



**KERALA AGRICULTURAL UNIVERSITY**  
**B.Tech.(Agri. Engg) 2015 Admission**  
**VI Semester Final Examination-July 2018**

**Fpme.3216**

**Tractor Systems and Control (2+1)**

**Marks: 50**

**Time: 2 hours**

**I Choose the Correct Answer.**

**(10x1=10)**

- 1 The size of the tractor tyre is represented as
  - a. Section height x rim width
  - b. Section height x rim diameter
  - c. Section width x rim diameter
  - d. Section width x rim width
- 2 Moving the centre of gravity of a tractor towards its front wheel creates the problem of
  - a. Instability
  - b. Steering
  - c. Overturning
  - d. None of the above
- 3 Inflation pressure in the rear wheels of the tractor for field operation varies between.
  - a. 0.8-1.5 kg/cm<sup>2</sup>
  - b. 1.5-2.5 kg/cm<sup>2</sup>
  - c. 1.8-2.1 kg/cm<sup>2</sup>
  - d. 2.2-2.6 kg/cm<sup>2</sup>
- 4 In a tractor the centre of gravity should be located approximately \_\_\_\_\_ ahead of rear axle
  - a. 1/4 of the wheel base
  - b. 1/3 of the wheel base
  - c. 2/3 of the wheel base
  - d. 3/4 of the wheel base
- 5 Toe in provided in a tractor is approximately
  - a. 14-15 mm
  - b. 7-10 mm
  - c. 18-25 mm
  - d. 25-30 mm

**Fill up the following.**

- 6 The type of starting aid used in power tiller is .....
- 7 As per the ASAE standard, the speed of the PTO is .....rpm
- 8 The use of a .....in a 4 wheel tractor is to improve the traction by allowing equal torque to be applied to both the rear wheels
- 9 Maximum noise level from a tractor near the operator's ear should not exceed .....
- 10 The gears in, ..... gear box is always interlocked with each other

**II Write Short notes on any FIVE of the following**

**(5x2=10)**

- 1 Advantages and disadvantages of air cool system
- 2 Working of the steering system
- 3 Explain the operator exposure to environment. Explain the anthropometric dimension considered for tractor seat design
- 4 What is power train and explain the transmission system of tractor
- 5 Tractor final drive
- 6 Safety gadgets for a tractor
- 7 Automatic draft and depth control of the hydraulic systems

**P.T.O**

**III Answer any FIVE of the following. (5x4=20)**

- 1 Discuss: Effects of whole body vibration
- 2 Tractor chassis with schematic diagram
- 3 Working of the single plate clutch
- 4 Working of synchromesh gear box.
- 5 Ergonomic consideration in tractor design.
- 6 Derive the Expression for weight transfer of a tractor.
- 7 Working of sliding mesh gear box with different gear position.

**IV Write an essay on any ONE of the following (1x10=10)**

- 1 Working principle of tractor hydraulic system with neat sketch
- 2 Principle and working of different types of brakes

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