Support your answers with sketches.

1) Discuss the different types of finishes to be used for walls according to different classifications?  

Or

1') Discuss different types of flooring material available in the market and the criteria for selection.

2) What are accessories? Discuss the criteria for choosing/ selecting accessories and also the guidelines for arranging them.

3) What are different types of lighting fixtures available in the market. Discuss their usage according to the requirement at a particular location.

4) What are the general principles for interior designing?

Or

4') Discuss the psychology of colours and its usage in interior design.

5) Design interiors for a Cafeteria of size 3m X 4.5m, Serving South Indian specialities. You are required to give the following details and specification:
   a) Layout plan
   b) R C Plan
   c) Critical/important sections
   d) Views
Support your answers with sketches.

Attempt Question No. 1 and 2 in the Drawing sheet only
Attempt Question No. 3 and 4 in the copy only

1) Draft the following details on suitable scale. (16)
   a) Fixing detail of a Riser in spiral staircase.
   b) Panelled suspended ceiling.
   c) Column to column connection for fully rigid design method.
   d) Edge detail for a portal frame structure.

2) Draw any 1 of the following on suitable scale. (08)
   a) Detail at apex/ridge for North light truss.
   b) Gutter detail for a North Light truss.

3) Discuss the design principles/planning concepts for making multi-storeyed structures earthquake resistant. (08)

   Or

3') What structural systems can be employed for making multi-storeyed steel structures earthquake resistant?

4) Discuss the building materials available for fire proofing of steel structures and also their fire rating. Also give important sections showing the application of these materials on columns and beams. (08)
Question

A renowned multinational company has purchased a rectangular plot measuring 100 m * 150 m in Greater Noida along a 40 m wide road running east-west (shorter side facing south being on the road side) for the construction of its head-quarter. Total covered area requirement is 20000 sqm with FAR of 1.5 and site coverage of 35%. Design the building as an important landmark with energy efficient smart-building emphasis/techniques. As you have been appointed as designer cum consultant, you have full freedom to propose spatial and other requirements.

Draw following drawings for the aforesaid building.

| Site plan | 06 Marks |
| Plans    | 12 Marks |
| Elevations & sections | 08 Marks |
| Parking layout | 03 Marks |
| Landscaping | 03 Marks |
| VIVA-VOCE  | 08 Marks |
2013-2014
B.ARC.H. / B.TECH.(AUTUMN SEMESTER) EXAMINATION
(ARCHITECTURE / CIVIL ENGINEERING)
DESIGN OF CONCRETE STRUCTURES-II
(CE-411)

Maximum Marks: 60
Credits: 04
Duration: Three Hours

Note: (i) Answer all the questions.
(ii) Assume suitable data, if not given.
(iii) Use of IS codes 456, 875(Part-II), 1893, 3370 and IRC loading charts are allowed.

Q1. Design a three span continuous beam of a typical interior idealized plane frame of a
building. The frames are spaced 5.5m apart and in the typical floor 140mm thick continuous
slab is cast monolithically with beams. The thickness of floor finish is 40mm. The beam has
three equal spans of length 6.1m. The floor is to support imposed load of 5 KN/m² at the
service state. The unit weight of the finishing material is 20KN/m². The materials to be used
are M-20 grade concrete mix and HYSD steel of grade Fe-415 for moderate exposure
conditions. Use bending moment and shear force coefficients for the continuous beam given
in IS-456.

OR

Q1'(a). Determine the design moments at support and in the mid span region, before and after
redistribution of moments of 30%, for a beam AB of span L, carrying a uniformly
distributed load, when (i) it is fixed at both ends A and B; (ii) it is fixed at end A and
simply supported at B. Draw the bending moment diagrams in each case, and show the
points of contra flexures and points of maximum bending moments.

Q1'(b). A special reinforced concrete moment resisting frame building with infill panels is
situated in Delhi. Height of the building is 10m. The building is resting on medium soil.
The base dimensions of building at plinth level is 24m. Determine the design horizontal
seismic coefficient and vertical seismic coefficient for a damping of 5%.

Q2. Design top dome, top ring beam and cylindrical wall of an Intze tank shown in Fig.1. Use
M-20 grade concrete and Fe-415 steel.

OR

Q2'. Design a rectangular tank having dimensions 5 x 2.5 x 2m. The 2m high walls are rigidly
jointed at the vertical edges and are pin jointed at the base and roof slab at their
horizontal edges. The tank is supported on all sides under the wall. Use M-20 grade
concrete and Fe-415 HYSD bars.

Contd......2
Q3. Design a slab culvert for span of 3m and clear carriage way width of 10m between kerbs suitable for IRC class A loading. Use M-20 grade concrete and Fe-415 HYSD bars. (12)

Q4(a) Write Short notes on :

(i) Loss of prestress
(ii) Merits and demerits of prestressed concrete

Q4(b) In prestressed concrete beam of cross-section 200mm x 300mm and span 6m, an initial prestressing force of 400KN is applied at constant eccentricity of 50mm by tendons of area 400mm$^2$. Assuming $E_s = 2 \times 10^5$ N/mm$^2$, $E_c = 0.333 \times 10^5$ N/mm$^2$; anchor slip = 1.5mm; creep coefficient in concrete $C_c = 2.0$; shrinkage coefficient of concrete = 0.0002 and creep in steel = 3.0%. Find the total percentage loss of prestress in the tendons. (05)

Q5. Design a waist slab type of a dog-legged staircase for an office building for the following data:

- Height between the floor = 3.2 m
- Tread $T = 270$ mm
- Riser $R = 160$ mm
- Width of flight = landing width = 1.25 m
- Live load = 5.0 kN/m$^2$
- Finished load = 0.6 kN/m$^2$

Assume the stairs to be supported on 230 mm thick masonry walls at the outer edges of the landing, parallel to the risers. Use M20 grade concrete and Fe415 grade steel. (12)

OR

Q5*. Design the heel slab of a cantilever retaining wall to retain an earth embankment 4m high above ground level. The density of earth is 18 KN/m$^3$ and its angle of repose is 30$^\circ$. The embankment is horizontal at top. The safe bearing capacity of the soil may be taken as 100 KN/m$^2$ and the coefficient of friction between soil and concrete is 0.5. Adopt M-20 grade concrete and Fe415 HYSD bars. (12)