SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year II Semester Regular Examinations August-2023
TRACTOR SYSTEMS & CONTROLS
(Agricultural Engineering)

Time: 3 Hours   **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	What is drive train of tractor? Mention its function and components.	L1	CO1	6M
	b	What is clutch? Explain its necessity, types and function .	L1	CO1	6M

OR

2	a	Explain the considerations for the design of plate clutch when wear is uniform.	L2	CO1	6M
	b	A single plate clutch with both sides has an outer diameter of 20 cm. The maximum intensity of pressure at any point in the contact surfaces does not exceed 1 kg/ cm2 . If the coefficient of friction is 0.3, determine the power transmitted by clutch operating at 2000 rpm speed.	L6	CO1	6M

UNIT-II

3	a	Explain about the external contracting brakes with neat diagram.	L2	CO2	6M
	b	Explain advantages and working of power steering system with neat sketch.	L2	CO2	6M

OR

4	a	Explain Toe–in, Toe-out, camber angle, caster angle and wheel base with neat diagram.	L2	CO2	6M
	b	Explain Ackerman steering and derive the equation for it.	L1	CO2	6M

UNIT-III

5	a	Explain the construction and working of three point hitch of a tractor system.	L1	CO3	6M
	b	Explain the principle of operation of hydraulic system in tractor.	L2	CO3	6M

OR

6	a	Explain any six terminologies related to the hitching of a tractor.	L3	CO3	6M
	b	Define Pascal's law. Explain different components of the hydraulic system.	L1	CO3	6M

UNIT-IV

7	a	Define tractive efficiency, gross tractive resistance (μg), net traction coefficient(μ), coefficient of rolling resistance (ρ). Derive the relationship between them	L1	CO4	6M
	b	Discuss the methods to increase traction.	L3	CO4	6M

OR

8	a	What are the different types of tyre? Explain them.	L2	CO4	6M
	b	What are the safety devices of tractor? Explain them.	L2	CO4	6M

UNIT-V

9	a	Name the type of tests conducted on the tractor and explain the test at main power take-off.	L4	CO5	6M
	b	Discuss few ergonomic considerations for tractor safety.	L3	CO5	6M

OR

10	a	List some general precautions to be followed in hydraulic and transmission and wheel system.	L1	CO5	6M
	b	Discuss the preparation of test in testing tractor performance.	L3	CO5	6M

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