2017-18
B. ARCH (WINTER SEMESTER) EXAMINATION
ARCHITECTURE
TOWN PLANNING
AR-302

Maximum Marks: 60 Credits: 04 Duration: Two Hours

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

Q.No. Question M.M.
1 Explain the following terms in brief: (any five) [5X3=15]
   (i) National Highway
   (ii) Grid-iron pattern
   (iii) Collector street
   (iv) Utopians
   (v) Right of Way
   (vi) Pedestrianization

2 Discuss in detail the factors that influenced the development of settlements from hunter gatherer societies to fortified towns. [15]

OR

2' Explain the town Planning features and socio-economic characteristics of the Indus valley civilization. [15]

3 Write short notes on the following town planning ideas (any two): [2X7.5=15]
a) Villa Contemporaine
b) Radburn Concept
c) Garden City

4 Sketch the layout of a 18m ROW collector street in a residential sector giving preference to pedestrians and curtailing the vehicular movement. Explain the design with the help of following details:
   (a) Plan [08]
   (b) Section [07]
2017-18  
B.Arch. (Winter Semester) Examination  
Architecture  
Building Services (Electrical & Mechanical)  
AR-306  

Maximum Marks: 60  
Credits: 04  
Duration: Two Hours  

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

Q.No.  

1  A room has cement plaster on all the walls, floor and ceiling, having length 600 cm, width 400 cm and height 300 cm. The coefficient of absorption for cement plaster at 1000 Hz frequency is .02 Sabin, find the reverberation time in seconds for the room. If the reverberation time is minimised to 1.3 sec, then what will be the coefficient of absorption of material to be used in the room for the same frequency?  

2  Sketch on your answer sheet, the electrical layout of an office with size 5m X 7m with attached toilet on the short wall. The size of the toilet is 1.5m X 2.4 m. Provide the legend of electrical fixtures used and specification chart for the same?  

3  What are the different type of lifts, explain with neat sketch their different components?  

OR  

3' What are the different methods of placement of escalator, explain with neat sketches different components of escalator?  

4. Explain any two of the following:  

   A. Incandescent Lamp  
   B. Halogen Lamp  
   C. Florescent Lamp  

5. What are the four main components of air conditioner, explain with neat sketch the function of each of them?
2017-18
B.ARCH. (WINTER SEMESTER) EXAMINATION
ARCHITECTURE
CONSTRUCTION AND MATERIALS-IV
AR-308N

Maximum Marks: 40 Credits: 05 Duration: Two Hours

Attempt SECTION A in answer sheet and SECTION B in drawing sheet.
Assume suitable data if missing.
Support your answers with neat sketch, wherever applicable.

Q.No. Question M.M.

SECTION A

1. Discuss any of the following doors with respect to their size, usage, advantages and disadvantages. Draw sketches to support your answer.
   a). Collapsible door
   b). Revolving door

2. What are partition walls? Discuss any 4 type of partition walls.

3. Write short notes on any 3 of the following.
   a). Prefabrication in construction industry
   b). Types of Cracks in buildings
   c). Paints in interior of buildings
   d). Type of Joints in buildings

SECTION B

4. Draw details for all of the following.
   a). Brick cladding
   b). Stone cladding
   c). Jointless suspended ceiling
   d). Decorative suspended ceiling
2017-2018
B. ARCH II- SEMESTER EXAMINATION
AR-352N ARCHITECTURAL DESIGN-IV

Max Marks: 40  
Credits: 07  
Time: 06 hrs

Note: Neuferts-data and time saver standards are allowed but provision of these is not the responsibility of the department. 
Good Drafting and Presentation shall carry its own weightage. 
Concept shall be evaluated through Viva voce.

Design Problem: Design a Museum cum Exhibition gallery for a medium size city like Aligarh on a plot measuring 80 m along a 45 m wide road on its southern side and having a depth of 120 m. The site has a gradual slope towards road and has no worthwhile vegetation. Site plan the ground floor to a suitable scale with 20 m front setback and 10 m remaining three side setbacks. Workout the detailed requirements and area analysis considering following requirements:

1. Natural history section
2. Science history section
3. Cultural history section
4. Period gallery
5. Exhibition gallery

Other requirements like entrance lobby, lounges, toilets, administrative areas, workshops, curator's office, canteen, ticket office, lift staircases, etc. shall be as per standards.

For the above project provide the following
1. Site Plan with showing building park and parking 08
2. Floor plans 16
3. Elevation and section 08
4. Concept 08
Answer all the questions.
Assume suitable data, if missing.
Notations used have their usual meaning
Use of IS-800:2007 and Steel Table is permitted.

Q.No.  Question  M.M.
1.  A bracket is bolted to a vertical column as shown below. M20 bolts of grade 4.6 are used. Determine the safety of connection if maximum value of factored load $P = 55\text{kN}$ which can be carried safely. Given that thickness of web of ISMC 300 is 7.6mm. Use $f_y = 250\text{ MPa}$ and $f_u = 410\text{ MPa}$

![Diagram of bracket and column with bolts]

OR

1'(a) What is the cause of incomplete fusion and undercutting in welds?

1'(b) Two framing angles ISA 150mm$\times$150mm$\times$10mm are used to make beam (section ISMB350@514.04N/m) to column (ISHM300 @ 618.03N/m) connection. One angle is placed on either side of web of the beam; five bolts of 20mm diameter and grade 4.6 are used to connect the angle legs to the beam web.

cont'd...
Determine the reaction that can be transferred through the joint. Use $f_v = 250$ MPa and $f_u = 410$ MPa.

2(a) Determine the strength in yielding and block shear of a standard angle ISA $100 \times 100 \times 8$ mm connected to a 12mm gusset plate with 7#16mm diameter bolts. Take $f_v = 250$ MPa and $f_u = 410$ MPa. (Use Clause 10.2.2 onwards for details of bolted connection)

2(b) Determine the size and thickness of a slab base for a column ISHB200 which carries a factored axial compressive load of 1000kN. The grade of steel is E250 and grade of concrete pedestal is M20.

OR

2’. A laced column consists of 2 ISMC250 placed back to back at a spacing of 160mm. Length of the column is 5m and the column is hinged at both ends. Use Fe410 grade steel. The column carries a factored axial load of 1350kN.

Determine

i. Spacing and size of the single lacing with inclination of lacing as 50° and load carrying capacity of lacing in tension and compression

ii. Design the welded connection of lacing bar with the column section

3(a) Explain Tension field action in plate girder

3(b) Design a 24m welded plate girder using 410 grade steel. The plate girder is subjected to factored bending moment and shear force of 8340kNm and 1290kN respectively. The girder is laterally supported through out. Design the cross section for an un-stiffened web. Check for the shear and moment capacity of the section. Use $f_v = 250$ MPa and $f_u = 410$ MPa.

4. Define Shape factor

Determine the collapse load for the portal frame shown below.