A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 55A02

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Fifth Semester

Agriculture Engineering

15UAG502 TILLAGE AND SOWING IMPLEMENTS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The size of a MB plough is expressed in terms of its CO1- R

   (a) Width of cut (b) Depth of cut (c) Length of share (d) No of plough bottom

2. The draft of a bullock drawn desi plough developing 100 kg pull at 30 degrees is CO1- App

   (a) 70 kg (b) 67 kg (c) 86.6 kg (d) 103 kg

3. In hydraulic sprayers, the degree of atomization is primarily a function of CO2- R

   (a) Liquid pressure and the nozzle characteristics (b) Air velocity

   (c) Size of the nozzle (d) Size and shape of the atomizer

4. If the speed of travel of an tractor -operated seed drill is doubled the seed rate (kg/ha) CO2- U

   (a) Remains the same (b) Is doubled

   (c) Is halved (d) Changes in proportion to the speed

5. In Agriculture operation by manual labour, which one has the highest drudgery index CO3- R

   (a) Weeding (b) Harvesting (c) Threshing (d) Fertilizer application

6. Whenever a plough works round a strip of ploughed land is said to be CO3- U

   (a) Casting (b) Gathering (c) Open furrow (d) Dead furrow

7. A three row cultivator with 30cm spacing is operated at 4kmph. The theoretical work capacity would be CO4- Ana

(a) 1.5 acre/h (b) 1.2 acre/h (c) 0.9 acre/h (d) 0.72 acre/h

8. Which crop has highest energy requirement for its cultivation CO4- R

(a) Sugarcane (b) Maize (c) Potato (d) Wheat

9. Planters differ from a seed drill in respect of CO5- R

(a) Kind of power transmission system (b) Kind of metering mechanism

(c) Kind of furrow openers used (d) All the above

10. The pressure of power operated sprayer is CO5- R

(a) 10 - 25 kg/cm^2 (b) 10 - 35 kg/cm^2 (c) 20 - 55 kg/cm^2 (d) 10 - 65 kg/cm^2

PART – B (5 x 2= 10 Marks)

11. List minimum four limitations in farm mechanization and give suggestion to overcome the problems. CO1- R

12. Define vertical suction and horizontal suction CO2- R

13. Calculate the area covered per day of 8 hours by a tractor drawn 4 bottom 200 mm plough if the speed of the ploughing is 5 kmph, the time lost in turning is 7 %. CO3- Ana

14. Define Calibration of seed drill CO4- R

15. Explain theoretical field capacity with an expression. CO5- U

PART – C (5 x 16= 80 Marks)

16. (a) (i) A cultivator having five tynes, spaced 8 cm apart and working to a depth of 5cm is running at a speed of 3 kmph. There is a time loss of 10% while turning. Calculate the time to cultivate per ha. If the resistance of the soil is 0.8 kg/cm^2. What would be the maximum draft and HP required when the width of each furrow is 5 cm? CO1- App (8)

		(ii) State a) Centre of resistance b) Line of pull.	CO1- U	(8)
		Or		
	(b)	Describe in detail about different types of MB plough and their working parts with a neat diagram.	CO1- U	(16)
17.	(a)	Explain about the standard disc plough with a neat sketch	CO2- U	(16)
		Or		
	(b)	(i) State a) Theoretical field capacity b) Actual field capacity c) Field efficiency.	CO2- U	(8)
		(ii) State a) Leveler b) Cage wheel c) Reversible MB plough	CO2- U	(8)
18.	(a)	Explain the working of a rotavator with a neat diagram.	CO3- U	(16)
		Or		
	(b)	Explain the types of disc harrow with a neat sketch.	CO3- U	(16)
19.	(a)	A 3×22 cm bullock drawn seed drill is being used for sowing wheat crop. The speed of drilling is 3 kmph. Seed rate setting is 80 kg/ha. Calculate the amount of seed falling per minute through each tube. If ground wheel diameter is 30 cm, then calculate the seed rate per revolution of the wheel. Also calculate area covered in one day if field efficiency is 85 percent.	CO4- App	(16)
		Or		
	(b)	List the types of seed metering mechanism. Discuss in detail about the fluted feed metering mechanism with a neat sketch.	CO4- U	(16)

20. (a) Discuss in detail about intercultural implements with neat sketch. CO5- U (16)

Or

(b) Discuss in detail about the dry and wet land weeders with a neat sketch. CO5- U (16)