[4662] – 303

Seat No.	

Third Year B.Arch. Examination, 2014
BUILDING SERVICES – II
(2008 Pattern & Bridge Course)

Time : 3 Hours Total Marks : 100

***Instructions** : 1) Answers to the **two** Sections should be written in **seperate** books.*

*2) **Neat** diagrams must be drawn **wherever** necessary.*

*3) Black figures to the **right** indicate **full** marks.*

*4) **All** questions are **compulsory**.*

SECTION – I

1. Answer **any two** questions from the following : **(2×15=30)**

   a) What are the types of air-distribution system used in mechanical ventilation for an enclosed area ? Describe with sketches.

   b) What is the function of an Air-Handling Unit (AHU) of central air-conditioning system of a building ? Explain locational criteria of AHU in the building and network of distribution system of air-conditioning.

   c) What are the different types of filters used in air-conditioning system ? Describe with sketches.

2. Write short notes with sketches wherever necessary (**any four**) : **(4×5=20)**

   a) Stack effect

   b) Air-cooled condenser

   c) Cooling tower

   d) Centrifugal fan

   e) Split A.C. system

   f) Refrigeration cycle.

SECTION – II

3. 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.

P.T.O.

b) What is Reverberation time ? Explain the method of calculation of Reverberation time. What are the important factors for reducing reverberation time in an auditorium ?

c) Explain with sketches sprinkler system used for fire fighting purposes in a building.

4. Write short notes with sketches wherever necessary (**any four**) : **(4×5=20)**

a) Properties of sound

b) Decibel

c) Fire-proof door

d) Fire escape staircase

e) Smoke detectors

f) Cutting of air-borne noise.

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Seat No.	

Third Year B.Arch. Examination, 2014
BUILDING SERVICES – I
(2008 Pattern & Bridge Course)

Time : 3 Hours Total Marks : 100

***Instructions** : 1) Answers to the **two** Sections should be written in **seperate** books.*
*2) **Neat** diagrams must be drawn **wherever** necessary.*
*3) Black figures to the **right** indicate **full** marks.*
*4) **All** questions are **compulsory**.*

SECTION – I

1. Answer **any two** questions from the following : **(2×15=30)**
   a) What are the types of air-distribution system used in mechanical ventilation for an enclosed area ? Describe with sketches.
   b) What is the function of an Air-Handling Unit (AHU) of central air-conditioning system of a building ? Explain locational criteria of AHU in the building and network of distribution system of air-conditioning.
   c) What are the different types of filters used in air-conditioning system ? Describe with sketches.
2. Write short notes with sketches wherever necessary (**any four**) : **(4×5=20)**
   a) Stack effect
   b) Air-cooled condenser
   c) Cooling tower
   d) Centrifugal fan
   e) Split A.C. system
   f) Refrigeration cycle.

SECTION – II

3. 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.

P.T.O.

b) What is Reverberation time ? Explain the method of calculation of Reverberation time. What are the important factors for reducing reverberation time in an auditorium ?

c) Explain with sketches sprinkler system used for fire fighting purposes in a building.

4. Write short notes with sketches wherever necessary (**any four**) : **(4×5=20)**

a) Properties of sound

b) Decibel

c) Fire-proof door

d) Fire escape staircase

e) Smoke detectors

f) Cutting of air-borne noise.

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Seat No.	

Third Year B.Arch. Examination, 2014
SPECIFICATION WRITING
(Bridge Course)
(2008 Pattern)

Time : 3 Hours Max. Marks : 100

Instructions : *1)* ***All*** *questions are* ***compulsory****.*
2) Figures to ***right*** *hand side* ***indicate*** *marks.*

SECTION – I

1. Define Specification writing. Discuss the principles of specification writing. **10**

   OR

   Explain importance of Specifications in Large Construction projects. Explain what you mean by closed specifications. **10**

2. Discuss the specifications for Waterproofing. **10**

   OR

   Discuss the relationship between Bill of Quantities, Working Drawings and specification writing. **10**

3. Write brief specifications for **(any three)** : **15**
   a) Internal Brickwork
   b) R.C.C. Beams
   c) Vitrified Flooring
   d) Wooden Doors.

4. Write Material Specifications for **(any three)** : **15**
   a) Glass
   b) Timber
   c) Bricks
   d) Stone

SECTION – II

5. Write short notes on **(any four)** : **20**
   a) Sprinklers
   b) Road specifications
   c) Ducting in Airconditioning
   d) Inspection Chambers
   e) Surface Treatment for Shuttering.

P.T.O.

6. Explain the function of **(any four)** : **20**
   a) Facing stones
   b) Expansion joints
   c) Hydrants
   d) Gauges of Plaster (15 × 15 cm)
   e) Benching in Excavation.

7. Write names of manufacturer for the materials **(any ten)** : **10**
   a) Glass
   b) Internal paint
   c) Drainage pipes
   d) Cement
   e) Ceramic Tiles
   f) Water Closet
   g) AC sheets
   h) Air conditioner
   i) Water storage tank
   j) Mangalore tiles
   k) MS Doors.

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Seat No.	

Third Year B. Arch. Examination, 2014
THEORY OF STRUCTURES – III
(2008 Yearly Pattern + 2008 Bridge Pattern)

Time : 3 Hours Max. Marks : 100

Instructions : *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

1. Write short notes on **any four :** **16**

   1) Bulb of pressure

   2) Foundation Problems at Site

   3) Gravity Retaining Wall

   4) Detailing of Central Spine Staircase with Cantilever Steps

   5) Active and Passive Pressure

   6) Need of Combined Footing.

2. A square column of size 400 $\times$ 400 is subjected to a load of 1000 Kn and rests on a soil of S.B.C of 250 kN/m^2 Design the isolated footing w.r.t to depth and steel. Check it for one way shear. Make the schedule and draw the sketch of reinforcement. **16**

3. Design a R.C.C. doglegged staircase for an school building for the following data **16**

   a) Width of the filght - 1500

   b) Floor to floor height - 3500

   c) Tread - 300 mm No of treads 9 in each flight

   d) The staircase is supported on 300 mm wide beams on outer edges of landings

P.T.O.

4. Check the stability of the retaining wall with respect of sliding and overturning only. **(10+7)**

   Pressure at base.

   Retained earth is on the vertical face of the stem.
   Density of retained earth 18 Kn/m^3
   Angle of repose - 25°
   Coefficient of friction - 0.65
   S.B.C of soil - 225 kN/m^2
   Density of Concrete - 25 kN/m^3

   Top Width of stem - 350 mm
   Bottom width of stem - 680 mm
   Height of stem - 5400 mm
   Width of base - 3300 mm
   Toe Projection - 800 mm
   Depth of Base - 650 mm
   Design the stem reinforcement.

SECTION – II

5. a) What is Prestressing ? Explain Pre and Post Tensioning. **(8+9)**

   b) A prestressed concrete beam of overall size 300 × 800 is simply supported over a span of 8.5 m. The beam carries an udl of 26 Kn/m over its entire span inclusive of its self weight. The prestressing tendons are located at a distance of 200 from the neutral axis and provide a prestressing force of 1200 Kn.

   Calculate the extreme fibre stresses at mid span.

6. a) Two column of size 600 × 600 and 500 × 500 carry loads of 1200 and 1000 Kn respectively and are spaced 1.8 m apart centre to centre and rest in a soil of S.B.C of 180 kN/m^2. Find the plan dimensions of the combined footing. Draw a sketch of the plan. **(8+8)**

   b) Write short notes on **any two :**

      1) Gantry Girders
      2) Ultimate load Method
      3) Castellated Girders

7. a) Solve : A compound stanchion of a factory building consists of 2 no ISMC 400 placed back to back. Calculate the spacing between the two sections so that they take maximum load. What working load will such a column carry for a height of 7.2 m with one end hinged and one end fixed. Use k factor of 1.05 for S.R assuming lacing **(9+8)**

Slenderness Ratio	**Stress in N/mm^2**
40	198
50	183
60	168
70	152

b) Explain the need of battening and write in detail about same or design the lacing system for the above compound stanchion and draw detail of same.

8. Write short notes on **any four** with neat sketches. **16**

1) Reinforcement detailing in a Rectangular Water Tank.
2) Ductility detailing of a Earthquake resistant Building.
3) Steel portal frame.
4) Eccentrically loaded columns.
5) Intze Tank.

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Seat No.	

Third Year B. Arch. Examination, 2014
ARCHITECTURAL DESIGN – III
(2008 – Pattern)

Time : 12 Hours (enlodge 6 hours) Max. Marks : 100

Instructions : *1) The design will be valued as a **whole**.*
*2) Assume suitable data if **necessary**.*
*3) Line drawings of plan and section 1:100 must be submitted at the end of first day. This drawing will **not** be returned the next day.*
*4) **All** drawings should be clear and self explanatory.*

A SCHOOL

Introduction :

A school is proposed in Konkan region of Maharashtra which has warm and humid climate.

Design Brief :

The school will be day school and shall be affiliated with SSC board of Maharashtra

In addition to academics, the students will be trained in technology, skill and personality development and physical fitness.

Project Site Details :

Sr. No.	Description	Area Sq M
1	Plot Area	4000.00
2	Playground Min area	800.00
3	Maximum Permissible Built Up	2000.00
4	Maximum Ground Coverage	1000.0

The site has a gradual slope of 1:10 from south to north. The school should respond to the macroclimate microclimate of the site.

P.T.O.

Design Program :

A	Residential School			1330
S. N.	Description	No.	Area Sq. M.	Total Sq. M.
1	Reception and Waiting	1	30	30
2	Administration	1	30	30
3	Classroom for 30 students with semi-open and open spaces	10	40	400
4	AV room	1	100	90
5	Multipurpose hall	1	300	300
6	Library	1	90	90
7	Laboratory	3	30	90
8	Arts and Crafts Room	2	30	60
9	Staff Room	1	40	40
10	Common Toilet for Ladies and Gents	1	adequate	
11	Covered Lunch Area	1	200	200

C Outdoor Facilities

1) Amphitheatre for approximately 200 seating.
2) Open space activities – Exhibit courts, Amphitheatres, Outdoor Games, View appreciation frames, spill over areas to be integrated into design at appropriate locations.
3) Various landscape elements could be added to make the space active and lively.

Parking Requirement :

1) Cars 5 nos
2) Scooters 20 nos
3) Cycles 100 nos

Development Control rules to be followed :

1) Maximum height of building 12.00 M.
2) Minimum setbacks shall be 6.00 M from the sides of site boundary.
3) Set back from road shall be 7.5 M

Drawing Requirement :

Description	Scale
□ Site plan	1:200
□ Min. two site section	1:200
□ All floor plans	1:100
□ Min. 2 sections	1:100
□ Min. 2 elevations	1:100

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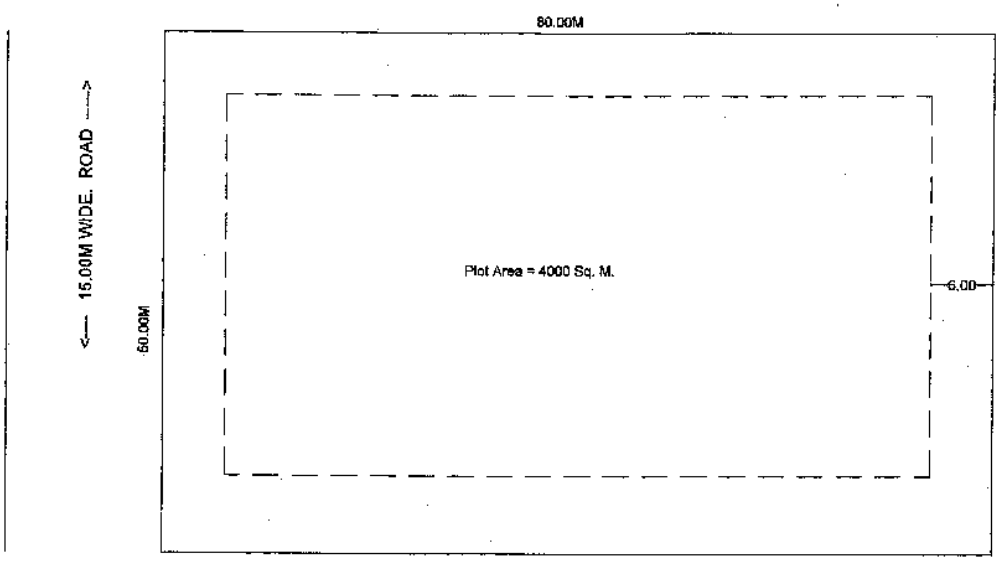

SITE PLAN N

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