

Student Exam No: \_\_\_\_\_

**GANPAT UNIVERSITY**  
**B.TECH SEM. VIII - MECHANICAL ENGINEERING**  
**REGULAR EXAMINATION MAY/JUNE - 2012**  
**ME: 805 AUTOMOBILE ENGINEERING**

**Time: 3 Hours**

**Total Marks: 70**

**Instructions:**

- 1). All questions are **compulsory**.
- 2). Figures to the **right** indicate full marks.
- 3). Answers to the two sections must be written in **separate** answer books.
- 4). Assume all necessary data.

**SECTION-1**

**Que:-1**

- (A) A motor car which weights 18000 N including the four road wheels each of which has an effective diameter of 0.66 m, a radius of gyration of 0.28 m and a weight of 296 N has an engine developing 66 kW at 2500 rpm. The part which rotate at engine speed weight 1069 N, with a radius of gyration of 0.115 m. The transmission efficiency is 90% and the total road and air resistance at this engine speed in top gear of 3.85:1 is 875 N on level. Calculate the acceleration in  $m/s^2$ , under those condition and assuming the acceleration to be uniform the time required to increase the speed by 32 km/hr. [08]
- (B) Write the function of clutch and give classification of clutches. [04]

**OR**

**Que:-1**

- (A) A four speed gearbox is to be constructed for providing the ratio of 1.0, 1.46, 2.28 and 3.93 to 1 as nearly as possible. The diametral pitch of each gear is 3.25 mm and the smallest pinion is to have at least 15 teeth. Determine the suitable number of teeth of different gears. [08]
- (B) Explain wind resistance and factor affecting the wind resistance. [04]

**Que:-2**

- (A) Draw layout of an automobile chassis and Explain its types. [06]
- (B) What are the advantages and disadvantages of a passenger car with the engine mounted at the front and drive to front wheels. [05]

**OR**

**Que:-2**

- (A) Enlist the types of Steering gears. Explain any two. [06]
- (B) Draw neat sketch of Semi centrifugal clutch. [05]

- Que:-3 Attempt any three:** [12]
- (A) Explain Types of vehicle body used in Automobile.
  - (B) Give short note on "Torque converter".
  - (C) Explain with diagram working of Constant mesh gearbox.
  - (D) Draw & Explain Types of Stub Axles.

**SECTION-II**

- Que:-4**
- (A) Enlist the various battery charging methods. Explain any one. [06]
  - (B) Explain Baffle type and wave cancellation type mufflers in exhaust system. [06]

OR

- Que:-4**
- (A) Draw the circuit & Explain following: [06]
    - (i) Balancing coil type Temperature Gauge
    - (ii) Electrical Speedometer
  - (B) Write short note on voltage and current regulator. [06]

- Que:-5**
- (A) Give short note on "Catalytic converter". [06]
  - (B) Give short note on Exhaust gas recirculation method. [05]

OR

- Que:-5**
- (A) Classification of Tools & Equipment. [06]
  - (B) Write down the procedure of P.U.C. certification. [05]

- Que:-6 Attempt any three:** [12]
- (A) Explain the Balancing coil type fuel gauge with circuit.
  - (B) Discuss the resonance type muffler in exhaust system.
  - (C) Write short note on "Battery Maintenance".
  - (D) Discuss the air braking system.

**END OF PAPER**