

# KERALA AGRICULTURAL UNIVERSITY

B.Tech (Agri.Engg.) 2015 Admission  
IV<sup>th</sup> Semester Final Examination-July-2017

Cat. No: Fpme.2210

Title: Machine Design (2+1)

Marks: 50

Time: 2 hours

## I Fill up the blanks

(10x1=10)

1. Steel with 0.8 % carbon is known as -----
2. The proof resilience per unit volume is called -----
3. Equation for Hoop stress for thin cylinder subjected to internal pressure is -----
4. Leverage is the ratio of -----and -----
5. Equation for module of a gear is -----
6. Lewis equation is applicable for the design of -----
7. The poissions ratio is the ratio of -----and -----
8. The design of thin cylinder is based on -----stress
9. Thread angle for ISO metric threads is -----
- 10 when the driving and driven pulleys rotate in opposite directions, the belt drive is called -----

## II Write short notes/answers to any FIVE of the following

(5x2=10)

1. List any four sliding contact bearing materials.
2. List any three Rolling contact bearings
3. List out any two copper alloys and explain their compositions
4. What is meant by pressure angle in a gear?
5. Explain the interference in involute gears
6. What is spline?
7. List out the methods used to measure hardness

## III Write short answers to any FIVE

(5x4=20)

1. How Cast iron is classified?
2. Explain the design procedure of shafts.
3. Illustrate how stress concentration in a component can be reduced.
4. What is meant by endurance strength of materials?
5. Explain the design procedure of Cotter Joint.
6. Explain the classification of shaft keys.
7. Design the rectangular key for a shaft of 50mm dia. The shearing and crushing strengths of the key are 42 Mpa and 70 Mpa.

## IV Write essay on any ONE

(1x10=10)

1. Design a knuckle joint to transmit 150kN. The design stresses may be taken as 75 Mpa in tension, 60 Mpa in shear and 150 Mpa in compression.
2. Explain in detail the design procedure of leaf springs.

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