Total No. of Questions : 3]

SEAT No. :

P432

[Total No. of Pages : 2

[4367] - 42

Fourth Year B.Arch.

BUILDING CONSTRUCTION AND MATERIALS - IV

(2003 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.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) A workshop of size 20m x 30m x 6m is to be constructed in an industrial area. Draw a plan to a scale of 1:100, and a detail section showing all structural details and a suitable roofing system giving details of lighting, ventilation and rain water disposal to a scale of 1:50 **[30]**

OR

A Seminar Room of size 6m x 8m is to be constructed. With the help of neat sketches give all details of treatment to make the room sound proof.

Q2) Draw plan and section to a scale of 1:100 and two important constructional details to a scale of 1:20, of a semi Olympic size swimming pool (12.5 m x 25m). Give details of appurtenant services. **[30]**

OR

Explain with the help of neat sketches, the construction of balconies for an auditorium of size 15m x 35m.

a) Cantilever theatre balcony.

b) A partially cantilever balcony.

c) Balcony supported over the foyer.

P.T.O.

SECTION - II

Q3) Write short notes on **ANY FIVE** with neat sketches: **[40]**

a) Two types of expansion joints for slabs and beams.

b) Any one system of curtain walling.

c) RCC north light barrel vault.

d) A skimmer unit detail for a swimming pool.

e) Any two structural systems used to resist swaying problems in high rise buildings.

f) Hyperbolic Para bolides.

g) Long span and short span vault.

h) Coffered slabs.

i) Folded slabs.

Total No. of Questions : 4]

SEAT No. :

P434

[Total No. of Pages : 2

[4367] - 301
T.Y. B.Arch.
BUILDING TECHNOLOGY AND 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) ***Solve any 2 questions from Section - I and Question 4 is compulsory.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) A hall having size of 6000 x 4500 mm is to be provided with sliding folding doors to an opening on the exterior wall along shorter side. Opening size is 1800 x 2100 mm (height) The door shutters to be designed as Edge sliding folding doors.

Draw a plan to the scale of 1:10. **[10]**

Draw elevation and section to the scale of 1:10. **[15]**

Draw any one enlarged detail. **[5]**

Q2) In a Ground plus one storey bungalow with 3.15 Mts floor height for both the floors, a Half flight staircase is to be provided. The mid-landing is to be entirely cantilevered and projected beyond the building line.

Draw plan at 1:50 scale of Staircase at ground floor, first floor and terrace level separately. Show column and beam positions and reinforcement details of the structure of the staircase. **[15]**

Draw section at 1:20 scale through Staircase showing reinforcement details. **[10]**

Draw detail at 1:5 scale of Staircase railing. **[5]**

P.T.O.

Q3) Draw sketches of any three of the following: **[30]**

a) Draw a section through escalators for a Ground + one Mall building having RCC structure showing installation provisions.

b) Plan and Cross section through cantilever RCC balcony showing reinforcement detail.

c) Cantilever retaining wall showing thumb rule proportions and reinforcement details.

d) Single Basement construction with external tanking waterproofing detail.

e) Plan and section of TW partition showing TW framing and finishing material.

SECTION - II

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

a) Explain the process of 'setting out' of the structure on site.

b) Explain stainless steel as a material and its application in buildings.

c) Explain advantages and disadvantages of Ready Mix Concrete.

d) Explain the advantages and disadvantages of Aluminium doors and windows.

e) Explain the conditions in which raft foundation is appropriate and sketch various types.

f) Explain the process of guniting and its application in building industry.

g) Explain with sketches RCC pile cap and column.

h) Explain with sketches construction of reinforced brick walls.

Total No. of Questions : 10]

SEAT No. :

P436

[Total No. of Pages : 2

[4367] - 402
Fourth Year B.Arch.
TOWN PLANNING
(2008 Pattern)

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

Instructions to the candidates:

1) ***Question No. 1 and Question No. 10 are compulsory.***
2) ***Attempt 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.***

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 cases and examples from the profession. **[14]**

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

Q3) Briefly summarize the planning concepts and strategies in any one of the planned cities. **[12]**

Q4) Short Notes (Any Two): **[12]**

a) C.A. Doxiadis.

b) Sir Pattrick Geddes.

c) Aesthetic Survey.

Q5) a) A residential plot measuring 15 x 20 meters abuts a road on its smaller side. Permissible ground coverage is 50%. Floor Space Index – 2.5 considering the given data, calculate the maximum no of buildable floors. **[6]**

b) Explain the term Town Planning Schemes and State its importance in town planning. **[6]**

P.T.O.

SECTION - II

Q6) State the importance of Transportation Planning in Town Planning? **[12]**

Q7) Describe the importance of DC (Development Control) Regulations in planning. **[12]**

Q8) Short Notes (Any Two): **[12]**

a) Urban Arts Commission.

b) 73rd & 74th Amendments.

c) Types of Surveys in Planning.

Q9) Briefly summarize the importance of Tree Preservation and Protection act 1975. **[12]**

Q10) a) Describe the various types of housing in detail.

b) Explain various considerations while preparing the layout for subdivision of land.

[14]

Total No. of Questions : 8]

SEAT No. :

P437

[Total No. of Pages : 2

[4367] - 403

Fourth Year B.Arch.

PROFESSIONAL PRACTICE

(2008 Pattern)

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

Instructions to the candidates:

1) ***Question Nos. 1 & 5 are compulsory. Out of the remaining attempt 2 questions from Section - I & Section - II.***
2) ***Answer to the two sections should be written in separate answer books.***
3) ***Figures to the right indicate full marks.***
4) ***Your answers will be valued as a whole.***

SECTION - I

Q1) What is value? What is valuation? Explain the importance of valuation. **[20]**

Q2) Write Short Notes on (Any 3): **[15]**

a) Easement Rights.

b) Architects Duties as Employer.

c) Act of God.

d) Interim Certificate.

Q3) Differentiate Between (Any 3): **[15]**

a) Profession and Business.

b) Single Stage and 2 Stage Competitions.

c) Patent Defects and Latent Defects.

d) Cost and Price.

Q4) What is the importance and the need of the Architects Act? Discuss. **[15]**

P.T.O.

SECTION - II

Q5) What is the role of Council of Architecture [C.O.A.] & Indian Institute of Architect [I.I.A.] in architectural profession? **[20]**

Q6) Write Short Notes on (Any 3): **[15]**

a) Easement rights for light and ventilation.

b) Mediation.

c) Penultimate Certificate.

d) Tender Notice.

Q7) Differentiate Between (Any 3): **[15]**

a) Extra Item & Extra Work.

b) Lumpsum Tender and Demolition Tender.

c) Dilapidated and Ruinous Buildings.

d) Conciliation and Arbitration.

Q8) What are the Articles of Agreement and Conditions of Contract? **[15]**

Total No. of Questions : 5]

SEAT No. :

P692

[Total No. of Pages : 3

[4367]-306
T.Y. B. Arch. (ID)
QUANTITY SURVEYING & ESTIMATING
(2008 Course) (Theory)

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

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) ***Use of logarithmic tables, slide rules, mollier charts, electronic pocket calculator & steam tables is allowed.***
5) ***Assume suitable data if necessary.***
6) ***All questions are compulsory.***

SECTION - I

Q1) a) Work out the quantities for the following items of work, based on the details given in the accompanying diagram - fig. - 1 (ANY EIGHT) **[40]**

i) Excavation in soil & S.M. (For col. Footings only)
ii) M20 Column footings.
iii) M20 Columns (in G.F. only)
iv) AI. Glazed windows & ventilators.
v) C.Flush door shutters for D1 & D2 (frame 125 × 65).
vi) Internal niroo plaster for ceiling and walls to Community Hall (only).
vii) M20 R.C.C. stair steps for G.F.
viii) B.B. Masonry (1 : 6) for entrance steps.
ix) Polished Kota Treads.
x) P/F Europeon W.C's.
xi) Ceramic Tile dado (2.10 Ht) - Toilets only.
xii) M20 Chajja's (projection 600, thickness 100).

b) State the unit of measurement for the following items of work as per IS 1200. **[10]**

i) Reinforcements.
ii) Structural steel in trusses.
iii) B.B. Masonry (1 : 4) 110 thick
iv) T.W. Door frames.
v) Block Excavations in soil & S.M.
vi) P.C.C. (1 : 3 : 6) floor concrete.
vii) M20 Floor slabs.
viii) External sand faced plaster
ix) 12 dia. G.I. pipes (concealed)
x) P. Kota skirtings (100 Hf)

P.T.O.

SECTION - II

Q2) Write short notes on (Any Two) **[12]**

a) Characteristics of detailed estimates.

b) Uses (only) of schedule of Rates.

c) Mode of measuring slabs, beams & col's (Conventional) as per IS 1200.

d) Construction Overheads.

Q3) Based on the material and labour rates given below, analyse and work out "Unit Rates" for the following items of work (Any Two) **[14]**

a) P.C.C. (1 : 4 : 8) Levelling courses.

b) Ceramic Tile floorings.

c) R.C.C. (1 : 1½ : 3) columns.

d) B.B. Masonry in steps (1 : 6)

MATERIAL RATES (Aggregates - 840/cum, Sand - 1700, OPC - 320/bag. Ceramic tiles - 450/Sq.M, Bricks - 6/ - each)
Labour (all inclusive) (a) 650/cum (b) 165/Sq.M (c) 3800/cum (d) Rs. 700/cum.

Q4) Describe the following items of work, (AS DESCRIBED IN BILL OF QUANTITIES) stating inclusions, exclusions, unit of measurement for (ANY TWO) of the following **[12]**

a) P/C Inspection Chambers 450 × 900.

b) P/F Wash Basins on C.I. brackets.

c) P/F M.S./ Tor steel reinforcement

d) P/F Polish Kota skirting (100 Ht)

Q5) Work out the material order quantity for the following items of work, for the quantum of work as mentioned (Any Two) **[12]**

a) M20 slabs & beams - 30 CUM

b) Vitreous tile floors - 120 Sq.M.

c) 230 dry rubble soling - 150 Sq.M.

d) External plaster (1 : 4) - 200 Sq.M.

COMMUNITY HALL
(10270X6080)
ENTRANCE
TOILET
LOBBY
CHAJJA 400TH
SECTION A-A
(TYPICAL)
@ R.C.C-DETAILS @
ALL FOOTINGS- 1200x1200
D/d (600/200)
ALL COLUMNS- 250X550
ALL FLOOR BMS- 230X600
ALL FLOOR SLAB-140TH
ALL LINTOLS- 230X400
FOOTING PCC- 1500X1500X100
PLINTH BMS- 230X450
FOUNDATION DEPTH-1.50M
@ SCHEDULE OF D/W/O @
FD1- 2400X 2400 (TWO FOLDING)
D1 - 1200X 2100- C. FLUSH
D2 - 800X 2100- C. FLUSH
W1 - 2000 X 1500- ALGL.
W2 - 2000 X 1000- ALGL.
V1 - 900X 900- ALGL-LVRD

FIG : 1

♦♦♦♦

Total No. of Questions : 8]

SEAT No. :

P433

[Total No. of Pages : 2

[4367]-51
Fifth Year B. Arch.
PROFESSIONAL PRACTICE
(2003 Pattern)

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

Instructions to the candidates :

1) ***Question Nos. 1 & 5 are compulsory.***
2) ***Out of the remaining attempt 2 questions from Section - I & Section - II.***
3) ***Answer to the two sections - write in separate answer books.***

SECTION - I

Q1) Explain the process of selection of a Contractor? Who is a Sub-Contractor? **[20]**

Q2) Write short notes on (Any Three): **[15]**

a) Earnest Money Deposit.
b) CPM.
c) Sole Arbitrator.
d) Virtual Completion Certificate.

Q3) Differentiate between (Any Three) : **[15]**

a) Mediation and Arbitration.
b) Item rate tender and lump sum tender.
c) Interim certificate and Final certificate.
d) Clerk of works and site engineer.

Q4) How are the contents & method of documentation of a site visit report? **[15]**

SECTION - II

Q5) What are the different types of Tender? Explain the opening of Tender in General? **[20]**

P.T.O.

Q6) Write short notes on (Any Three) : **[15]**

a) Award.

b) Suspension of work.

c) Qualification of an arbitrator.

d) Breach of contract.

Q7) As an Architect comment upon the following issues (Any three) : **[15]**

a) Contractor has asked for extension in time.

b) Owner wants to terminate the contract.

c) Materials specified by the Architect are not procured by the contractor.

d) Contractor does not submit EMD along with the tender.

Q8) a) What should be the Pre Qualification of Contractor for building work in contract & conditions stipulated by A.I.I.A. **[10]**

b) Discuss contractual provisions relating to Architect's status & decisions. **[5]**

SEAT No. :

P435 [Total No. of Pages : 4

[4367]-401
Fourth Year B. Arch.
ARCHITECTURAL DESIGN - IV
(2008 Pattern)

Time :18 Hours] *[Max. Marks :100*

Instructions to the candidates :

1) ***Your answer will be valued as a whole.***
2) ***Assume suitable data if necessary.***
3) ***Single line sketch plan of the entire scheme with the site to the required scale shall be submitted by the candidates 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 will not make any considerable departure from the sketch submitted on the first day.***
4) ***The drawing should be self explanatory.***

DESIGNER'S HUB AT BALEWADI, PUNE.

Four Pune based design professionals in architecture, product design, interiors and visual arts propose to build a Designer's hub with guest accommodation to showcase talent in this field and facilitate interaction among professionals. The selected plot is fairly flat and rectangular in shape having dimensions 100.0 M (**north-south**) and 75.0 M (**east-west**) dimensions. It has **45.0 M** wide service road on **East** side of plot. You have to give Architectural design solution with all considerations of design parameters and standards.

SPACE REQUIREMENTS

Note- Adequate areas for **outdoor interaction**, passages, lobbies, staircases, lifts, escalators etc, services and Toilets should be added wherever required.

A) Administration

Nos.	Particulars	Area in sq.m
1	Entrance lobby with reception and waiting	100.0
2	Administration office 1. Managers cabin _____25.0 sq.m 2. Office area for 10 nos. staff ____50.0 sq.m 3. Meeting Room_____50.0 sq.m 4. Pantry _____15.0 sq.m 5. Store and server area _____15.0 sq.m 6. Printing and plotting station ____20.0 sq.m 7. Adequate toilets to be provided for both the sex.	175.0

P.T.O.

B) Designer's Hub with interactive centre

Nos.	Particulars	Area in sq.m
1.	Professional offices, 6 no. of 100.0 sq.m each with toilets.	600.0
2.	Auditorium seating capacity of 150 nos. with all necessary requirements. (Stage, Back stage, press room, two green rooms and Toilets etc)	300.0
3.	Seminar halls 2 nos. 50 seating capacity, 75 sq.m each with audio-visual facility.	150.0
4.	Conference hall with small pantry and toilet.	75.0
5.	Workshops 2 nos 100 sq.m each	200.0
6.	Exhibition hall covered 100 sq.m (additional 100 sq.m open space should be provided for outdoor exhibits)	100.0
7.	Cafeteria of 30 seating capacity with kitchen, store, etc.	100.0
8.	Shops 2 nos 15 sq.m each.	30.0
9.	Adequate toilets to be provided for both the sex.	

C) Accommodation Facility

Nos.	Particulars	Area in sq.m
1.	Entrance lobby and waiting Lounge	50.0
2.	Reception counter, back office, Toilet etc.	25.0
3.	Manager's office with Toilet	25.0
4.	Guest rooms - 10 Nos. 30.0 sq. each with toilet	300.0
5.	Coffee shop with pantry.	50.0
6.	Adequate toilets to be provided for both the sex.	

D) Area requirements for Services

Nos.	Particulars	Area in sq.m
1.	Air condition machine plant room	75.0
2.	Electric Transformer Electric meters and panel room	75.0
3.	Generator room	50.0
4.	Refuse disposal area	30.0
5.	U.G. Water tank of capacity 50,000 lit.	
6.	Fire fighting systems, loading unloading platforms	

E) Requirements for Parking

Nos.	Particulars
1.	25 Cars
2.	50 two wheelers
3.	2 Buses

Design Parameters.

1) Minimum side margin 9.0 M from all side.
2) Maximum 1/2 ground coverage of plot area (50%)
3) Maximum height of building 36.0 M
4) Design should be more functional and structurally stable.
5) Provision of Barrier free Architecture for physically challenged.
6) Necessary passages, corridors, staircase, lobbies should be provided as per design standards.
7) Compulsory show the structural components in plan and section.
8) For vehicular movement drive way, ramps, head room etc should be as per standards.

Drawing requirements :

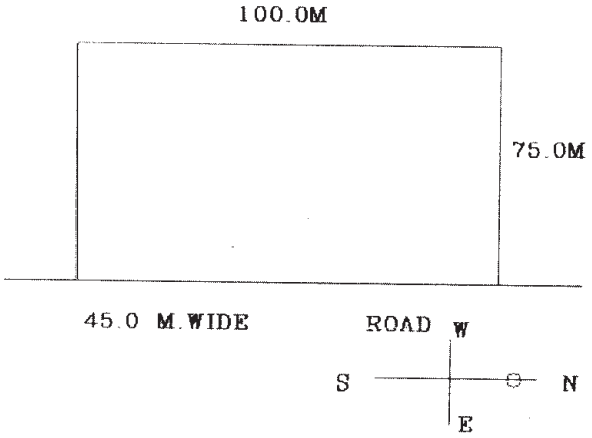
1) **Day one**.

i)	Single line layout plan showing site details, Building configurations, circulation, etc.	1:200
ii)	Single line floor plans at all levels.	1:200

2) **Final day**

i)	Single line Lay-out plan showing site, Building configurations, Roofing system, Parking, landscaping driveways, Walkways. Etc	1:200
ii)	Double line plans at all levels with internal furniture lay-outs	1:200
iii)	Minimum one site Section.	1:200
iv)	Minimum one building Section to explain the scheme	1:200
v)	Minimum two Elevations.	1:200
vi)	Minimum one view.	

Site plan.



SEAT No. :

P689 [Total No. of Pages : 3

[4367]-304

T. Y. B. Arch.

ARCHITECTURAL DESIGN - III

(Common to Old & New)

Time :12 Hours [Enlodge 6 hours] *[Max. Marks :100*

Instructions to the candidates :

1) ***The design will be valued as a whole.***
2) ***Assume suitable data if necessary.***
3) ***The candidate will submit the single line drawings of the site layout, floor plans and section at 1:200 at the end of the first day. These sketches shall not be returned to the candidate, therefore due record should be kept for reference on the subsequent day. Candidates should refrain from making serious deviations from sketches submitted on the first day.***
4) ***The drawing should be self explanatory with structural clarity in drawings.***
5) ***Orientation of the site should not be changed while preparing the floor plans.***

Office Building for a consultancy firm

A reputed multidisciplinary consultancy firm desires to set up its Headquarters amidst the hustle and bustle of the city environs with a staff requirement of about 90 persons. The client is looking for a built form that would address the concerns of energy efficiency by using passive design measures.

Design Brief

Sr.No.	Particulars	Areas
1	**Waiting and Reception**	80 sqmts
2	**Administration** a. Director's cabin b. Secretary cabin c. Audiovisual (2 × 45 Sm)	 25 sqmts 15 sqmts 90 sqmts
		130 sqm
3	**Department heads** a. Accounts b. Structures c. Design d. Services (HVAC)	 15 sqmts 15 sqmts 20 sqmts 20 sqmts
		70 sqm
4	**Office areas** : a. Accounts department with store b. Reprographics c. Meeting Rooms (15 × 5)	 50 sqmts 30 sqmts 75 sqmts
		155 sqm

P.T.O.

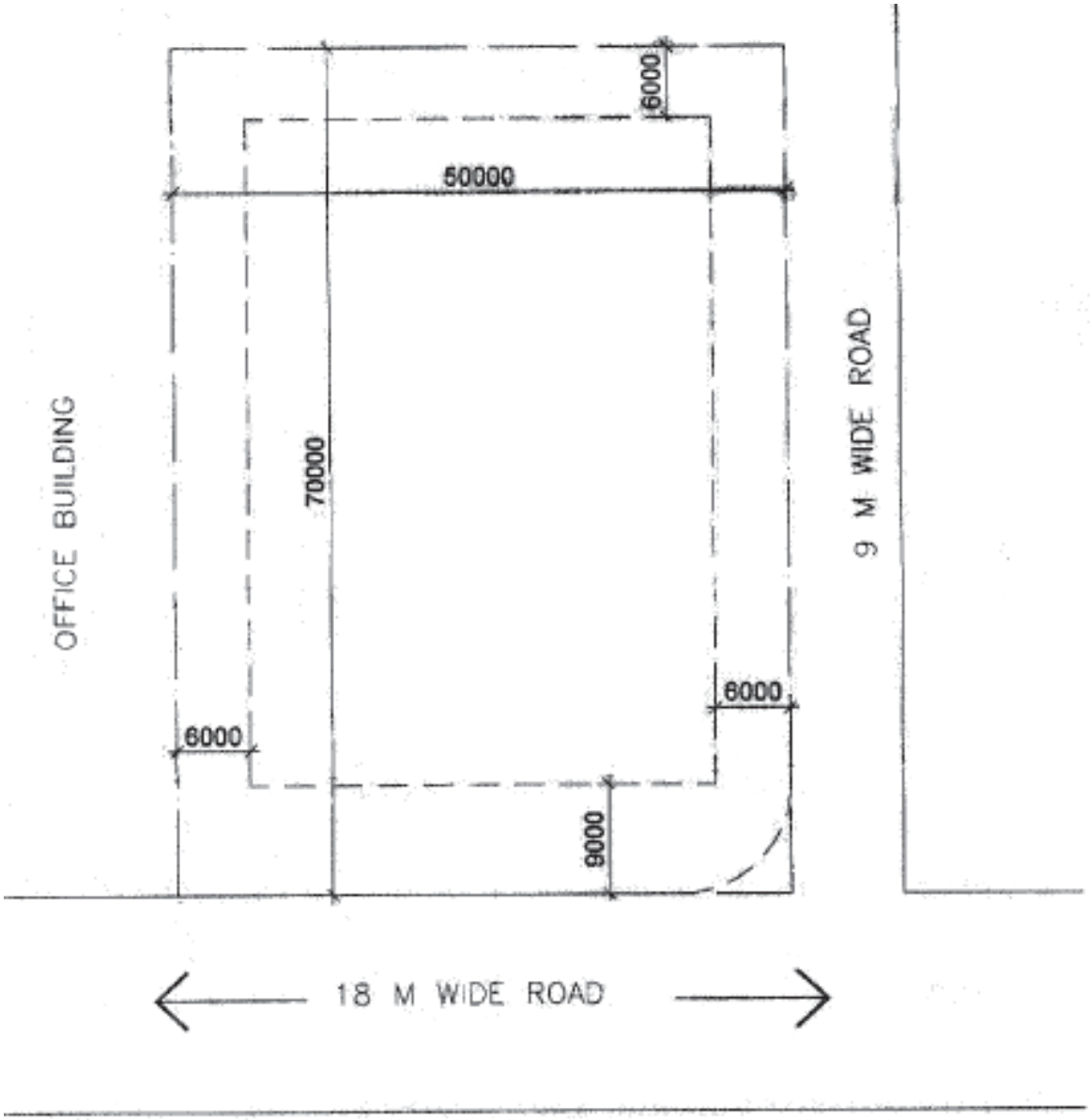
5	**Work stations** : a. Project leaders (07 × 10 Sqm) b. Assistants (07 × 05 Sqm) c. Workstation for 75 persons	 70 sqmts 35 sqmts 500 sqmts
		605 sqm
6	**Recreation** : a. Canteen 1.Indoor 2.Outdoor 3.Kitchen b. Gymnasium c. Indoor Games	 Adequate 70 sqmts 85 sqmts 30 sqmts 100 sqmts 40 sqmts
		240 + 85 sqm
7	**Service Areas** Male Toilet: 3WC, 3 UR, 3 WHB Female Toilet: 3WC, 3WHB Lift and Staircase Electrical Room: 10 Sqm HVAC Room: 15 Sq Pantry 10 Sqm	
8	**Parking** :	20 Cars, 50 nos 2 wheelers

Site parameters :

Plot Size	50 M × 70.00M
Plot area	3500.00 Sq. Mt
Set back from Road	Front: 9.00 M, Side setback: 6.0 m
Height Permissible	16.0 M
Maximum ground coverage	35% of plot area
Basement Line	Till the setback line
Permissible F.S.I.	1.00

Drawing requirements :

1. Site Plan. 1:200
2. All floor plans 1:100
3. Two sections minimum 1:100
4. Two elevations minimum 1:100
5. A perspective sketch of the building


6000
50000
70000
OFFICE BUILDING
9 M WIDE ROAD
6000
6000
9000
18 M WIDE ROAD
N

* * *

Total No. of Questions : 8]

SEAT No. :

P690

[Total No. of Pages : 3

[4367] - 33
T.Y. B.Arch.
THEORY OF STRUCTURES - III
(2003 Pattern)

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

Instructions to the candidates :

1) ***Answer any three questions from each section.***
2) ***Answers should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate 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) Trial Pits and Bore Holes.

b) Counterfort Type Retaining Wall.

c) Reinforcement Detailing of a Folded Plate Staircase.

d) Raft Foundations.

e) Rankine's Theory of Earth Pressures - Basic Assumoptions, Active and Passive Earth Pressure.

f) Piles - Need and their structural Action.

Q2) A rectangular column of size 230 × 450 is subjected to a factored load of 1100 kN and rests on a soil of S.B.C of 300 kN/m^2.

a) Design the base of the isolated footing and draw a diagram showing the geometry. **[4]**

b) Find depth for B.M. considerations and find steel required for same. **[4]**

c) Draw a plan and section showing the reinforcement. **[3]**

d) If the said footing is near another column of same size and load with a centre to centre distance of 1.8 m, would it be necessary to provide a combined footing. If so design the size of the rectangular combined footing in plan only. **[6]**

P.T.O.

Q3) Design a R.C.C doglegged staircase for an office building for the following data : **[17]**

a) Width of the flight - 1500 mm

b) Floor to floor height - 3200 mm

c) Tread - 275 mm Riser - 160 mm

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

Q4) A retaining wall is of the following data.

Retained earth is on the vertical face of the stem.

Density of retained earth 18 kN/m^3

Angle of repose - 30 degrees

Coefficient of friction - 0.6

S.B.C of soil - 250 kN/Sq. m

Density of Concrete - 25 kN/m^3

Top Width of stem - 400 mm

Bottom width of stem - 850 mm

Height of stem - 5500 mm

Width of base - 3200 mm

Toe Projection - 900 mm

Depth of Base - 600 mm

a) Check the stability of the above wall with regards to Overturning and Sliding. **[11]**

b) Find the Maximum and Minimum Pressure at the base and comment on the same. **[6]**

SECTION - II

Q5) a) What are the advantages of Prestressed R.C.C construction over conventional R.C.C construction. **[8]**

OR

a) Explain Pretensioning and Post Tensioning. **[8]**

b) A prestressed concrete beam of overall size 300 × 600 is simply supported over a span of 6.5 m. The beam carries an udl of 18 kN/m over its entire span inclusive of its self weight. The prestressing tendons are located at a distance of 200 mm from the neutral axis and provide a prestressing force of 1100 kN.

Calculate the extreme fibre stresses at mid span. **[9]**

Q6) a) Design a purlin for a factory building for the following data : **[8]**

i) Span of the truss - 16 m

ii) Spacing of the trusses - 4.5 m

iii) Slope of roof 25°

iv) Spacing of purlins - 2.2 m

v) Take dead load as 200 n/M^2

Use angle section.

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

i) Castellated Girders - Need and Advantages.

ii) Plate Girder - Need and Different Parts.

iii) Working Stress Method - Basic Concept and Limitations and Advantages.

Q7) Solve, A compound stanchion of a factory building consists of 2 no ISMC 250 placed back to back. Calculate the spacing between the two sections so that they take maximum load. What load will such a column carry for a height of 8.2 m with both ends fixed, design a suitable battening system for the same compound column with neat sketches. **[17]**

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

a) Various conditions of pressure for which an underground water tank is designed.

b) Design and detailing of a Circular Water Tank with a flexible joint between the walls and the base.

c) The reasons why high strength steel and concrete are used in Prestressed Members.

d) Steel Portal Frames - Advantages and Detailing.

e) Design for Earthquake Resistant Structures - Ductility Detailing.

f) Over Head Water Tanks.

Total No. of Questions : 8]

SEAT No. :

P691

[Total No. of Pages : 3

[4367] - 302
T.Y. B.Arch.
THEORY OF STRUCTURES - III
(2008 Pattern)

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

Instructions to the candidates :

1) ***Answer any three questions from each section.***
2) ***Answers should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate 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) Trial Pits and Bore Holes.

b) Counterfort Type Retaining Wall.

c) Reinforcement Detailing of a Folded Plate Staircase.

d) Raft Foundations.

e) Rankine's Theory of Earth Pressures - Basic Assumoptions, Active and Passive Earth Pressure.

f) Piles - Need and their structural Action.

Q2) A rectangular column of size 230 × 450 is subjected to a factored load of 1100 kN and rests on a soil of S.B.C of 300 kN/m^2.

a) Design the base of the isolated footing and draw a diagram showing the geometry. **[4]**

b) Find depth for B.M. considerations and find steel required for same. **[4]**

c) Draw a plan and section showing the reinforcement. **[3]**

d) If the said footing is near another column of same size and load with a centre to centre distance of 1.8 m, would it be necessary to provide a combined footing. If so design the size of the rectangular combined footing in plan only. **[6]**

P.T.O.

Q3) Design a R.C.C doglegged staircase for an office building for the following data : **[17]**

a) Width of the flight - 1500 mm

b) Floor to floor height - 3200 mm

c) Tread - 275 mm Riser - 160 mm

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

Q4) A retaining wall is of the following data.

Retained earth is on the vertical face of the stem.

Density of retained earth 18 kN/m^3

Angle of repose - 30 degrees

Coefficient of friction - 0.6

S.B.C of soil - 250 kN/Sq m

Density of Concrete - 25 kN/m^3

Top Width of stem - 400 mm

Bottom width of stem - 850 mm

Height of stem - 5500 mm

Width of base - 3200 mm

Toe Projection - 900 mm

Depth of Base - 600 mm

a) Check the stability of the above wall with regards to Overturning and Sliding. **[11]**

b) Find the Maximum and Minimum Pressure at the base and comment on the same. **[6]**

SECTION - II

Q5) a) What are the advantages of Prestressed R.C.C construction over conventional R.C.C construction. **[8]**

OR

a) Explain Pretensioning and Post Tensioning. **[8]**

b) A prestressed concrete beam of overall size 300 × 600 is simply supported over a span of 6.5 m. The beam carries an udl of 18 kN/m over its entire span inclusive of its self weight. The prestressing tendons are located at a distance of 200 mm from the neutral axis and provide a prestressing force of 1100 kN.

Calculate the extreme fibre stresses at mid span. **[9]**

Q6) a) Design a purlin for a factory building for the following data : **[8]**

i) Span of the truss - 16 m

ii) Spacing of the trusses - 4.5 m

iii) Slope of roof 25°

iv) Spacing of purlins - 2.2 m

v) Take dead load as 200 n/M^2

Use angle section.

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

i) Castellated Girders - Need and Advantages.

ii) Plate Girder - Need and Different Parts.

iii) Working Stress Method - Basic Concept and Limitations and Advantages.

Q7) Solve, A compound stanchion of a factory building consists of 2 no ISMC 250 placed back to back. Calculate the spacing between the two sections so that they take maximum load. What load will such a column carry for a height of 8.2 m with both ends fixed, design a suitable battening system for the same compound column with neat sketches. **[17]**

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

a) Various conditions of pressure for which an underground water tank is designed.

b) Design and detailing of a Circular Water Tank with a flexible joint between the walls and the base.

c) The reasons why high strength steel and concrete are used in Prestressed Members.

d) Steel Portal Frames - Advantages and Detailing.

e) Design for Earthquake Resistant Structures - Ductility Detailing.

f) Over Head Water Tanks.

Total No. of Questions : 4]

SEAT No. : ____

P693

[Total No. of Pages : 2

[4367]-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 books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***All questions are compulsory.***

SECTION - I

Q1) Answer any two questions from the following : **[2 × 15 = 30]**

a) Explain with sketches different types of Filters used in Air Conditioning System.

b) Explain the air cycle in a typical air conditioning system. What is the function of an Air Handling Unit (AHU) of central Air-Conditioning system of a building? Explain location criteria of AHU in the building.

c) What are the types of Fans/Blowers used in Mechanical ventilation systems? Explain with sketches.

Q2) Short notes (with sketches wherever necessary) (Any Four) : **[4 × 5 = 20]**

a) Refrigeration cycle.

b) A.C. Ducting System.

c) Types of compressors.

d) Air-cooled condenser.

e) Cooling tower.

f) Human conditions of comfort.

SECTION - II

Q3) Answer any two questions from the following : **[2 × 15 = 30]**

a) Explain with sketches various methods of controlling the structure borne noise in construction of walls and floors of a Lecture room.

P.T.O.

b) What are Reverberation and Reverberation time? Explain the method of calculation of Reverberation time. State recommended reverberation times for following building spaces :
   i) Music concert hall.
   ii) Lecture room.

c) Bye laws for fire-fighting while designing basements for parking.

Q4) Short notes (with sketches wherever necessary) (Any Four) : **[4 × 5 = 20]**

a) Properties of sound.

b) Acoustical shadow.

c) Fire escape staircase.

d) Fire fighting water tank.

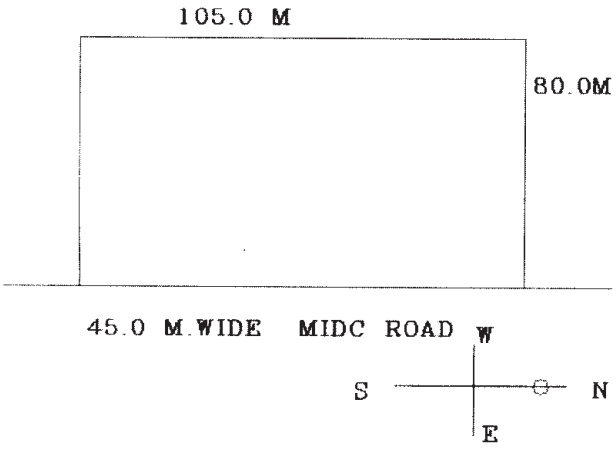
e) Wet riser.

f) Types of fire extinguishers.

2) Final day.

1)	Single line Lay-out plan showing site, Building configurations, Roofing system, Parking, landscaping driveways, Walkways, etc.	1:200
2)	Double line plans at all levels with internal furniture lay-outs	1:200
3)	Minimum one site Section	1:200
4)	Minimum one building Section to explain the scheme	1:200
5)	Minimum two Elevations	1:200
6)	Minimum one view.	

Site plan



D) Area requirements for Services

Nos.	Particulars	Area in sq.m
1	Air condition machine plant room	50.0
2	Electric Transformer, Electric meters and panel room	75.0
3	Generator room	50.0
4	Refuse disposal area	30.0
5	U.G. Water tank of capacity 50,000 lit.	
6	Fire fighting systems, loading unloading platforms	

E) Requirements for Parking

Nos.	Particulars
1	25 Cars
2	50 two wheelers
3	2 Buses

Design Parameters

1) Minimum side margin 9.0 M from all side.
2) Maximum 1/2 ground coverage of plot area (50%).
3) Maximum height of building 36.0 M.
4) Design should be more functional and structurally stable.
5) Provision of Barrier free Architecture for physically challenged.
6) Necessary passages, corridors, staircase, lobbies should be provided as per design standards.
7) Compulsory show the structural components in plan and section.
8) For vehicular movement driveway, ramps, head room etc should be as per standards.

Drawing requirements

1) Day one

1)	Single line layout plan showing site details, Building configurations, circulation, etc.	1:200
2)	Single line floor plans at all levels	1:200

A) Requirements of Administration

Nos.	Particulars	Area in sq.m
1	Landscaped Entrance Plaza and entrance lobby with reception and waiting	100.0
2	Administration office a. Managers cabin ——— 20.0 sq.m b. Office area for 10 nos. staff —— 50.0 sq.m c. Meeting Room ——— 50.0 sq.m d. Pantry ——— 15.0 sq.m e. Store and server area ——— 15.0 sq.m f. Adequate toilets to be provided for both the sex	150.0

B) **Area requirement for convention centre**

Nos.	Particulars	Area in sq.m
1	Convention hall one with toilet, storage, loading-unloading and necessary services.	100.0
2	Auditorium seating capacity of 150 nos. with all necessary requirements. (Stage, Back stage, press room, two green rooms and toilets etc)	300.0
3	Seminar halls one of 50 seating capacity with audio-visual facility.	75.0
4	One Conference hall with small pantry and toilet	75.0
5	Banquet hall with kitchen, store, toilet etc.	150.0
6	Exhibition hall covered 125 sq.m (additional 100 sq.m open space should be provided for outdoor exhibits)	100.0
7	Cafeteria of 30 seating capacity with kitchen, store, etc.	100.0
8	Shops 5 no. of 15 sq.m each.	75.0
9	Adequate toilets to be provided for both the sex.	

C) Requirement of Accommodation Facility

Nos.	Particulars	Area in sq.m
1	Entrance lobby and waiting Lounge	50.0
2	Reception counter, back office, Toilet etc.	25.0
3	Manager's office with Toilet	25.0
4	Guest rooms - 15 Nos. 30.0 sq. each with toilet	450.0
5	Coffee shop with pantry	50.0
6	Adequate toilets to be provided for both the sex.	

SEAT No. :

P698 **[Total No. of Pages : 4**

[4367]-41
Fourth Year B. Arch.
ARCHITECTURAL DESIGN - IV
(2003 Pattern)

Time :18 Hours] ***[Max. Marks :100***

Instructions to the candidates :

1) ***Your answer will be valued as a whole.***
2) ***Assume suitable data if necessary.***
3) ***Single line sketch plan of the entire scheme with the site to the required scale shall be submitted by the candidates 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 will not make any considerable departure from the sketch submitted on the first day.***
4) ***The drawing should be self explanatory.***

CONVENTION CENTER AT TALEGAON, PUNE

Pune chambers of commerce and industries and MIDC (Maharashtra Industrial Development Corporation) proposes to built convention center at Talegaon, Pune 15.0 km. from proposed Air port.

Due to increasing needs of all types of industries at national and international level. The convention center will be busy round the year catering to national and international events like conventions, conferences, exhibitions, international ceremonial programs Etc. the convention center will have 15 guest rooms accommodation of star category facilities. The selected plot is fairly flat and rectangular in shape having dimensions **105.0 M (north-south) and 80.0 M (east–west)** dimensions. It has **45.0 M** wide service road on **East** side of plot.

You have to give Architectural design solution with all considerations of design parameters and standards.

SPACE REQUIREMENTS

Note: Adequate areas for **outdoor interaction**, passages, lobbies, staircases, lifts, escalators etc, services and Toilets should be added wherever required.

P.T.O.