

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025*****Fourth Semester******Agricultural Engineering*****AI3401 - Tractors and Engine Systems*****Regulations - 2021******Duration : 3 Hrs******Maximum : 100 Marks******PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

Q.No	Questions	BLT	CO	Marks
1.	What is the function of a cylinder head in a tractor engine?	L1	1	2
2.	Name the main components of a crankcase.	L1	1	2
3.	Define the principle of valve timing.	L1	2	2
4.	Tell the role of a governor in an engine.	L1	2	2
5.	Show the difference between sliding mesh and constant mesh gearboxes.	L2	3	2
6.	List any two types of gearboxes used in tractors.	L1	3	2
7.	What is meant by tractive efficiency?	L1	4	2
8.	Interpret the difference between longitudinal and lateral stability.	L2	4	2
9.	Summarize the need for steering mechanisms in power tillers.	L2	5	2
10.	Contrast the key differences between tractor and bulldozer operations.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Explain the construction and function of engine block, cylinder head and crank case.	L2	1	16
	Or			
	b Describe with neat sketches the layout of a typical tractor engine.	L2	1	16
12.	a Explain with neat sketch a complete sequence of operation of valve timing diagram for a four-stroke diesel engine. Indicate overlap, intake and exhaust events.	L3	2	16
	Or			
	b Construct an appropriate cooling and lubrication system for a high-load tractor engine. Justify your selection based on operating	L3	2	16

conditions.

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| 13. | a | Explain a synchromesh gearbox layout with necessary sketch. Show the power flow in all gear stages. | L3 | 3 | 16 |
| | | Or | | | |
| | b | Design a brake system layout for a tractor that frequently operates on slopes. | L3 | 3 | 16 |
| 14. | a | Analyze the impact of operator seat design, vibration isolation, and visibility on productivity and safety. | L4 | 4 | 16 |
| | | Or | | | |
| | b | Compare and contrast longitudinal and lateral stability issues in tractors and their corrective measures. | L4 | 4 | 16 |
| 15. | a | Explain the operation and uses of a bulldozer with suitable sketches. | L3 | 5 | 16 |
| | | Or | | | |
| | b | Explain the complete test procedures which help in formulation of test codes. | L3 | 5 | 16 |