QP Code: RD21BTECH263 | Reg. No | | | | | | | | | | | AY 21

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Fifth Semester Regular) Examinations, December – 2023

21BAGES25002 – Farm Machinery and Equipment-I

(AGE)

Time: 3 hrs | Maximum: 70 Marks

Answer all questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. Write objectives of Farm Mechanization.	CO3	K3
b. Explain classification of agricultural operations performed on a farm.	CO2	K3
c. Enlist Indigenous wooden plough.	CO4	K1
d. What is Effective Operating Time?	CO3	K2
e. Enlist classification of Mechanical transplanters.	CO2	K1

PART – B **(15 x 4 = 60 Marks)**

Answer ***ALL*** questions	Marks	CO #	Blooms Level
2. a. Explain Three-point linkage with help of neat sketch.	7	CO1	K3
b. Explain classification of different sources of farm power.	8	CO1	K1
(OR)			
c. What is Tillage? Write Objectives of tillage.	7	CO3	K2
d. Explain Indigenous wooden plough with help of neat sketch.	8	CO3	K1
3.a. What is secondary tillage? Write main objectives of secondary tillage.	7	CO3	K3
b. A 4 bottom 40 cm tractor drawn mould board plough cuts a trapezoidal furrow. The furrow has 40 cm top width and 20 cm bottom width. The plough is operating at a depth of 25 cm. Assuming average soil resistance as 0.63 kg/cm^2 and forward speed of 4.8 km/h, determine the following: i) Rate of field coverage per hour when field efficiency is 70% ii) Tractor power required to pull the implement.	8	CO4	K3
(OR)			
c. Explain various Components of a disc harrow with help of neat sketch.	7	CO2	K2
d. A 3-bottom 40 cm Mould Board Plough is working at the speed of 4.5 km/hr. Field efficiency is 75 %. Find the effective (actual) field capacity.	8	CO4	K2
4.a. Explain Dozer attachment for tractor and Backhoe attachment with help of neat sketch.	7	CO5	K1

b.	A farmer purchased a 35 hp wheel type tractor at a total cost of Rs. 700000/- and three bottom plough with 30 cm bottom width at Rs. 25000/-. The fuel consumption of tractor was 4 lit/hr at plough speed of 4.0 km/h. a) Determine EFC of ploughing operation, if Field efficiency is 75 percent b) Determine cost of ploughing per hour c) Determine cost of ploughing per ha	8	CO4	K3
	(OR)			
c.	Explain Trencher with help of neat sketch.	7	CO4	K1
d.	Find the cost of using a tractor per hp-hr when the cost of 18 hp tractor is Rs.300000, Life of tractor is 10 years, Rate of interest is 10 percent and Working hours per year is 1000 hours Assume: Repair & maintenance @ 6 percent Diesel consumption @ 4 lit per hour Diesel price Rs.95 per litre Cost of lubricants @ 30 % of diesel/fuel cost Wages of Driver Rs.500 for 8 hours	8	CO2	K2
5.a.	Explain Cup feed type Seed metering mechanism with help of neat sketch.	7	CO4	K2
b.	Calculate the seed rate per ha of a 9 x 22 cm seed drill, whose ground drive wheel diameter is 60 cm and weight collected in 40 revolutions from each furrow opener is 160 gm. The recommended seed rate is 70 kg/hr. What are the adjustments required to get the recommended seed rate in the above seed drill and what amount of seed is received from each furrow opener in 40 revolutions for getting recommended seed rate?	8	CO6	K2
	(OR)			
c.	Explain Internal double run type Seed metering mechanism with help of neat sketch.	7	CO4	K1
d.	A hollow cast iron column 3-metre-long has a wall thickness of 2.5 cm and support a load of 132000 kg. If the safe stress allowed is 1000 kg/cm^2. Find the external and internal diameter of the column. Find also the strain and shortening of the column due to this load. Take Y = 10×10^5 kg/cm^2.	8	CO3	K1

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