

KATHMANDU UNIVERSITY  
End Semester Examination  
June/July, 2023

Marks Scored:

Level : B.Arch.

Year : III

Exam Roll No. :

Time: 30 mins.

Course : ARCH 319

Semester : II

F. M. : 10

Registration No.:

Date :

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Encircle the most appropriate option from each set of choices.

1. In Two-way RCC slab, we first lay reinforcement bars along  
a. long span                      b. short span                      c. continuous span                      d. anyone spans
2. If the column with the 300×300mm cross-section has a height of 5400mm the column is treated as  
a. Long column                      b. Short column                      c. Ductile column                      d. Rigid column
3. Lapping of reinforcement bars in an RCC column is recommended by NBC at H/2 because at this zone  
a. the Bending moment is high                      b. the Bending Moment is least  
c. the Shear force is high                      d. the Shear force is low
4. Unless otherwise mentioned the clear cover for the RCC beam is provided  
a. 50 mm                      b. 40 mm                      c. 25 mm                      d. 15 mm
5. M20 grade of concrete stands for 20N/mm<sup>2</sup> which denotes the mix ratio of  
a. 1:1:2                      b. 1:1.5:3                      c. 1:2:4                      d. 1:3:6
6. In a building, three columns are close to each other by only 2.0m, it is desirable to provide  
a. isolated footing for each column                      b. cantilever footing  
c. combined footing for three columns                      d. total mat foundation for building
7. A steel column fixed with an anchor bolt with a base plate on the RCC column is considered as  
a. partially rigid connection                      b. rigid connection  
c. hinged connection                      d. fixed connection
8. In beam-to-column connection, additional support with steel plates in column's from flange to flange is provided (in case of heavy loading) to prevent local buckling which is called  
a. Splice                      b. Pressure reducing valve  
c. Web cleat angle                      d. Stiffener
9. The extension (splice) of the steel column to the upper floor that is subjected to heavy sheer force, you will provide steel plate (splice) to  
a. the web of the column                      b. both sides of the flanges  
c. inner sides of flanges                      d. end plate

10. For covering a large space without intermittent columns in steel-structure the most economical structure would be
  - a. Steel column with steel beam
  - b. Portal frame structure
  - c. RCC column and steel truss
  - d. RCC frame structure
11. If you are to erect a half-brick partition wall on Ground Floor you
  - a. need to provide foundation for partition
  - b. do not need to provide foundation
  - c. need to provide PCC base
  - d. need to provide DPC
12. The most simple and short span truss for span up to 8.0m span is
  - a. King post truss
  - b. Howe truss
  - c. Pratt truss
  - d. Queen post truss
13. Steel deck with concrete is used in
  - a. internal partition
  - b. outer cladding of building
  - c. roofing in steel structure
  - d. flooring in steel structure
14. If you are to divide a room with fire-resistant partitions, you would choose composite board made of
  - a. Calcium silicate board with mineral wool
  - b. ACP panel board.
  - c. Particle board in aluminium frame
  - d. EPS panel
15. If you are to partition a big office hall with sound (echo) problems, you would best choose
  - a. EPS panel partition
  - b. Glass block partition
  - c. Fibre concrete partition
  - d. Particle board partition
16. The ceiling in which curved moulding that starts from the wall up the existing ceiling, creating a round concave surface to give a smooth transition, is called
  - a. Coffered ceiling
  - b. Coved ceiling
  - c. Waffle ceiling
  - d. Vaulted ceiling
17. If you are to recommend false ceilings for a humid, noisy commercial complex where tough, hard, and sound absorbing and fire resistant are the criteria you would suggest
  - a. Wooden ceiling
  - b. POP ceiling
  - c. Metallic ceiling
  - d. Fibre ceiling
18. The characteristics of Shakes used as external cladding of a building is
  - a. made by sawing and has a smooth surface
  - b. fine finished and a smooth surface
  - c. traditionally hand-split and rustic in looks
  - d. made from minerals
19. The common characteristics of external cladding detailing of a European residential building is
  - a. used of a thick layer of insulations
  - b. used of fibre cement panel
  - c. used of modular system
  - d. used of metal profiles
20. During the renovation of a building, if the external plaster of the building has minor cracks and depressions, you would suggest (for smooth finishing)
  - a. replastering whole area and painting
  - b. applying wall putty and painting
  - c. filling depression with cement and painting
  - d. applying textured painting

25 JUN 2023

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SECTION "B"

Attempt *ALL* the questions.

1. Draw a detailed plan and sections of a staircase with appropriate reinforcement details supported on a beam on one side and the brick wall on the other. [do not show nosing or stirrups] [6]
2. Describe sequentially the construction procedure of an isolated RCC footing up to a plinth tie beam with appropriate explanatory sketches. [6]
3. How many types of portal frames do you know based on their joints/ connection details? Also, draw the connection (semi-rigid) between the RCC foundation and the Steel column. [4+3=7]
4. Describe, with appropriate sketches, the fixing method of the false ceiling of the Gypsum board. [6]
5. How are Aluminium Composite Panels fixed on the exterior of the building? Describe with appropriate sketches. [6]
6. Write short notes on any three with required sketches. [3+3+3=9]
  - a. Types of foundations
  - b. Functions of lateral ties of RCC columns and stirrups of RC beams.
  - c. Lapping zones in continuous beam as per MRT.
  - d. Fixing of glass block partition
  - e. Functions of false ceiling.