KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Agrl. Engg.) 2018 Admission
VI Semester Final Examination- December 2021

Fpme. 3213   Farm Machinery and Equipment-II (2+1)   Marks: 50

Time: 2 hours

I   **Fill in the blanks**   (10x1=10)
1. The grain damage increase with the_____ in cylinder speed.
2. The value of uniformity coefficient of a sprayer nozzle ranges from_____ to _____.
3. The recommended speed of threshing drum for paddy crop ranges from ____to ____.
4. _____is the most common type of feeding device used in power thresher up to 7.5kW
5. BMR stands for _____.

     Define the following
6. Reel index.
7. Weeding index
8. Anthropometry
9. Rack loss in combine harvester
10. Threshing efficiency

II   **Write short notes on ANY FIVE of the following**   (5x2=10)
1. Straw combines
2. Duffee's formula and related terms associated with the chaff cutter
3. Cono-weeder
4. Different types of tests conducted for farm machinery
5. Registration of cutter bar
6. Difference between VMD and NMD
7. Electrostatic sprayer

III   **Answer ANY FIVE of the following**   (5x4=20)
1. Explain the factors affecting the performance of a thresher
2. Mention the objectives of testing the farm machinery
3. Explain the different types of mowers based on the cutting unit
4. Explain the different types of spray nozzles based on droplet pattern and amount of liquid sprayed
5. Explain the working of tractor operated blade type potato digger
6. Explain the different methods used to control the vibration of reciprocating mower
7. How will you assess the energy expenditure in ergonomic studies?

IV   **Write an essay on ANY ONE of the following**   (1x10=10)
1. Solve the following
     (A)   A combine harvester having a cutter bar width of 2.5m is tested for harvesting paddy crop and the following data were noted:-

Total area harvested = 50m^2	Time taken =10 sec	Free seed over rack=75g
Un-threshed over rack =50g	Free seed over shoe=250g	Un-threshed over shoe=75g
Net grain collected in the harvester tank=25 kg	Average cutter bar loss= 9 g/m^2	

Calculate:
 (i)   Total seed yield and total seed loss in kg/ha respectively
 (ii) Various combine losses and total combine loss as percentage of total seed yield.
 (iii) Reel index, if peripheral speed of reel is 5.0 kmph

 (B)   Determine the rate of flow of herbicide solution to the spray boom when it is being applied in a row crop at the rate of 500 l/ha. The effective width of the sprayer is 12.5m and the tractor is operating at a speed of 5.0 km/h. Also calculate the flow rate from the spray nozzle when spacing between nozzles is 40 cm?

2. Explain the various functional components and working of a combine harvester with a neat sketch

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