Reg. No. _____

Karunya University
(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)
(Anna University batch)

End Semester Examination – November / December 2008

Subject Title: REINFORCED CONCRETE STRUCTURES - II   Time : 3 hours
Subject Code: CE250   Maximum Marks: 60

Use of IS 456-2000,IRC codes, IS 3370, IS 1893-2002 and Design Aids (SP16) permitted
Use M20 concrete and Fe415 steel unless otherwise specified.

Answer ALL questions
PART – A (10 x 1 = 10 MARKS)

1. What is a waist slab?
2. What type of retaining wall shall be adopted if the soil to be retained is of height 7.2 m
3. What type of stresses will be induced predominantly if the water tank is of circular shape?
4. What is staging in a water tank?
5. Name the design curves to be used while designing a two way panel of deck slab supported on its edges by beams?
6. If a bridge is to be designed for a national highway what are the IRC loadings to be adopted?
7. "Portal method is associated with design of frames for gravity loads." State whether this statement is true or false
8. "The philosophy of IS code is to design an earthquake proof building" State whether this statement is true or false.
9. Choose the correct answer
    For application of yield line theory the slab has to be
    a. Over reinforced   b.   Under reinforced

10. Choose the correct answer:
    Strip method of analysis is preferred when
    a) Slab is rectangular and loading is uniformly distributed
    b) Slab is square and loading is uniformly distributed
    c) Slab is circular and loading is uniformly distributed
    d) Slab is irregular in shape and loading is not uniform

PART – B (5 x 2 = 10 MARKS)

11. Why shear key is provided in a retaining wall?
12. List the forces to which the bottom ring girder of an Intze type tank is subjected to when it is supported on columns.
13. State the conditions under which Courbon method can be adopted while designing longitudinal girders of a bridge.
14. State the assumptions made in cantilever method.
15. Sketch the pattern of yield line of a rectangular slab subjected to uniformly distributed load and which is continuous over edges.

[P.T.O]

PART – C (5 x 8 = 40 MARKS)

16. Design the waist slab of a stair using the following data and sketch the longitudinal section of the slab indicating the reinforcement details

    Rise-150 mm

    Tread = 250 mm

    Span of the waist slab (including landings)- 4m

    Width of stair case – 1.2 m

    Imposed load- 4 kN/m^2

    Floor finish 40 mm thick PCC

    The slab has landings at both the ends

                              (OR)

17. A cantilever type RCC retaining wall has to be designed using following data:

    Height of earth to be retained above GL-3.5m

    Depth of foundation below GL-1m

    Angle of repose - 30^0

    Unit weight of soil- 16 kN/m^3

    Check the stability of the wall   (4)

    Design the cantilever stem   (4)

18. A rectangular tank has plan inner dimensions 5m X 3m. The height of the tank is 2.5m. Design the short wall of the tank. The tank rests on the ground.

                              (OR)

19. An overhead tank has following dimensions:

    Shape of the tank- square

    Plan dimensions of body of tank- 4m X 4m

    Height of body of tank-3m.

    The wall thickness is 300 mm

    The base slab thickness-400 mm

    Roof slab thickness-150 mm

    Height of staging-12m

    Number of columns supporting the tank-4

    C/C distance of columns- 4m

    Column dimensions-350X350 mm

    Bracings are provided at a c/c of 4m. The dimensions of bracing beams are 350 X 600 mm.

    Wind pressure acting on the tank- 2 kN/m^2

   Depth of foundation below GL 2 m

    Estimate the compression in leeward side columns when the tank is full.

20. Design a simple slab bridge to the following requirements:

    Clear span- 5m

    Clear width of carriage way-7.5m

    Live load- Class A

    Width of kerb-600mm
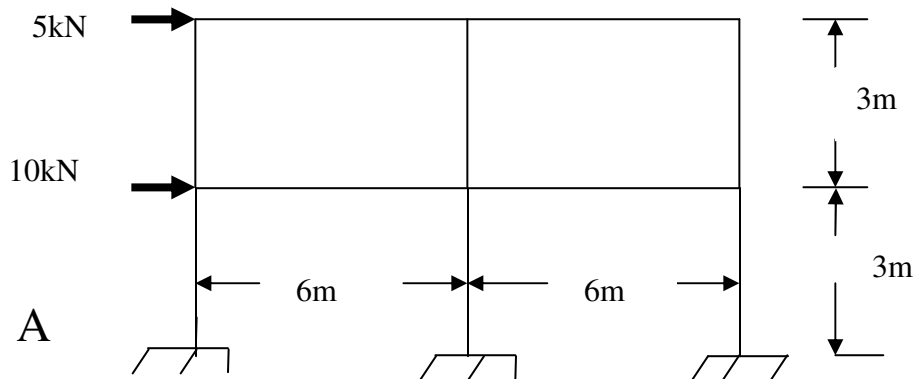
    Wearing coat-80mm

                              (OR)

21. Determine the reaction on the central girder shown in figure of a typical 'T' beam bridge by Courbon's method.

0.5m   14kN   14kN   14kN   14kN

1.4m

1.7m   1.8m

0.9m   2.5m   2.5m   0.9m
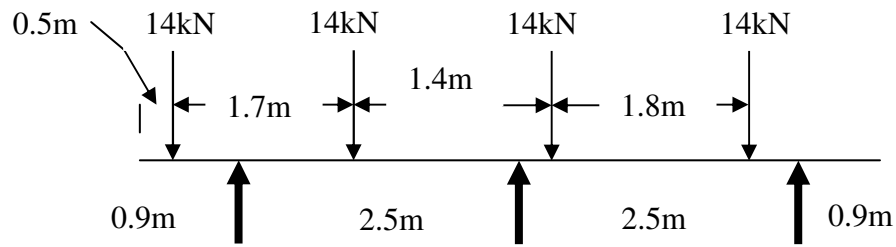
All the girders are of uniform moment of inertia

22. Determine the bending moment at base of the windward column at A of the frame shown in figure using portal method.

5kN

3m

10kN

3m

6m   6m

A

(OR)

23. Write short notes on following: (4+4)
    a.   Ductility   b.   Response spectrum

24. Design the rectangular slab by yield line theory given the following data:
        Long span- 7m
        Short span-5m
        Imposed load- 3 kN/m^2
        The ratio of long span reinforcement to that of short span is 0.75
                                            (OR)
25. Find the uniformly distributed imposed load the slab can support given the following data:
        Long span-6m
        Short span-4.5 m
        Steel in short direction- 8 mm @ 180 c/c
        Steel in long direction- 8 mm @ 250 c/c
        Thickness of slab- 110 mm
        Adopt a load factor of 1.5