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6th Sem / Mech, GE, Mech. Engg. (Fabication Tech.)
Subject:- Automobile Engineering

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 Which suspension system component is responsible for absorbing shocks?
a) Coil spring b) Leaf spring
c) Air suspension d) Shock absorber

Q.2 What is the function of a cutout in an alternator system?
a) Regulates voltage
b) Regulates current
c) Controls battery charging
d) Prevents overcharging

Q.3 Which type of gearbox is known for its synchronized gear shifting?
a) Sliding mesh b) constant mesh
c) Synchromesh d) Torque converter

Q.4 What is the purpose of wheel balancing and alignment ?
a) Improving fuel efficiency
b) Enhancing vehicle stability
c) Increasing engine power
d) Reducing tire wear

Q.5 Which steering gear type is commonly associated with rack and pinion systems?
a) Worm and wheel b) Hydraulic
c) Electric d) Centrifugal

Q.6 What is the primary function of a clutch in a vehicle?
a) Control steering
b) Transfer power from engine to wheels
c) Control braking
d) Adjust suspension

Q.7 Which braking system relies on air pressure to engage the brakes?
a) Mechanical brake b) Hydraulic brake
c) Air brake d) Vacuum brake

Q.8 What is the primary purpose of a master cylinder in a braking system?
a) Engage the brakes
b) Control brake fluid pressure
c) Transmit brake force to the wheels
d) Adjust brake pedal pressure

Q.9 Which type of battery requires periodic maintenance such as checking voltage and specific gravity?
a) Lead-acid cell b) Lithium-ion
c) Nickel-metal hydride d) Alkaline

Q.10 Which component regulates the flow of electricity in a dynamo system?
a) Regulators b) Cutout
c) Alternator
d) Integrated starter -alternator

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 What is the purpose of a differential in a vehicle?

Q.12 Define the term ' torque' in the context of automotive engineering.

Q.13 What is the primary function of an air filter in a vehicle?

Q.14 Describe the working principle of a turbocharger.

Q.15 What is the function of a radiator in an automobile.

Q.16 Define hybrid vehicles.
Q.17 What is the purpose of the alternator in a vehicle?
Q.18 Define the term 'suspension' in the context of automotive engineering.
Q.19 What is the function of a steering column in a vehicle?
Q.20 Describe the operation of a hydraulic braking system.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Explain the layout of a chassis in an automobile and its significance in vehicle design and performance.
Q.22 Discuss three types of automobiles manufactured by leading companies, including their manufacturers and the locations of their manufacturing units.
Q.23 Explain the functions of a clutch in an automobile and discuss the constructional details of multi-plate friction clutch with neat diagram.
Q.24 Discuss the functions of a propellers shaft and rear axle in a vehicle, and explain the importance of a universal joint and differential in their operation.
Q.25 Describe the operation of a torque converter and overdrive in a transmission system, and discuss their roles in improving vehicle performance and fuel efficiency.
Q.26 Describe the construction and working principles of worm and wheel, rack and pinion steering gears, and compare their advantages and disadvantages in terms of steering precision and ease of maintenance.
Q.27 Describe the constructional details and working principles of mechanical, hydraulic, air and vacuum brake systems, highlighting their relative merits and demerits in terms of braking efficiency and maintenance requirements.

Q.28 Describe the constructional details and working principles of air brake system, highlighting their relative merits and demerits in terms of braking efficiency and maintenance requirements.
Q.29 Explain the function and construction of coil springs in a vehicle's suspension system. How do different of coil springs, such as variable-rate and linear-rate, affect vehicle performance.
Q.30 Discuss the maintenance procedures for batteries, including the importance of checking voltage and specific gravity.
Q.31 Explain the concept of specific gravity in relation to battery electrolyte. How does temperature affect the specific gravity of electrolyte.
Q.32 Describe the construction and working principles of a cutout used in conjunction with a dynamo. How does cutout prevent overcharging of a battery, and what adjustments can be made to optimize its performance?
Q.33 Explain how an alternator differs from a dynamo in terms of construction and operation.
Q.34 Explain the typical wiring diagram of an automobile incorporating an alternator.
Q.35 Introduce the concept of an Integrated Starter-Alternator (ISA) and its significance in automotive applications.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Explain the construction and working of single plate clutch with the help of neat sketch.
Q.37 Explain the working of Power steering with its line diagram.
Q.38 Explain the construction and working of a differential with a neat sketch. .....