**Reg. No. \_\_\_\_\_\_\_\_**

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

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

**Supplementary Examination - June 2011**

**Subject Title: DESIGN OF MASONRY AND TIMBER STRUCTURES Time: 3 hours**

**Subject Code: 09CE213 Maximum Marks: 100**

#### **Answer ALL questions**

**PART – A (10 x 1 = 10 MARKS)**

1. List the types of structures.

2. What are the limit states that are considered in Limit State Method?

3. List the types of masonry walls used in building construction.

4. Define shape modification factor.

5. State the middle third rule.

6. Define the term safe bearing capacity of soil.

7. What do you mean by reinforced brick masonry?

8. What is free standing wall?

9. Name the permissible defects in timber.

10. What is built up column?

**PART – B (5 x 3 = 15 MARKS)**

11. What are the various loads acting on a structure?

12. Explain how permissible stress on masonry is calculated.

13. What are the conditions for stability of masonry structures?

14. What are the recommendations for walls in earthquake resistant masonry structures?

15. What are the factors which affects the strength of timber?

**PART – C (5 x 15 = 75 MARKS)**

16. Discuss the merits and demerits of the methods of design (WSM, ULM and LSM) in detail.

(OR)

17. Explain the various types of loads to be considered in structural design.

18. Determine the allowable axial load per metre length of a 200mm solid wall. The height of the wall is 3.5m. The wall is continuous and its length between cross wall is 5m. Take fc as 0.55N/mm2

(OR)

19. Design a brick column 3m high to carry an axial load of 110kN. The width of the column is limited to 300mm size for architectural reasons. Assume cement lime mortar 1:1:6 and first class brick with 10N/mm2 strength. The column may be taken as fixed – restrained.

20. A masonry dam 6m high is 1.5m wide at top and 4.5m wide at bottom with vertical water face. Determine the normal stresses at the toe and heel for reservoir empty and reservoir full conditions.

(OR)

21. A wall carries a load of 100kN/m including its own weight. Find a suitable width and depth of its foundation. Take angle of repose = 30o, safe bearing capacity of the soil = 90kN/m2 and unit weight of soil = 16kN/m3. Design a suitable section for the footing, if the wall is 300mm thick above the plinth.

[P.T.O]

22. List the assumptions made in reinforced brick masonry construction. Also discuss the advantages and disadvantages of reinforced brick construction.

(OR)

23. Discuss the important factors influencing the behavior of masonry building during earthquake. Also discuss the requirements for structural safety of masonry building during earthquake.

24. Design timber beams for the roof of a room having 6m x 8m clear dimensions. The timber is Sal. The dead load of roof covering is 2.5kN/m2 and live load is 1.5kN/m2. Design the beams for inside location. Take E = 12.7kN/mm2

(OR)

25. A built up column of Sal wood consists of four planks of 50mm x 300mm with a central core of 250x250mm. Calculate the safe load capacity if its height is 4m. Take fcp = 10.6N/mm2, E =12.7kN/mm2