KERALA AGRICULTURAL UNIVERSITY

B.Tech (Food. Engg) 2011 Admission

Vth Semester Final Examination- December /January -2013

Cat. No: Cien3105

Title: Design of structures (1+1)

Marks: 80

Time: 3 hours

PART A

I. Fill up the blanks (10X1 = 10)

1. Permissible tensile stress in high yield strength deformed bars is .....
2. Reinforcement provided to prevent failure of concrete by excessive diagonal tension are.....
3. Minimum cover to column reinforcement equals .....
4. The part of the structure which transfers the load to the soil on which it rests is .....
5. Welded structures are usually ..... Than riveted structures.
   Say TRUE or FALSE correct if the statement is false
6. The effective length of a column is not necessarily its actual length
7. In the case of silos the entire weight of the material stored will not act on the floor of the structure.
8. The term contingencies indicate the expenses which cannot be classified under any other distinct head.
9. The size of the rivet is the diameter of the shank.
10. The bearing strength of rivet is the product of projected area and the stress in bearing.

PART B

Write short notes on ANY TEN of the following (10X3 = 30)

1. Make a sketch of double riveted lap joint.
2. Euler's formula.
3. Lacing
4. Neutral axis
5. Over-reinforced section
6. Detailed estimate
7. Quantity surveying
8. Long columns
9. Moment of resistance of under reinforced section.
10. Sketch the bending and shear stress diagrams for a rectangular section.
11. Butt welds
12. Advantages of Ferro cement.

PART C

Answer ANY SIX questions (6 X 5 =30)

1. Assumptions made in riveted connections.
2. Explain the design procedure of a compression member.
3. Estimate the earth work involved in digging a rectangular channel of 5 m length and sectional dimensions 30 X 45 cm.
4. Explain about the types of building estimate
5. Calculate the area of steel for a circular column 400mm diameter to carry an axial load of 800kN. Assume suitable data.
6. What are the disadvantages of welding?
7. Evaluate the design constants for M_{20} concrete.
8. Explain the types of riveted joints with neat sketches.

PART D

Answer ANY ONE question. (1 X 10 =10)

1. Design a simply supported slab for the following requirements.
   Clear span = 3.75m, Live load = 2000N/m^2. Use M_{20} concrete and torsteel
2. Find suitable pitch of rivets for a single riveted double cover butt joint for plates 15mm thick.