<table>
<thead>
<tr>
<th>Q.No.</th>
<th>Question</th>
<th>M.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Explain any one of the following Islamic architecture style in detail.</td>
<td>[15]</td>
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<tr>
<td></td>
<td>Moorish architecture. Turkish architecture. Islamic architecture of Far-East.</td>
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<tr>
<td>2</td>
<td>Explain Slave/ ... or Mughal or Sikh dynasty architecture in detail with suitable examples of sketches of important buildings and their salient features.</td>
<td>[15]</td>
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<tr>
<td>3</td>
<td>Explain Islamic art and decoration as used in various buildings and any one of the following Islamic architecture style in detail.</td>
<td>[15]</td>
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<tr>
<td>4</td>
<td>Write notes on any three of the following in Islamic architectural buildings</td>
<td>[15]</td>
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2016-17
B.A.RCH. (AUTUMN SEMESTER) EXAMINATION
B.A.RCH-III YEAR
LANDSCAPE DESIGN
AR-303 N

Maximum Marks: 40
Credits: 3
Duration: Two Hours

Answer any four questions.
Draw sketches to support your answer.
Question no 5 is compulsory

Q.No. Question M.M.
1 Explain the term Hard and Soft Landscaping, define with neat sketch the materials used in hard and soft landscaping? [10]

2 What is the need of landscaping, explain the use of landscaping for various purposes like aesthetics, architecture, ecology, social, medicinal and others? [10]

OR

2' Explain Major and Minor elements of Landscaping, what are the different approaches which are used for developing any landscaping scheme? [10]

3 What are the four main factors which can be considered while designing any landscape? [10]

4 Define with neat sketches the elements used in Chinese Garden and explain how these gardens are different from various other gardens? [10]

OR

4' Explain with neat sketches the basic elements used in Mughal Garden, what is the difference between Mughal Garden and Persian Garden? [10]

5 Draw on suitable scale the Landscape Plan and section of a garden in a residential area on a plot size of 30M X 40 M. Also prepare the specification chart. [10]
1. Differentiate between the following:
   a. Balance and Contrast in interior design.
   b. Scale and Proportion in interior design.  
      \[ (2.5 \times 2 = 5) \]

2. What is the golden ratio and what is its relevance in interior design?  
   OR  
   Explain colour psychology and its importance in interior design?  
   \[ (10) \]

3. Elaborate upon the role of line as an element in interior design.  
   OR  
   With the help of a sketch, describe how an element of design can be used to achieve a principle of design.  
   \[ (10) \]

4. Design a kitchen for a residence, in the space given below and provide a basic space layout, colour scheme, anthropometric specifications and material information corresponding to your proposal:  
   \[ (15) \]
2016-2017
B.ARCHITECTURE (V-SEMISTER) EXAMINATION
(ARCHITECTURE DESIGN III)
(AR-351N)
Credits: 07
Max Marks: 40
Duration: Six Hours

Note: (i) Neuferts-data and time saver standards are allowed but provision of these is not the responsibility of the department.
(ii) Good drafting shall carry weightage.
(iii) Assume any suitable data wherever desirable.

Design problem

A famous old inter college of Aligarh having various courses as per CBSE pattern from 9-12th, has very old building badly suitable to cater for present needs of the college and hence it desires to establish a well-designed modern building in its place. Considering you as an expert designer of school buildings, it is appointing you to suggest, guide, supervise and design this aforesaid project with suitable requirements and facilities. Site is of rectangular shape measuring 90m*150m located on east side of 24 m wide road running north-south, short side of the site facing the road side.

For the above project provide the following

1. List of requirement with area chart. 06
2. Site plan with parking and landscaping. 06
3. Suitable plans to explain your design. 12
4. Section/sections 04
5. Elevations and/ views 04

Viva shall also be conducted to provide you opportunity to explain your concept/design. 08
2016-17
B.TECH. (III YEAR) EXAMINATION
CIVIL ENGINEERING
DESIGN OF CONCRETE STRUCTURE-I
CE-311

Maximum Marks: 60 Duration: Two Hours

Answer all the questions.
Assume suitable data if missing. Notations used have their usual meaning.
Use of IS: 456-2000 Code is allowed and list the relevant clauses of the code while solving the problem. Only design charts of SP16 are allowed.

Q.No. Question M.M.
1 (a) Explain the mode of failure of under reinforced section through strain diagram. [03]
1 (b) Calculate the ultimate moment carrying capacity of a rectangular beam with b=250mm and D= 400mm, and A_{st} = 4 # 16 mm diameter bars. Provide nominal clear cover to meet the requirement of fire resistance rating of 2hrs and durability requirements for “extreme” exposure. Assume concrete grade as M30 and steel grade as Fe415. Show the reinforcement details with neat sketches. Give the relevant clauses of the IS: 456-2000 while solving the problem. [09]

2 (a) Deduce the formula for the calculation of development length in R C beam with standard notations [04]
(b) A R.C. beam has an effective depth of 450 mm and breath of 250 mm. It contains 2-25 mm Fe415 grade bars in tension and M20 mix. Design the shear reinforcement needed for a factored shear force of 250 kN. Also show the details of shear reinforcement in a section. [08]

3(a) Describe the following:
(i) Why minimum eccentricity condition is imposed in design of axially loaded RC columns?
(ii) Purpose of providing transverse reinforcement in columns and maximum and minimum spacing between ties. [04]

3(b) A short RC column, subjected to axial load and uniaxial bending is 230mm × 450mm in size and reinforced with 8#16 mm diameter with 4 bars placed at equidistant along shorter sides, with a clear cover of 40 mm. Using the Chart given below, calculate
(i) \( M_{ux} \) (about an axis bisecting depth of 450 mm) when \( P_u = 800 \) kN
(ii) \( P_u \) when \( M_{ux} = 50 \) kNm.
Assume Fe 415 steel and M25 Concrete mix

Cont'd... 2
3'(b) Design a short circular R.C. column to carry an service axial load of 1500 kN. The column is hinged at both the ends and unsupported length of the column is 4m. Assume Fe415 steel grade, M20 mix concrete and clear cover of 40mm. Check for eccentricity, design with circular ties and show the details of reinforcement.

4 Determine only the depth of a slab of a multi panel floor system with all four edges continuous and effective spans of 6.m × 4.m. Assume a live load of 3.5kN/m² and a floor finish of 40mm. Assume concrete grade as M20 and steel grade as Fe415. No checks are required. Without calculating the positive and negative steel show the details of reinforcement details in one of the directions in the middle strip in section as per IS: 456-2000.

OR

4' (a) Why are drop panels and column heads provided in a flat slab?

4'(b) Determine only the depth of interior panel of a flat slab. The slab is supported on columns spaced at 6m in both the directions. The size of the column is 550mm × 550mm. Assume a live load of 3.5 kN/m² and a floor finish of 1 kN/m². Height of the column is 6m. Assume concrete grade as M25 and steel grade as Fe 415. Neither any check nor calculation of steel is required.

5 Calculate the thickness of footing of a RC column of size 300mm × 300mm, reinforced with 8 bars of 16 mm dia., carrying an axial service load of 1200 kN. The safe bearing capacity of soil at a depth of 1m is 130 kN/m². Assume Fe 415 steel and M20 mix concrete.
Maximum Marks: 60

Duration: Two Hours

Answer all the questions. Assume suitable data if missing. Notations used have their usual meaning.

Q.No. Question M.M.

1(a) Enumerate the factors affecting compaction of soil. Discuss the effect of water content on compaction of soil. [06]

1(b) In a field exploration, a soil sample was collected in a sampling tube of internal diameter 5.0 cm below water table. The length of the extracted sample was 10.2 cm and its weight was 450 g. If G = 2.68 and the weight of the dried sample is 335 gm. Find the porosity, void ratio, degree of saturation, and dry density of the sample. [06]

OR

1'(a) Draw the plasticity chart incorporated in IS:1498 and give the group symbols of the various regions in the chart. [04]

1'(b) Define zero air voids line. The standard Proctor compaction test on a soil sample was conducted and the following results were obtained. Plot compaction curve and determine the optimum moisture content, maximum dry unit weight. Also draw the zero air voids line. Assume the specific gravity of soil as 2.75. [08]

<table>
<thead>
<tr>
<th>Moisture content (%)</th>
<th>Bulk unit weight (kN/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.4</td>
<td>18.5</td>
</tr>
<tr>
<td>8.8</td>
<td>19.9</td>
</tr>
<tr>
<td>10.0</td>
<td>20.9</td>
</tr>
<tr>
<td>12.2</td>
<td>21.2</td>
</tr>
<tr>
<td>15.2</td>
<td>20.6</td>
</tr>
<tr>
<td>17.2</td>
<td>20.3</td>
</tr>
</tbody>
</table>

2(a) Define any three from the following: [6]

i) Darcy’s Law
ii) Static Liquefaction
iii) Effective stress
iv) Critical hydraulic gradient

Contd... 2.
2(b) Define heaving of soil surface. An excavation is proposed for a site consisting of a homogeneous, isotropic layer of silty clay, 14m thick, above a deep deposit of sand. The groundwater is 3m below ground level (see Figure 1). The void ratio of the silty clay is 0.62 and its specific gravity is 2.7. What is the limiting depth, D, of the excavation to avoid heaving? [06]

3(a) What is the basis of the construction of Newmark’s influence chart? How is it used? [06]

3(b) Draw the isobars for 50% and 60% of point load Q for a footing of size 2.5 x 2.5 m. Use Boussinesq method. [06]

4(a) Derive Terzaghi’s one dimensional consolidation equation by mentioning its assumptions. [06]

4(b) In a laboratory consolidation test, a 25 mm thick sample of clay reached 60% consolidation in 17 minutes under double drainage condition. Determine the time required for 60% consolidation of a layer of this soil in the field under following conditions:

(i) When a 3 m thick layer of the given soil is sandwiched between two sand layers.

(ii) When a 5 m thick layer of the soil is overlain by a sand layer and underlain by a deep layer of intact shale.

OR

4'(a) Discuss in detail about Height of Solids and Change in Voids Ratio methods for determining the equilibrium voids ratio. [08]

4'(b) In a laboratory consolidation test, the voids ratio of the sample reduced from 0.85 to 0.73 as the pressure was increased from 100 to 200 kN/m². If the coefficient of permeability of soil is \(3.3 \times 10^{-4}\) cm/sec, determine (i) coefficient of volume change (ii) coefficient of consolidation

5(a) i). Discuss the three drainage conditions. How these conditions are simulated in triaxial shear test apparatus.

ii). Write any two shortcomings of Direct Shear Test.

iii). A direct shear test was conducted on a sample of sand. At failure, the normal and shear load values were observed as 288N and 173N respectively. The cross sectional area of the sample = 36 cm². Determine the angle of internal friction.

5(b) A sample of saturated cohesionless soil was tested in a triaxial test apparatus under drained conditions. The sample failed at a deviator stress of 465kN/m² and the failure plane made an angle of 60° with the horizontal. Find the values of principal stresses. What would be the magnitudes of the deviator stress and the major principal stress at failure for another identical specimen of sand if it is tested under a cell pressure of 220kN/m²? [06]

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**Figure 1 (Question 2b)**

- Silty Clay
- Impermeable sheet piles
- 3m
- 14m
- Sand
- h

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