22309

12425

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Figures to the right indicate full marks.

(3) Assume suitable data, if necessary.

(4) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

(a) List any four tools/equipments required to check automobile transmission system components.

(b) List any four materials used for clutch lining.

(c) State any four requirements of automotive clutch.

(d) State purpose of transfer case in all wheel drive vehicles.

(e) State function of universal joint and sliding joint in propeller shaft.

(f) State loads acting on rear axle.

(g) State types of wheels with their application.

2. Attempt any THREE of the following : **12**

(a) Classify vehicle layout with respect to following :

(1) Location of engine

(2) Number of live axle

(3) Application

(4) Drive to the wheels

(b) Classify friction and non-friction type automotive clutches.

(c) Draw power flow diagrams for 1st, 2nd, 3rd and reverse gear of sliding mesh gear box.

(d) Explain construction of Hotchkiss drive with neat sketch.

3. Attempt any THREE of the following : **12**

(a) Draw layout of front engine front wheel drive vehicle and label :

(1) Engine

(2) Clutch

(3) Gear box

(4) Axle

(b) List types of frame with their application. State types of frame sections.

(c) Explain working of Continuously Variable Transmission (CVT) system with neat sketch.

(d) Explain construction and working of torque tube drive with neat sketch.

4. Attempt any THREE of the following : **12**

(a) Explain construction and working of the centrifugal clutch with neat sketch.

(b) Draw neat sketch of clutch plate and label following components :

(1) Torsion spring

(2) Cushioning spring

(3) Clutch facing

(4) Friction lining

(c) State different materials used for clutch lining. State its necessity.

(d) Explain working of torque converter with neat sketch and label :

(1) Turbine

(2) Impeller

(3) Stator

(4) Input and output shaft

(e) In modern automobiles, synchromesh gear box is preferred over constant mesh gear box. Justify its application with illustration.

5. Attempt any TWO of the following : **12**

(a) Explain construction and working of constant mesh gear box with neat sketch. Label following components :

(1) Clutch shaft/Input shaft

(2) Lay shaft/Idle shaft

(3) Main shaft/Output shaft

(4) Dog clutch and Dog teeth

(b) Compare simple Hooke's type universal joint with constant velocity joint and justify their use in relevant transmission system.

(c) Describe a method of lubrication for rear axle assembly of the truck.

6. Attempt any TWO of the following : **12**

(a) Explain construction and working of final drive and differential with neat sketch.

(b) State effects of tyre overinflation and underinflation. Draw tyre rotation pattern for front wheel or rear wheel drive vehicle.

(c) Differentiate between tube tyre and tubeless tyre based on following points (any **four**) :

(1) Weight

(2) Fuel efficiency

(3) Handling and comfort

(4) Puncture repair

(5) Safety

(6) Cost
