

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Winter-2019-20 Examination

Semester: 5**Subject Code: 03102302****Subject Name: Automobile powertrains & systems****Date: 26/11/2019****Time: 10:30am to 01:00pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat and clean diagram.
4. Start new question on new page.

Q.1 Objective Type Questions**(15)**

1. Leaf springs absorb shocks by
 (A) bending (B) twisting (C) compression (D) tension
2. The function of master cylinder in hydraulic brakes is to
 (A) builds up hydraulic pressure to operate the brakes
 (B) maintains constant volume of fluid in the system
 (C) serves as a pump to force air out of the hydraulic system
 (D) All of the above
3. Fluid travels in _____ motion in Torque converter
 (A) Vortex (B) Rotary (C) Vortex & rotary (D) None of the above
4. In the transmission the counter shaft driven gear is meshed with a gear on the
 (A) Main Shaft (B) Clutch Shaft (C) Ideal Shaft (D) Output Shaft
5. Following is the types of Continuous variable transmission.
 (A) Pully Based (B) Toroidal (C) Hydrostatic (D) All of the Above
6. What is transfer case?
7. What is caster angle?
8. What is a steering ratio?
9. The pinion meshes with the ring gear below the center line and is at a slight angle(Less than 90°) in hypoid gear final drive.[True or False]
10. The reduction or gear ratio of the final drive is determined by dividing the number of teeth on the ring gear by the number of teeth on the pinion gear. [True or False]
11. While checking Shock Absorber condition by bounce test, Vehicle rebounds count should be more than two. [True or False]
12. _____type of gear train is used in Automobile Manual Gearbox.
13. The kinetic energy due to motion of the vehicle is dissipated in the form of _____ energy due to friction between moving parts (wheel drum) and stationary parts of vehicle (brake shoes)
14. The process of removing air from the brake system is known as _____
15. The power train includes the Engine, _____, clutch, transmission, propeller shaft, and differential.

Q.2 Answer the following questions. (Attempt any three)**(15)**

- A) List out the Automobile layout, Describes where on the vehicle the Engine and drive wheels are found.
- B) Give detailed classification of automobile brakes.
- C) With neat sketch explain Multi-plate clutch.
- D) List different types of steering gearbox and explain any one steering gearbox.

Q.3 A) Explain construction, working and arrangement of Constant mesh gearbox with the help of neat sketch.**(07)**

B) Explain construction and working of Master cylinder

(08)**OR**

B) Explain with neat sketch the rear axle shaft supporting of 1. Semi floating 2. full floating

(08)

Q.4 A) Why do we require differential? Describe its construction and working with neat schematic diagram. **(07)**

OR

A) Write a short note on fluid coupling with neat schematic diagram. Write advantages of fluid coupling. **(07)**

B) What is an independent suspension? Enlist basic classification of independent suspension and Explain the double wishbone type of suspension. **(08)**