Register Number:……..

B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Fifth Semester

AUTOMOBILE ENGINEERING

U18AUE0014: Off Road Vehicles

COURSE OUTCOMES

CO1: Categories vehicle based on their specifications.

CO2: Infer the different types of subsystem and its functioning used in the construction of special purpose vehicle.

CO3: Classify and observe the application of special purpose vehicles in construction activates.

CO4: Explain various safety systems used in utility and military vehicle.

CO5: Interpret kinematics used in the off road vehicles to understand its operational stability.

CO6: Identify the design requirements of tracked vehicles.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

1.	List down the requirements of off road vehicle?	CO1	[K_1]
2.	List down any two application of multi axle vehicle.	CO1	[K_1]
3.	Mention the classifications of tractors based on their function.	CO2	[K_1]
4.	Name two special implements used with tractors and their applications.	CO2	[K_1]
5.	Compare the single-bucket loader and multi-bucket loader.	CO3	[K_2]
6.	Explain the main use of a tree dozer in earth-moving operations.	CO3	[K_2]
7.	What are the special features of transport vehicles used for long-distance hauling?	CO4	[K_2]
8.	Illustrate the two important design features for safety in mobile cranes.	CO4	[K_3]
9.	How does a hydro-pneumatic suspension system improve ride quality?	CO5	[K_3]
10.	Construct the design features of a water tank in a sprinkler vehicle.	CO5	[K_2]

Answer any FIVE Questions: -

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

11.	a)	Explain the off road vehicle construction layout, drive and capacity based on ARAI.	CO1	[K_2]

	b)	Discuss the engine location and transmission system of multi-axle vehicles.	CO1	[K_2]
12.	a)	Describe the classifications of tractors and the layout of a wheeled tractor with neat sketches.	CO2	[K_2]
	b)	Discuss the hydraulic control system, power take off unit and special implements of the tractors.	CO2	[K_2]
13.	a)	Explain the types of dumpers, their construction details and their operating systems.	CO3	[K_2]
	b)	Explain the types of loaders with neat sketches.	CO3	[K_3]
14.	a)	Explain the various types of dozers and their components.	CO3	[K_2]
	b)	Summarize the operating system of scrappers with a neat sketch.	CO3	[K_2]
15.	a)	Elaborate on the types of oil tanker vehicles based on capacity and size, along with their safety features.	CO4	[K_3]
	b)	Discuss the basic characteristics of truck cranes, as well as their stability and design features.	CO4	[K_3]
16.	a)	Explain the hydro-pneumatic suspension system used in tracked vehicles.	CO6	[K_2]
	b)	Summarize the safety features and safety warning system for dumper.	CO5	[K_2]

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