



B.E DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Sixth Semester

AUTOMOBILE ENGINEERING

U18AUE0014: Off Road Vehicles

COURSE OUTCOMES

- CO1:** Categorise vehicles based on their specification.
- 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 activities.
- CO4:** Explain various safety systems used in Utility and military vehicles.
- 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)

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|-----------------------------------------------------------|-----------------------|
| 1. List the requirements of off road vehicles. | CO1 [K ₁] |
| 2. Classify the off road vehicles. | CO1 [K ₂] |
| 3. How the tractor can be classified? | CO2 [K ₂] |
| 4. Under what principle hydraulic control system works? | CO2 [K ₂] |
| 5. List the applications of shovel. | CO3 [K ₁] |
| 6. What are types of blades used in Dozer? | CO3 [K ₂] |
| 7. Brief about features of military ambulance. | CO4 [K ₃] |
| 8. List safety devices of military utility vehicles. | CO4 [K ₁] |
| 9. Expand OCDB. | CO5 [K ₂] |
| 10. Draw the layout of Hydro-pneumatic suspension System. | CO6 [K ₂] |

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

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| 11. | a) | Draw the layout of off road vehicle | 4 | CO1 | [K ₃] |
| | b) | Classify the Engine location based on drive of a vehicle? Explain any two in detail with neat sketch. | 12 | CO1 | [K ₂] |
| 12. | a) | Explain the layout of Tractor with suitable sketch. | 10 | CO2 | [K ₂] |
| | b) | Classify the steering system in tractor and draw any one steering layout. | 6 | CO2 | [K ₂] |
| 13. | a) | What is power shovel? How it can be classified? Explain in detail about hydraulic power shovel. | 12 | CO3 | [K ₃] |
| | b) | Discuss advantages and limitations of Dragline. | 4 | CO3 | [K ₃] |
| 14. | a) | Articulate the any one type of mobile crane with neat sketch. | 12 | CO4 | [K ₃] |
| | b) | Write the advantages and limitations of Tower cranes. | 4 | CO4 | [K ₃] |
| 15. | a) | Explain Hydraulic power steering system with neat sketch. | 12 | CO5 | [K ₃] |
| | b) | List the types of dump truck. | 4 | CO6 | [K ₁] |
| 16. | a) | Summarize types and parts of Bulldozer. | 8 | CO3 | [K ₂] |
| | b) | Explain in detail about power take off unit in tractor. | 8 | CO2 | [K ₃] |
