



**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

MAKEUP EXAMINATION – JAN 2023

Course Code: MEC1001

Course Name: Fundamentals of Automobile Engineering

Program : B.Tech

Date: 30-JAN-2023

Time: 1.00 PM to 4.00 PM

Max Marks: 100

Weightage: 50%

Instructions:

- (i) Read the all questions carefully and answer accordingly.
- (ii) All questions are compulsory

Part A

Answer all the Questions. Each question carries six marks.

(5Q x 06 M = 30 M)

1. An engine, or motor, is a machine used to change energy into movement that can be used. The energy can be in any form. Common forms of energy used in engines are electricity, chemical (such as petrol or diesel) or heat. List five classifications of IC Engine.
(C.O.No.1) [knowledge]
2. A car transmission, also known as the transmission system, is the mechanism by which power created by the engine is transferred to the driving wheels. This part of the vehicle is the most important in determining the power and functionality of your engine systems. Mention the requirements of transmission system in an automobile.
(C.O.No.2) [knowledge]
3. The job of the lubrication system is to distribute oil to the moving parts to reduce friction between surfaces which rub against each other. The oil then runs down inside the crankcase to the main bearings holding the crankshaft. Oil is picked up and splashed onto the bearings to lubricate these surfaces. Enumerate five objectives of lubrication system in IC Engine.
(C.O.No.3)
[knowledge]
4. Brake is a device for slowing or stopping a vehicle, wheel, shaft, etc, or for keeping vehicle in stationary, especially by means of friction example drum brake, disc brake, hydraulic brake, air brake, hand brake. Write five difference between pneumatic and hydraulic brake.
(C.O.No.3) [knowledge]
5. The suspension system's primary function is to maximize the overall performance of a vehicle as it cruises down the road. The suspension system also helps to absorb bumps in the road and provide a safe and comfortable ride. Mention at least five components of suspension system.
(C.O.No.4)[knowledge]

Part B

Answer all the Questions. Each question carries TEN marks.

(4Qx10M = 40M)

6. A Combustion Chamber is the area within the Cylinder where the fuel/air mix is ignited. As the Piston compresses the fuel/air mix and makes contact with the Spark Plug, the mixture is combusted and pushed out of the Combustion Chamber in the form of energy. Write a brief note on Cylinder, Piston, Crankshaft, and Connecting rod.

(C.O.No.1) [Comprehension]

7. The function and purpose of a clutch is to transmit torque from a rotating driving shaft to a transmission system. Clutches require a mode of actuation in order to break the transmission of torque. Explain the working principle of friction clutch with a schematic diagram.

(C.O.No.2) [Comprehension]

8. The function of any transmission is transferring engine power to the driveshaft and rear wheels (or axle half shafts and front wheels in a front-wheel-drive vehicle). Gears inside the transmission change the vehicle's drive-wheel speed and torque in relation to engine speed and torque. Explain the working principle of Differential with a neat sketch.

(C.O.No.2) [Comprehension]

9. A cooling system works by sending a liquid coolant through passages in the engine block and heads. As the coolant flows through these passages, it picks up heat from the engine. Brief the working principle of Thermosiphon water cooling system with a neat sketch.

(C.O.No.3) [Comprehension]

Part C

Answer all the Questions. Each question carries FIFTEEN marks.

(02Qx15M = 30M)

10. IC engine is a heat engine where the combustion of the air-fuel mixture occurs inside the combustion chamber that produces high temperature and high gas pressure. This gas pressure pushes the piston over a distance and transforms the chemical energy into thermal energy which is used for performing the mechanical work. Explain the working principle of four stroke cycle petrol Engine with a neat sketch.

(C.O.No.3) [Comprehension]

11. The brake system takes the kinetic energy of your moving vehicle and converts it to thermal energy through friction. Usually used for the back wheels (although some vehicles had four-wheel drum brakes years ago), drum brakes feature a hollow cylinder (the drum) attached to the axle that spins with the wheel. Explain the working principle of antilock braking system with a neat sketch.

(C.O.No. 5) [Comprehension]