

KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2024

Marks Scored:

Level : B.ARCH
Year : III

Course : ARCH 319
Semester : II

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date

26 JUL 2024

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle in the most appropriate option from each set of choices

1. The NBC 206 states that the slope of the ramp shall not be less than:
a. 1:8. b. 1:12 c. 1:15. d. 1:18.
2. The NBC states that the maximum number of risers in a single flight shall not be more than:
a. 12 b. 13. c. 14 d. 15.
3. The stair that takes least space among followings in a building is the:
a. Doglegged b. Helical stair.
c. Bifurcated d. Stair with stair well.
4. If the L is the length of the load-bearing wall of a building, NBC 202 has recommended that the total width of the door and windows in that wall should be:
a. Less than 0.45 L b. Less than 0.5 L c. Less than 0.55 L d. Less than 0.6 L
5. In a one-way RCC slab the main reinforcement bars are laid as follows:
a. Along short span. b. Both ways.
c. Along short span d. As per the instruction of an Engineer.
6. NBC 202 MRT has recommended that the top bars of the beams be lapped at the middle 1/3 zone of the beam. The reason is that:
a. Top portion is in compression. b. Bottom zone is in tension
c. Top zone is in maximum shear. d. Bottom zone is in shear.
7. If the total load of 294 kN is to be borne by an isolated footing of an RCC column that sits on a subsoil with a permissible bearing capacity of 150kN/m², the size of the footing would be:
a. 1.2m x 1.2m b. 1.3m x 1.3m c. 1.4m x 1.4m d. 1.5m x 1.5m
8. The following connection is considered a rigid connection that transfers moment, shear, and torsion to the attached member:
a. Bolt connection with stiffeners. b. Rivet connection
c. Spliced plate connection with bolts. d. welded connection.
9. H-section steel column is effective and economical because its whole section takes axial load and its flanges takes:
a. Tension and compression in bending. b. Additional axial loads.
c. Shear forces only. d. Torsional loads only.

10. End plate connection is usually done in:
 - a. Beam to beam extension.
 - b. Column to column Connection.
 - c. Colum to beam connection..
 - d. Any type of extension.
11. The clear cover for reinforcement bars in RCC footing is kept maximum (40mm) compared to beams and slabs to:
 - a. Increase the strength of footing.
 - b. Protect from moisture.
 - c. More cover to bars means more strong.
 - d. Protect from fire.
12. In portal frame of steel structure the two pin portal frame means hinges are used in base connection. The hinge joints transfer:
 - a. Loads, shear forces and torsions.
 - b. Loads and torsional forces.
 - c. Loads and shear forces but not moments.
 - d. Loads, shear, torsion and moment.
13. Metal sheets are corrugated or folded because their strength increases:
 - a. Due to their acquired volumes/ space
 - b. Due to their irregularities
 - c. Due to their extra material due to bending
 - d. Due to their unique shape
14. RCC slab reinforcement bars are cranked up for continuous slab on the other end at a distance of:
 - a. 0.15 L.
 - b. 0.25L.
 - c. 0.3 L.
 - d. 0.35 L.
15. Wall putty is preferred in fine finishing over white cement finishing because it is:
 - a. More resilient than cement.
 - b. More finer than cement.
 - c. More elegant than cement.
 - d. More stronger than cement.
16. If you are to partition a big office hall with sound (echo) problems, you would best choose:
 - a. EPS panel partition.
 - b. glass bock partition.
 - c. fibre concrete partition
 - d. Particle board partition.
17. The hollow or recessed panel in a grid pattern to create a regular depression on the ceiling with depth with architectural interest is called:
 - a. Coffered ceiling
 - b. Coved ceiling.
 - c. Tray ceiling.
 - d. Vaulted ceiling
18. The important bolt that takes all the weight of the suspended false ceiling is called:
 - a. High strength friction grip bolt (HSFG).
 - b. Self driven bolt.
 - c. Shear Stud.
 - d. Expansion anchor bolt.
19. A construction technique that refers to the components that are attached to the primary building to form distinctive external surface is called:
 - a. Panelling.
 - b. Cladding.
 - c. Internal finishing.
 - d. Covering.
20. The following statement is **TRUE** for machine roomless lifts:
 - a. It also does not needs lift pit.
 - b. It also does not need rail guide.
 - c. It does not need counter weight.
 - d. It also has compact machine.

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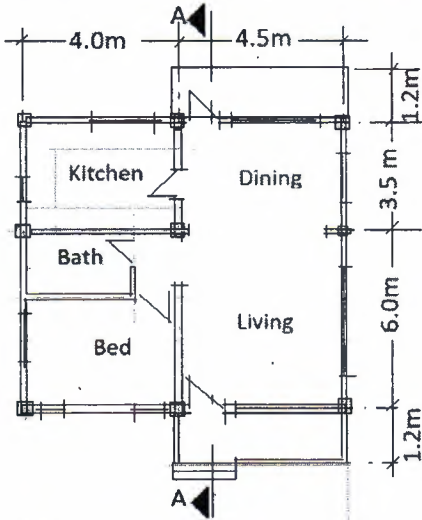
Level : B.ARCH
Year : III
Time : 2 hrs. 30mins.

26 JUL 2024

Course : ARCH 319
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F. M. : 40

SECTION "B"
[40 marks]

1. Briefly describe all the elements stipulated in NBC 202 MRT that you should consider incorporating in a load-bearing wall construction of a building to resist seismic forces. [6]
2. Following is a sketch (not to the scale) of a one-bed bedroom (one-story) house to be constructed as an RCC frame structure. Draw only one section (A-A) in detail with other elaborated (blow-up) details related to that section necessary for construction.
[Note: You, as a designer can assume or add all the dimensions, concrete grade, reinforcement bars, and other required information etc.] [6]



3. Briefly describe the benefits of a suspended false ceiling. Describe with neat sketches the fixing details of any suspended ceiling you know the best. [4+3=7]
4. Draw neat sketches of, a 4.5" thick brick partition wall with all the information and its sequential construction method with sequential steps from erection to finishing painting. [6]
5. Draw a king post truss or Howe Truss (with I-section/ Channel/ tubular pipe sections) and its fixing detail with Universal Column H section. [6]
6. Write short notes on **ANY THREE** with required sketches. [3+3+3=9]
 - a. Types of pile foundations and their uses.
 - b. Types of lapping of reinforcement bars in RCC structures.
 - c. Singly and doubly reinforced RCC beams.
 - d. Benefits of cladding in buildings.

