VIT
Vellore Institute of Technology

Final Assessment Test – November 2019

Course: MEE1036 - Automotive Chassis
Class NBR(s): 1349
Time: Three Hours

Slot: D1+TD1
Max. Marks: 100

KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION, IS EXAM MALPRACTICE

General Instruction: Relevant sketches should be provided, wherever necessary

Answer any TEN Questions

(10 X 10 = 100 Marks)

1. Propose a suitable layout based on engine location and drive for a heavy duty vehicle and explain its salient features, merits and demerits.
2. List down the different loads acting on automotive frames. Elaborate the material, manufacturing and design prespectives of a ladder type frame.
3. Derive the conditions for true rolling motion of a vehicle equipped with Ackermann steering mechanism.
4. With a neat sketch, explain the construction and working of an integral type power steering system.
5. List down the functions of final drive. Briefly explain their design variants. Also elaborate on the factors that influence the selection of specific design for implementation.
6. With neat layout, explain the type of independent suspension system being used in luxurious vehicles, which also not necessitates headlamp adjustment due to varying loads.
7. Explain the construction and working of a telescopic shock absorber.
8. The wheelbase of a vehicle of weight 20 kN is 4.0 m and its centre of gravity is 1.2 m above the ground. When the vehicle is standing, the front axle shared 7 kN, while the rest of the weight is carried by the rear axle. Determine the load on each axle when both brakes are applied just to the point of skidding; the retardation achieved is 5.0 m/s^2.
9. At least one side of the braking system (either front or rear) must be effective always. Suggest a suitable braking system for the above-said purpose and elaborate on your suggestion with a neat sketch.
10. Explain the construction and working of Hotchkiss drive and torque tube drive.
11. Describe the requirements of an automobile wheel. With a neat sketch, explain the construction of spoke type wheel. Compare the features of wire spoke wheel with that of disc wheel.
12. Explain the construction and working of a unit, which prevents the skidding under severe braking of a vehicle that is traveling on a wet slippery road.

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