



KERALA AGRICULTURAL UNIVERSITY
B.Tech. (Food Engg.) 2015 Admission
V Semester Final Examination-January-2018

Meen.3107

Machine Design (2+1)

Marks: 50

Time: 2 hours

(10x1=10)

I Fill in the blanks:

- 1 The ratio of ultimate stress to the design stress is known as-----
- 2 The product of diametral pitch and circular pitch is equal to-----
- 3 Oldham coupling is used to connect two shafts which are-----
- 4 Hooke's law holds good up to-----
- 5 The stress corresponding to that of failure is known as-----

State True or False

- 6 The unit of strain is kg/cm^2
- 7 The axle have the shape of shaft and is stationary
- 8 Spur gears are used to transmit power in between two shafts whose axes are intersect
- 9 In thrust bearings the load acts along the axles of rotation
- 10 In engines, connecting rod is subjected to torsional loads.

II Write Short notes on ANY FIVE of the following

(5x2=10)

- 1 What are all the important mechanical properties of engineering materials?
- 2 Define factor of safety and write about its importance.
- 3 List various types of keys and their application.
- 4 Define coupling and mention classification of couplings.
- 5 What is spring constant? Mention types of springs.
- 6 Write short notes on selection of antifriction bearings.
- 7 Differentiate between cotter joint and knuckle joint.

III Answer ANY FIVE of the following

(5x4=20)

- 1 What is a knuckle joint? Write the design procedure of it.
- 2 Write the design procedure of muff coupling along with its advantages.
- 3 List the various theories of failure and explain any one theory.
- 4 Specify the conditions for flat belt drive and briefly explain the design procedure of a 'V' belt drive.
- 5 Compare gear drive with belt drives and explain the various terminologies of spur gear.
- 6 Write short notes on crane hooks and universal couplings.
- 7 Explain the procedure for the design of a leaf spring.

IV Write an essay on ANY ONE of the following

(1x10=10)

- 1 Explain the design of threaded fasteners subjected to direct static loads.
- 2 Explain the design procedure of rigid flange coupling and compare rigid with flexible coupling.
