2013-14  
B. ARCH (SUMMER SEMESTER) EXAMINATION  
ARCHITECTURE  
CONSTRUCTION AND MATERIALS-II  
AR-203  

Maximum Marks: 40  
Credits: 05  
Duration: Three Hours  

Answer all the questions.  
Support your answers with relevant sketches where necessary.  
Well drafted and neat sketches shall be given extra credit.  

<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Question</th>
<th>M.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Write in brief about the following terms: (any five)</td>
<td>[5x2=10]</td>
</tr>
<tr>
<td>(a)</td>
<td>Plastics</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>Asbestos</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>Depressed arch</td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>Acrylcs</td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>Laminated glass</td>
<td></td>
</tr>
<tr>
<td>(f)</td>
<td>Fibre reinforced concrete</td>
<td></td>
</tr>
<tr>
<td>(g)</td>
<td>Extrusion</td>
<td></td>
</tr>
<tr>
<td>(h)</td>
<td>Tool steel</td>
<td></td>
</tr>
</tbody>
</table>

2(a) Explain any one process of aluminium extraction from its ore. [5]  
2(b) Draw the sectional detail of timber grillage foundation. [5]  

OR  

2'(a) Draw the sectional detail of shallow foundation in black cotton soil using alternate layers of sand and mooram. [5]  
2'(b) What are the causes of failure of foundations? Write about the precautionary measures taken to prevent the failure of foundations. [5]  

3(a) Draw the plan of a steel window in detail. [6]  
3(b) Write about the uses of tin in building construction industry. [4]  

4 Draw the following (any two): [5x2=10]  
(a) Quinto arch with support details  
(b) 4-centered arch with support details  
(c) Raymond pile
2013-14
B.A.R.C.H. (AUTUMN SEMESTER) EXAMINATION
Second Year
ANCIENT ARCHITECTURE (Indian and Far East)
AR-209

Maximum Marks: 60 Credits: 03 Duration: Three Hours

Support your answers with sketches

1. Explain the following terms. (Attempt any 5) (10)
   a) Gopuras
   b) Shikhara
   c) Gavaksha
   d) Pediment
   e) Dandaka
   f) Pilaster

2. Discuss important characteristic features of Nagara style and Dravidian style of temple architecture? (10)

   Or

2'. Discuss the important architectural characteristic features of Jain architecture? Elaborate the example of Adinath temple.

3. Discuss the evolution of temple plan and elevation with respect to the spatial arrangement and structural planning? (10)

4. Gupta period is called the "Golden Age of Architecture". Discuss Why. (10)

   Or

4'. Discuss the concept of "Vastu Shastra". Also discuss its application in temple planning. (20)

5. Explain briefly any 4 of the following.
   a) Brihadishwara temple, Tanjore
   b) Chaitya at Karle
   c) Khajuraho group of temples, Orissa
   d) Lax Khan temple, Aihole
   e) Lingaraja temple, Puri
Answer all the questions.
Assume suitable data if missing.
Notations used have their usual meaning.

Q.No. Question M.M.
1 Explain the importance of climatic studies and climatic design approach for architects in present times especially with reference to energy crises. [12]
2 Describe various elements of climate, their characteristics and behaviour in detail and their role in formation of various climates. [12]
3 Explain any FOUR of the following
- Time lag and decrement factor, globe thermometer, effective temperature, equation of human body thermal balance, glare, smart glasses, sun-path diagram and louver design [12]
4 Explain heat control methods in a building through its (floors and walls) OR (roofs and windows) as having been used in traditional buildings. [12]
5(a) Explain importance of illumination and its standards used in common buildings emphasizing day-light factor concept for designing of windows. [06]
5(b) Explain need of ventilation in buildings as well as behaviour of wind inside and outside of buildings also describe designing of buildings for proper air flow in buildings. [06]
Maximum Marks: 60
Credits: 03
Duration: Three Hours

Answer all the questions.
Assume suitable data if missing.
Notations used have their usual meaning.
Use of Nomograph and partially flow diagram permitted

Q.No. Question M.M.
1 (a) Describe the physical, chemical and biological parameters of water quality [08]
1 (b) Water is to be supplied to a locality at the rate of 135 lpcd for a population of 75 thousand people through pumping from a reservoir. The difference in elevation between the water source and the delivery point is 35 m. The total length of the pipe is around 1200 m. If the velocity in the pipe is to be assumed as 1.4 m/s find the diameter of the pipe and the brake horse power of the pump required to supply the desired amount of water. Take the value of friction factor as 0.02 and efficiency of pump as 60%.

OR

1 (a) Following data gives the variation in water demand of a town. [12]

<table>
<thead>
<tr>
<th>Time</th>
<th>Water Demand (10$^3$ litres)</th>
<th>Time</th>
<th>Water Demand (10$^3$ litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midnight–1 a.m.</td>
<td>50</td>
<td>12.0 noon – 1.0 p.m.</td>
<td>100</td>
</tr>
<tr>
<td>1.0 – 2.0 a.m.</td>
<td>55</td>
<td>1.0 – 2.0 p.m.</td>
<td>120</td>
</tr>
<tr>
<td>2.0 – 3.0 a.m.</td>
<td>65</td>
<td>2.0 – 3.0 p.m.</td>
<td>120</td>
</tr>
<tr>
<td>3.0 – 4.0 a.m.</td>
<td>95</td>
<td>3.0 – 4.0 p.m.</td>
<td>130</td>
</tr>
<tr>
<td>4.0 – 5.0 a.m.</td>
<td>120</td>
<td>4.0 – 5.0 p.m.</td>
<td>160</td>
</tr>
<tr>
<td>5.0 – 6.0 a.m.</td>
<td>140</td>
<td>5.0 – 6.0 p.m.</td>
<td>160</td>
</tr>
<tr>
<td>6.0 – 7.0 a.m.</td>
<td>180</td>
<td>6.0 – 7.0 p.m.</td>
<td>180</td>
</tr>
<tr>
<td>7.0 – 8.0 a.m.</td>
<td>220</td>
<td>7.0 – 8.0 p.m.</td>
<td>150</td>
</tr>
<tr>
<td>8.0 – 9.0 a.m.</td>
<td>130</td>
<td>8.0 – 9.0 p.m.</td>
<td>110</td>
</tr>
<tr>
<td>9.0 – 10.0 a.m.</td>
<td>100</td>
<td>9.0 – 10.0 p.m.</td>
<td>80</td>
</tr>
<tr>
<td>10.0 – 11.0 a.m.</td>
<td>90</td>
<td>10.0 – 11.0 p.m.</td>
<td>60</td>
</tr>
<tr>
<td>11.0 – 12.0 noon</td>
<td>90</td>
<td>11.0 – Midnight</td>
<td>50</td>
</tr>
</tbody>
</table>

Contd.......2
Calculate the capacity of storage tank needed to meet out the variations in water demand if the pumping hours are from 4.0 a.m. to 10.0 a.m. and 3.0 p.m. to 9.0 p.m. Use either graphical or analytical method.

2 (a) Draw the flow sheets for water treatment for surface and sub-surface sources of water supply.

2 (b) Describe the lime soda process of water softening and write the different chemical equations involved. Briefly describe the significance of addition of excess lime in lime soda process.

2 (c) Describe in detail the different methods of layout of pipelines for water distribution systems. Support your answer with neat sketches.

3 (a) Water is supplied to a town from a pump house (A) as well as from an elevated reservoir (C) 45 m above M.S.L. to a locality (B). The pump pressure was 550 KPa and the desired water pressure at load centre (B) is 220 KPa. The average elevation of pump at A was 3.0 m above M.S.L and that of load centre was 5.0 m above M.S.L. Calculate the total discharge of water reaching at B. The length and diameter of pipe from A to B are 1000 m and 200 mm respectively while that from C to B was 900 m and 150 mm respectively.

3 (b) Describe disinfection process using chlorine as a disinfectant. Draw the breakpoint curve and explain its significance.

OR

3' (a) A 300 mm sewer is laid at a slope of 0.007. Find out the depth of flow when the sewer is flowing at 40% of its capacity. Also find the velocity of flow.

3' (b) Discuss in detail the different building drainage systems. Also state the suitability of each system.

4 (a) With the help of diagram describe the functioning of bell type of a flushing cistern.

4 (b) Differentiate between separate and combined type of sewerage systems.

4 (c) Briefly explain the merits and demerits of conservancy and water carriage systems of sanitation.

5 (a) Briefly describe the methods of testing of house drains.

5 (b) Design a septic tank for 40 users assuming wastewater contribution per person as 70 lpd and assume period of cleaning as two years.

5 (c) What are traps? Briefly describe the differentiate types of traps.

FIGURE ENCLOSED

Contd........3
Figure 4-22
Nomograph for Manning formula in English and SI metric units for circular pipes flowing full based on \( n = 0.013 \).

Contd......4
Figure 4–23
Relative quantity, velocity, and cross-sectional area of flow in a circular pipe for any depth of flow.
SULABH SHAUCHALAYA

The term ‘Sulabh Shauchalaya’ refers to a system of operating and maintaining community toilets with bathing, laundry and urinals facility with attendant’s service round the clock. These complexes have electricity and 24 hours water supply and soap powder/liquid is supplied free to users for washing hands. It has separate enclosures for men and women. The user are charged nominal sum for using WC and bath. Use of urinal facility is free. Children, disabled persons and those who cannot afford are allowed to use the facility free of charge.

Observing the advantages of ‘Sulabh Shauchalaya’ the authorities of Indian Railways has decided to construct such toilets at various railway stations. You are requested to design the said ‘Sulabh Shauchalaya’ with requirements as given below and represent your scheme on scale 1:50 or 1:25.

**Design requirements:**

1. Attendant counter
2. Small Store
3. Male section
   a) WCs 3 Nos.
   b) Bath Rooms 3 Nos.
   c) Urinals 3 Nos.
   d) Wash Basins 4 Nos.
4. Female Section
   a) WCs 3 Nos.
   b) Bath Rooms 3 Nos.
   c) Wash Basins 4 Nos.

**Area**

As required
5 sq. m.

As required
As required
As required

**Drawing Requirements:**

1. Plan/s (to be evaluated through viva) [25]
2. Elevation/s [08]
3. Section/s [07]
2013-14
B. ARCH (SUMMER SEMESTER) EXAMINATION
ARCHITECTURE
MAN SOCIETY AND BUILDING
HU-208

Maximum Marks: 60
Credits: 02
Duration: Three Hours

Answer all the questions. Support your answers with relevant sketches where necessary.

Q.No. Question

1. Explain in brief the following terms: (any, five) [5x3=15]
   (a) Hunter Gatherer society
   (b) Dowry system in Indian context
   (c) Horizontal mobility
   (d) Traditions
   (e) Modernism
   (f) Female infanticide

2. Differentiate between the following terms: (any three) [3x5=15]
   (a) Rural versus urban society
   (b) Joint versus nuclear family
   (c) Bridal gifts versus dowry system
   (d) Indian traditions versus western practices


4. Explain the concept of 'Duty before rights'. How can it help in the development of a better society. [10]

5(a) How can societal development help in curbing housing backlog and reduce the problem of slums in the country. [05]

5(b) How can an Architect help in the betterment of society by using his creative skills in building design. [05]