]**

P.T.O.

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

a) Width of the flight - 1450

b) Floor to floor height - 3400

c) Tread - 290mm, Number of treads - 9 in each flight

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

Q4) A Cantilever R.C.C. Retaining wall is as follows : **[17]**

Retained earth is on the vertical face of the stem.

Density of retained earth 16kN/m^3

Angle of repose - 30°

Coefficient of friction - 0.6

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

Density of Concrete - 25 kN/m^3

Top Width of stem - 300mm

Bottom width of stem - 660mm

Height of stem - 5100mm

Width of base - 3200mm

Toe Projection - 700mm

Depth of Base - 600mm

a) Check the Stability of the Retaining Wall with respect to Sliding and Over-Turning. Comment on same. **[10]**

b) Design the Stem Reinforcement. Draw sketch of same. **[7]**

SECTION-II

Q5) a) Explain the concept of PreStressing and the Process of Pre-Tensioning. **[6]**

b) A prestressed concrete beam of overall size 300 × 750 is simply supported over a span of 11m. The beam carries an udl of 32kN/m over its entire span exclusive of its self weight. The prestressing tendons are located at a distance of 300 from the base and provides a prestressing force of 2200 kN.

Calculate the extreme fibre stresses at Mid Span and at End Span **[10]**

Q6) a) Two column of size 400 × 400 and 500 × 500 carry loads of 1000 and 1300 kN respectively and are spaced 2.2m apart centre to centre and rest in a soil of S.B.C of 225kN/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]**

a) Partial Factors of Safety for load and Stresses in Limit State Method

b) Plate Girder

c) Castellated Girder

d) Piles - Types and Application

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 hinged at both ends and has a height of 5.5m. 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
40	198
50	183
60	168
70	152

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

a) Basic Concept of Portal Frame.

b) Reinforcement Detailing for Beams and Columns in Earthquake Resistant Structures.

c) Reinforcement Detailing for a Cylindrical Walled Water Tank.

d) Different Shapes of Compound Stanchions.

e) Reinforcement Detailing For a combined Footing.

f) Types of Retaining Walls and their Applications.

Total No. of Questions : 6]

SEAT No. :

P2083

[Total No. of Pages : 4

[5464]-13

Third Year B. Arch. (Theory)

QUANTITY SURVEYING AND ESTIMATING

(2008 & Bridge Pattern)

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

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 the right indicate full marks***
5) ***Assume suitable data wherever necessary.***

SECTION-I

Q1) Work out quantities for the following items of work based on the details given in the accompanying diagram (Fig.1) (Any eight) **[40]**

a) P.C.C. 1:3:6 below footing

b) R.C.C. Beams in 1:2:4

c) Dado tiles only for Bath and WC up to 2.1 m height

d) Windows and Ventilators

e) RCC Footings – 1:2:4

f) Skirting in Bed – 100 wide

g) Internal Plaster for walls and ceiling - Kitchen only

h) Doors

i) RCC (1:2:4) columns in superstructure from FFL to FFL

(FFL- finished floor level)

j) Flooring in Bath andWC

P.T.O.

Q2) State the unit of measurement as per IS Code 1200 (Any TEN) **[10]**

a) Excavation in soft murum

b) External Plastering

c) R.C.C. Lintel in 1:2:4

d) M.S Windows

e) Vitrified Tiled Flooring

f) M.S Grill

g) WC pan in toilet

h) G. I. Pipe 25mm dia.

i) Oil Bound Distemper

j) 5 Amp. Electrical Point

k) Chain-link Fencing

l) Bib-Cock

SECTION-II

Q3) Write short notes on. (Any Two) **[10]**

a) Work Charged Establishment

b) Schedule of rates

c) Rate Analysis

Q4) Prepare rate analysis for unit quantity. (Any Three) **[15]**

a) 1:3:6 PCC at Plinth level

b) 230 mm Brick Masonry in 1:5 cement mortar

c) 12 mm thick Cement Plaster in 1:4 cement mortar

d) 1:2:4 R.C.C. work in Columns

Material rates:

Cement - 400/- per bag

Sand-4000/- per cu m

Aggregate - 610/- per cu m

Bricks - 9/- per Number

Labour rates:

P.C.C. Work - 3,500/- per cu m

R.C.C. Work - 8,500/- per cu m

Brick Masonry Work - 6,000 /- per cum

Cement Plaster - 600/- per sq m

Q5) Prepare indent of material for following. (Any Three) **[15]**

a) P.C.C. at plinth level in 1:3:6 for 248.0 cum

b) 12 mm thick cement plaster in 1:5 mortar for 175.0 sq.m

c) 230mm thick BB Masonry in 1:4 cement mortar for 250.0 cum

d) R.C.C. Columns in 1:2:4 for 180.0 cum

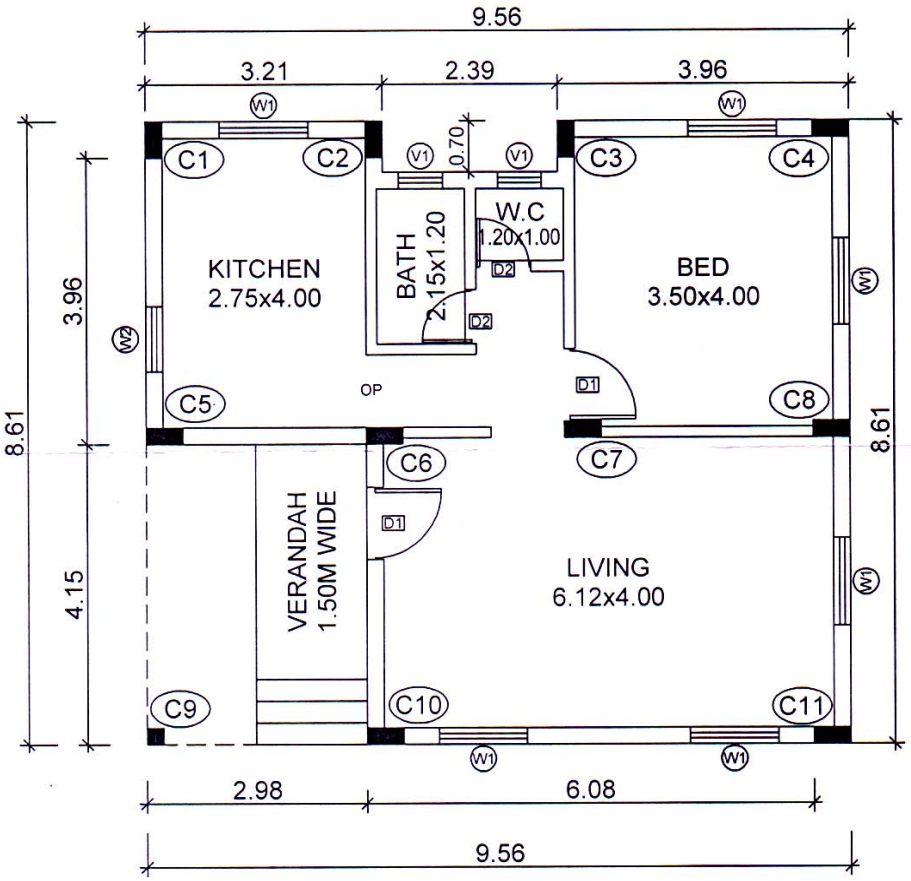
Q6) Explain in detail the following. (Any Two) **[10]**

a) Describe any two items as Bill of Quantities for Q. 1 A.

b) Explain types of estimates (any two)

c) Explain the long wall & short wall method in quantity calculation?

FIGURE 1



DATA:

RCC FOOTINGS D : 500, d : 200	: 1.20M x 1.50M
FLOOR TO FLOOR HEIGHT	: 3.20M
RCC COLUMNS : C1-C10	: 0.23M x 0.50M
RCC COLUMNS : C11	: 0.23M x 0.23M
RCC BEAMS	: 0.23M x 0.50M
CILL LEVEL	: 0.90M
LINTEL LEVEL	: 2.10M
SLAB THICKNESS	: 0.15M
PLINTH LEVEL	: 0.60M
DEPTH OF EXCAVATION FROM GROUND LEVEL	: 1.50M

D1 : 1000x2100 ; D2 : 750x2100
W1 : 1200x1200 ; W2 : 900x1200 ; V : 600x900

ASSUME SUITABLE DATA AS REQUIRED

Total No. of Questions : 6]

SEAT No. :

P2084

[Total No. of Pages : 2

[5464]-14

T. Y. B. Arch.

SPECIFICATION WRITING

(2008 & Bridge 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 separate books.***
3) ***Figures to the right indicate full marks.***

SECTION-I

Q1) Explain the difference between working drawings & specification writing giving examples. **[10]**

OR

What are the various types of specifications? Discuss performance & standard specifications in detail.

Q2) Write Short Notes on. (Any four) **[20]**

a) Lime punning to walls

b) Demolition Work

c) Necessity of Specifications

d) Lead & Lift

e) Types of Pointing

Q3) Write brief Specification on. (Any four) **[20]**

a) Damp proof course

b) External cement plaster

c) First class Brickwork

d) RCC Chajjas

e) 6mm thk Cement plaster in Ceiling

P.T.O.

SECTION-II

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

a) Sound defects
b) Accoustical Panelling & partitions
c) Types of Fire Detectors
d) Types of wiring systems
e) Fencing System

Q5) Explain functions of (any four) **[20]**

a) Transformers
b) Machine rooms
c) Chillers
d) Sprinklers
e) Escalators

Q6) Write manufacturers name for following products. (Any ten) **[10]**

a) GI Sheets
b) Lifts
c) Flooring tiles
d) Switchboards
e) Cement
f) Urinals
g) Taps
h) Wash basins
i) MS windows
j) Doors
k) Float Glass
l) Indian warer closets
m) Fans
n) Wooden flooring

Total No. of Questions : 5]

SEAT No. :

P2085

[Total No. of Pages : 2

[5464]-15
T. Y. B. Arch. (Bridge)
BUILDING SERVICES - I(A)
(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) Explain with neat sketches the refrigeration cycle in the process of Air Conditioning. **[15]**

OR

What is mechanical ventilation & explain different systems of mechanical ventilation in detail with appropriate sketches.

Q2) Explain Direct stack effect and Reverse Stack effect in natural ventilation with appropriate sketches. **[15]**

OR

Explain with neat sketches, the various ways in which natural ventilation can be achieved in buildings.

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

a) Centrifugal Fan

b) Types of filters used in air conditioning

c) Evaporators

d) Axial Flow fan

e) Cooling towers

f) Conditions of human thermal comfort

P.T.O.

SECTION-II

Q4) What is Reverberation Time? State Sabine's formula and the optimum reverberation time for a lecture hall.

Calculate the reverberation time for a lecture hall with length = 12m, width = 8m, height = 3. 8m.

Seating capacity of the hall = 60.

ITEM	DESCRIPTION	NO.S	SIZE
Flooring	Marble mosaic tiles - -		
Walls	230 thick brick walls with Neeru finished plaster - -		
Ceiling	Concrete slab with cement finished plaster - -		
Doors	T. W. fully paneled doors	2 No.s	1m × 2.1m
Windows	Fully glazed windows	6 No.s	1.8m × 1 .2m

Assume Full occupancy, all windows open and all doors closed. **[20]**

OR

Explain with neat sketches the water supply scheme for fire fighting in a high rise building.

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

a) Fire Escape Staircase

b) Smoke Detector

c) Masking effect of sound

d) Defects of Sound

e) General bye laws for fire fighting as per NBC

f) Acoustical Material

g) Methods of cutting off air borne noise

h) Refuge Area.

SEAT No. :

P2086

[Total No. of Pages : 4

[5464]-16
Fourth Year B. Arch.
ARCHITECTURAL DESIGN - IV (Enlodge)
(2008 & Bridge Pattern)

Time : 20 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Your Design Solution will be evaluated as a whole.***
2) ***Assume suitable data, if necessary.***
3) ***The candidate shall submit single line plans of the entire scheme with layout plan to the required scale at the end of first day. These drawings shall not be returned to the candidates, therefore due record of the same should be kept for subsequent days. The candidate shall not make any considerable departure for the design submitted on the first day.***
4) ***The drawings should be self-explanatory with structural scheme and should have clarity in all the plans and sections.***

Modern and Post-modern Art gallery

In the new developing areas of Pune Municipal corporation, the authorities is planning to build an art gallery, a facility for the neighbourhood and new developments. The plot is a flat site, rectangular in shape and surrounded by residential development. It has 15 m wide road and on the banks of a river.

The proposed art gallery has to be designed with following requirements:

Space requirements (figures indicate carpet area in sq.m)

Note: adequate areas for passages, lobbies, staircases, lifts etc, services and toilets should be added adequately wherever required.

Administration	
Entrance lobby and reception area	100 sq.m
Managers cabin	30 sq.m
Office area for 6 no. staff	60 sq.m
Store area	100 sq.m

P.T.O.

Art Gallery	
Art gallery for permanent exhibition	300 sq.m
Art gallery for temporary exhibition	200 sq.m
Open space for outdoor exhibits	200 sq.m
Seminar hall 2 nos . 50 seating capacity, 75 sq.m each with audio-visual facility	150 sq.m
Store	150 sq.m

Other areas	
Book shop	75 sq.m
Coffee Shop with outdoor seating area	100 sq.m
Cafeteria with kitchen.pantry ,store, washing area, indoor and outdoor seating area	150 sq.m
Shops - 2 nos 30 sq.m each	60 sq.m

Service area	
Electrical transformer, electric meter and panel room	75 sq.m
Generator room	50 sq.m
U G water tank of capacity of 50,000 ltr	
Fire fighting system	
Loading unloading platforms	

Parking and security	
Cars	10 nos
Two wheelers	50 nos
Bus	1 no.
Security cabin	1 no.

Design Parameters ;

1. Minimum setback 9.00 m from Main road and 6 m from other sides.
2. Maximum ground coverage 50%.
3. Design should be functionally and structurally stable.
4. Provision of barrier free environment for differently abled.
5. Structural components should be shown in plan and section.
6. Vehicular movement, ramps. headroom etc as per standards.

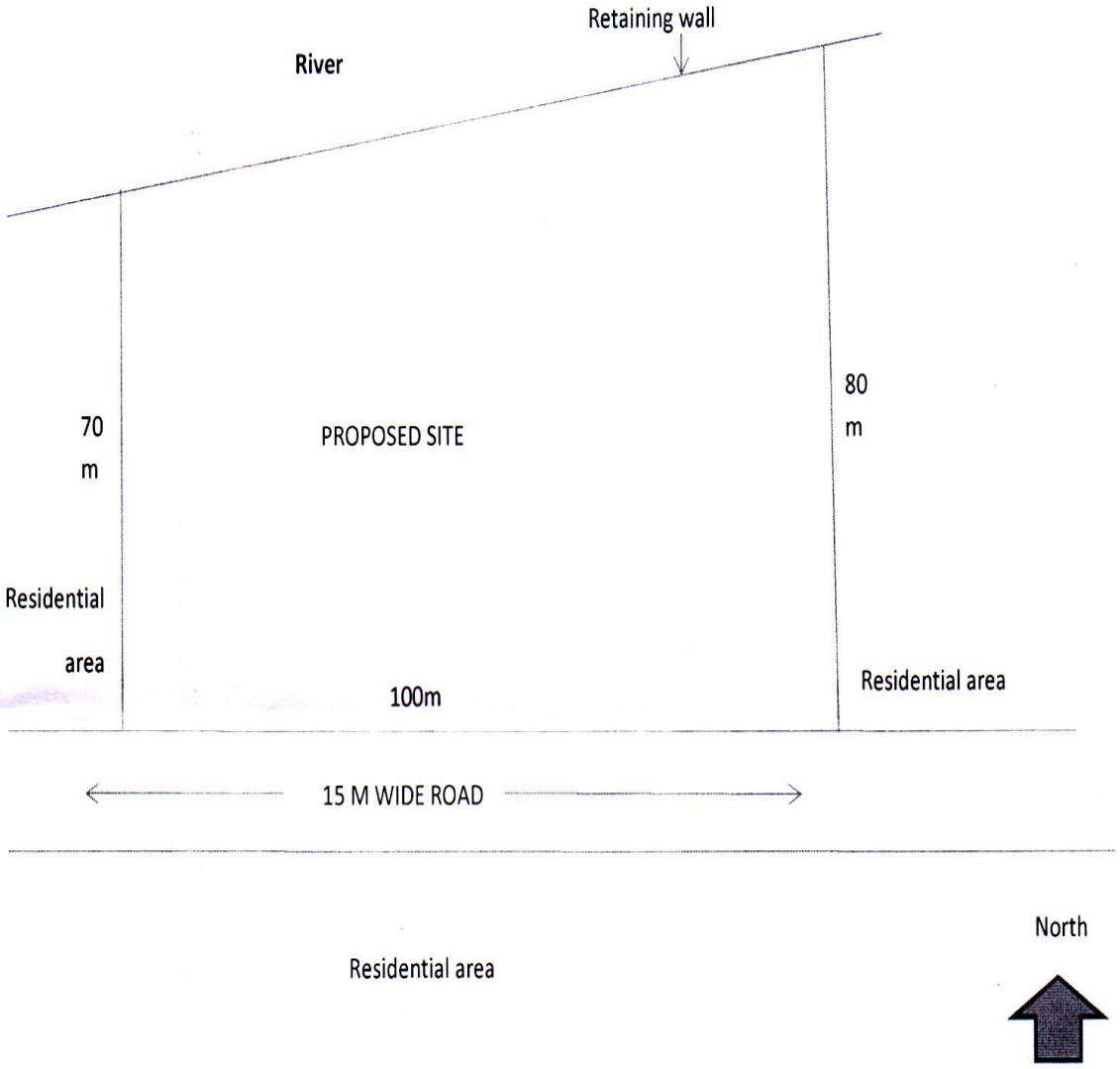
Drawing Requirements :

First day

Site zoning	
Single line layout plan showing site development, building configuration, circulation etc	1:200
single line floor plans at all levels	1:200

Final day

Site plan with site development- ground floor plan, , access, roads, parking, landscaped areas and service areas	1:200
All double line floor plan showing furniture layout	1:100
Roof Plan	
Building Sections - minimum 2	1:100
Elevations - minimum 2	1:100
View	


Retaining wall
River
70
m
PROPOSED SITE
80
m
Residential
area
100m
Residential area
15 M WIDE ROAD
Residential area
North

Total No. of Questions : 10]

SEAT No. :

P2087

[Total No. of Pages : 2

[5464]-17
Fourth Year B. Arch.
TOWN PLANNING
(2008 & Bridge Pattern)

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

Instructions to the candidates:

1) ***Question 1 and Question 6 are compulsory.***
2) ***Answer Any Three questions from Each Section from the remaining.***
3) ***Answers to the Two Section should be written in separate books.***
4) ***Draw neat diagrams or sketches wherever necessary.***
5) ***Assume suitable data if required.***
6) ***Figures to the right indicate marks.***

SECTION-I

Q1) What do you mean by the term 'Town Planning' and explain its importance of learning for an architect. Support your answer with appropriate examples. **[14]**

Q2) Explain the concepts of Neighbourhood by Clarence Perry and its characteristics. **[12]**

Q3) What are the different types of Housing? Describe with sketches stating the advantages and disadvantages of each type. **[12]**

Q4) Write a note on any one of the planned cities in India. **[12]**

Q5) What is the relation of Urban Design with respect to Urban Planning and Architecture? **[12]**

SECTION-II

Q6) What is the necessity of a Development Plan? How does it help in achieving orderly city development? **[14]**

P.T.O.

Q7) What is the importance of Development Control Regulations? **[12]**

Q8) Write a note on the MRTP: Maharashtra Regional and Town Planning Act 1966**.** **[12]**

Q9) Describe the different types of surveys used in the process of planning. **[12]**

Q10) What are the problems faced by Indian cities in the Transportation sector? **[12]**

Total No. of Questions : 10]

SEAT No. :

P2088

[Total No. of Pages : 3

[5464]-18
Fourth Year B. Arch. (Theory)
PROFESSIONAL PRACTICE
(2008 & Bridge Pattern)

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

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 6 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) Explain the role of an Architect in the Architectural Profession in detail. Highlight his/her specific duties, liabilities, professional conduct & image in society. **[20]**

Q2) What is Indian Institute of Architects (IIA)? How, when and where was it established? What is the role and activities of lIA with respect to Architectural Profession? **[15]**

Q3) Write short notes on : (Any 3) (5 marks each) **[15]**

a) Architect Act 1972

b) Architect's duties towards fellow Architects

c) Architecture as a Profession, neither trade nor business

d) Architect's duties towards his/ her own staff & consultants

e) Typical layout of an Architect's office

f) Role of allied / specialized consultants in Architectural Profession

P.T.O.

Q4) Write a comprehensive note on Architectural Competitions in India, as per guidelines laid down by Council of Architecture. Explain the types and procedures, advantages and disadvantages of it. **[15]**

Q5) What is Professional remuneration recommended by Council of Architecture for Architects? Describe the various stages of payment of Architectural fees in a Residential bungalow project. **[15]**

SECTION-II

Q6) What are the advantages and disadvantages of Tendering system? Explain the nature & types of tenders, also elaborate the system of tendering. **[20]**

Q7) What is Arbitration? What are its advantages and disadvantages and what is the procedure prescribed for conducting Arbitrations? **[15]**

Q8) Write short notes on : (Any 3) (5 Marks each) **[15]**

a) Eligibility of an Arbitrator

b) Running account bills (R.A. Bills)

c) Demolition Tender

d) Articles of Agreement

e) Interim certificate for R.A. Bills

f) Minutes of Site Meeting

Q9) What is the role of an Architect in a construction contract? Describe the Contract Document & its content by highlighting the general & special conditions of contract. **[15]**

Q10) Explain the salient differences between the following : (Any 3) (5 marks each) **[15]**

a) Mediation & Arbitration

b) Cost, Price and Value

c) Mobilization fund & Material Advance Payment

d) Security deposit & Earnest money deposit

e) Bonus clause and Penalty clause

f) Defect liability period & extended period