

Subject:- Power transmission and chassis  
controlling system

Paper Code:- 402102

Sets (I) / (II)

Q.1 M.C. Q./ Objectives.

(i) - c, (ii) - b, (iii) - c, (iv) - b, (v) - c,  
(vi) - a, (vii) - a, (viii) - b, (ix) - b, (x) - a.

Q.2. (a) Gear box is required in automobile to provide different rotational speed at the wheel of the vehicles. At the time of starting less speed is required, while at normal running conditions, higher speed is required. During city ride condition, frequent variation in speed of vehicle is required. Gear box provides change in speed by shifting gears.

Q.2. (b) Clutch is used for engaging or disengaging the power supply from engine to gear box. While shifting of gears in gear box disengagement of power is required. But at the time of running of vehicle engagement of power is essential. This is being facilitated by application of clutch by driver.

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Q.2(c) Differential is required to provide different speeds of inner and out wheels at the time of turning of vehicle. It facilitates higher speed to outer wheels and less speed to inner wheels. The power transmitted by propeller shaft from engine and gear box to differential. Differential bifurcate the power available and rotates the outer wheels at high speed and inner wheels at lower speed through its proper mechanism.

Q.3(a) The main function of suspension system is to absorb the jerks from road condition to vehicle and passengers inside it. Its role purpose is keep the vehicle balanced during running conditions. It should properly balance the weight of vehicle itself and the weight of passenger. The improper functioning of suspension system may cause overturning of vehicle and discomfort to passengers.

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Sets (I) / (II)

Q.4 There are mainly three types of braking system as per the different application.

Mechanical braking system requires mechanical steel wires for application of braking. This system is suitable for two wheelers, motorcycles and emergency brakes in automobiles.

Hydraulic braking system is used in cars. In this system brake fluid is kept in master cylinder. By pressing brake pedal, it compresses the fluid toward running wheels and expands brake shoes for application of brakes.

In pneumatic braking system, a compressor is run by engine. It compresses the air and stores in an air tank. This compressed air is used for application of brakes. This system is used in heavy vehicles like trucks and buses. It makes braking possible by applying less efforts.

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Sets (II) ✓

3(b) The important function of steering system is to guide the front wheels of vehicle in proper direction as per requirements of driver and road conditions. The steering system facilitates the driver to move the vehicle as per his desire. It guides the turning of vehicle left or right or go straight. It also ~~provide~~ make provision for returning the front wheels in straight direction when steering wheel is released.

3(c) Since wheels are rotating at higher revolutions per minute, a slight unbalancing in rotating mass may cause unbalancing of the complete vehicle. Hence balancing of wheels are quite essential. Wheel balancing is performed by putting some extra mass on the rim of the wheel. Wheel alignment is also required to keep align all the four wheels of vehicle while running condition.

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Sets (I) / (II)

Q.5. There are different types of faults in gear box.

(i) Difficult to shift gears, requires adjustment in clutch. Due to hard clutch, it becomes difficult in gear shifting.

(ii) gear shifting more noisy.

Gear shifting becomes more noisy when teeth of gears are broken or damaged. It may be also due to improper disengagement of clutch.

(iii) More wear of gear teeth.

It may be due to less availability of lubricating oil inside the gear box. It may also happen due improper meshing of gears in gear box.

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Sets (B) / (II)

Q.6 The important parts of clutch mainly consists of (i) driving member, (ii) a driven member and (iii) an operating member.

Driving member has a flywheel which is mounted on the engine crankshaft. A disc is bolted to flywheel. It is known as pressure plate or driving ~~plate~~ disc. The driven member is a disc called clutch plate. It can slide freely to and fro on the clutch shaft. The operating member consists of a pedal or lever which can be pressed to disengage the driving and driven plate. When the clutch pedal is released the driving and driven plates are engaged, again.