



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

**Fpme.3112**

**Farm Machinery and Equipment-II (2+1)**

**Marks: 50**  
**Time: 2 hours**  
**(10x1=10)**

**I Define the following**

- 1 Cylinder concave
- 2 Threshing
- 3 Snapping clearance
- 4 Cleaning efficiency
- 5 Harvesting

**Fill in the blanks**

- 6 In a combine harvester, the ratio of reel peripheral speed to forward speed (Reel speed Index) should be in the range of .....
- 7 The percentage of un threshed grains from all outlets with respect to total grain input in the thresher by weight is called.....
- 8 The row of cut crop formed by a vertical conveyor reaper is called .....
- 9 Generally, for a good cutting of crops, the recommended lead per meter. length of cutter bar is .....
- 10 Flail mowers use high speed ..... knives

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

**(5x2=10)**

- 1 What are the safety precautions for safe operation of threshers
- 2 Describe in brief the working of Groundnut digger cum shaker.
- 3 Explain the working of a manually operated harvester for mango fruit.
- 4 Describe the construction of a hand maize sheller.
- 5 Write the necessary adjustments to be made on combines before being used for harvesting a crop.
- 6 Write down the adjustments of a thresher that can improve the efficiency of the threshing operation.
- 7 Explain the working of a chaff cutter with the help of figure

**III Answer ANY FIVE of the following**

**(5x4=20)**

- 1 a What is alignment and registration of a mower?  
b A trailed mower has a drive wheel of 70 cm diameter. The crank of the mower makes 800 rpm when it is driven by a tractor, moving at the speed of 2.5 kmph. If the speed ratio between the crank wheel and land wheel is changed to 27:1. Calculate the increase in speed of tractor to maintain same speed of crank.
- 2 A cut and throw forage harvester has a cylinder cutter head 600 mm in width and 700 mm PTO dia. It has 8 knives and rotates at 900 rpm. It is to harvest corn at feed rate of  $60 \times 10^3$  kg/h while producing an average length of cut 5 mm. Calculate  
(a)the required peripheral speed of the feed rolls and  
(b)the maximum height of the throat at the throat area if the density between rolls is  $300 \text{ kg/m}^3$
- 3 Explain the working of tractor operated flail type forage harvester cum chopper.
- 4 Explain the working of a self-propelled reaper binder.
- 5 Explain the different types of threshing cylinders with a neat sketch.
- 6 In a field test of a multi crop thresher the following data were obtained:

Time of operation: 60 seconds

One minute sample collection data:

Quantity of broken from all outlets	:5 gm
Quantity of clean grains at main straw outlet	:20 gm
Quantity of unthreshed grain from all outlet	:10 gm
Quantity of clean grain at sieve overflow and underflow (Spilled)	:10 gm
Quantity of clean grain from all outlet:	:1620 gm

**Calculate:**

- a Percentage of broken grain
- b Percentage of blown grain
- c Percentage of unthreshed grain
- d Percentage of spilled grain
- e Threshing Efficiency

If quantity of clean grain obtained from the sample taken at main grain outlet is 492 gm from total quantity of 500 gm sample, calculate the cleaning efficiency of the thresher.

- 7 Explain with the help of a neat labelled diagram the working principle of a combine and name the important parts of a combine.

**IV Write an essay on ANY ONE of the following**

**(1x10=10)**

- 1 Sugarcane Harvester
- 2 Cotton Picker

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