Student Exam No: _____

GANPAT UNIVERSITY

B.TECH SEM. VIII - MECHANICAL ENGINEERING
REGULAR EXAMINATION MAY/JUNE - 2013
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 **Attempt All**

(A) A racing car weighs 14224.5 N including the four road wheels, each of which has an effective diameter of .66 m, radius of gyration of 0.275m and weight 267.3 N. The engine develops 221 kW at 5000 rpm. The parts rotating at engine speed weigh 890 n with radius of gyration of 0.107 m, the transmission efficiency is 90% and the total load and air resistance at this speed in top gear of 4.2:1 is 1324.5.Calculate the acceleration in km/h/s under this condition. **[08]**

(B) Explain Gradability and Acceleration in Road performance. **[04]**

OR

Que:-1 **Attempt All**

(A) A passenger car weighs 15990N including the four road wheels which have an effective diameter of 0.68 m, radius of gyration of 0.28 m and a weight of 245N each. The engine develops 92kW at 3000 rpm and the parts rotating at engine speed weigh 711 n with radius of gyration of 0.095 m. The top gear transmission efficiency is 90% and the axle ratio is 3.34:1. The road and air resistance in top gear at an engine speed of 3000 rpm is up to 932 N. Calculate the acceleration in m/s^2 possible under these conditions. Also calculate the engine BP required to give an acceleration of 4.8 km/h/s at the above engine speed in top gear. **[08]**

(B) Give concept of distribution of weight for three- wheeled vehicle. **[04]**

Que:-2 **Attempt All**

(A) Write short note on Chassis operating conditions. **[06]**

(B) Enlist the chassis frame types. Draw any two of them. **[05]**

OR

Que:-2 **Attempt All**

(A) Draw neat sketch of Centrifugal clutch. **[05]**

(B) Draw & Explain Constant mesh gearbox. **[06]**

Que:-3 **Attempt Any three:** **[12]**

(A) Write the function of following component
   (i) Universal joint (ii) Slip joint (iii) Final drive (iv) Constant velocity joint
(B) Define front suspension system. Draw MacPherson suspension system.
(C) Explain fluid flywheel used in modern automobile.
(D) Explain types of rear axles used in Automobile.

SECTION-II

Que:-4 **Attempt All**

(A) Give short note on Battery charging Methods. **[06]**
(B) Explain construction details of Battery used in recent Automobiles. **[06]**

OR

Que:-4 **Attempt All**

(A) Enlist the various cranking motor drives. Explain bendix drive and Folo-thru drive system in detail. **[06]**
(B) Draw the circuit and Explain following: **[06]**
   (i) Voltage regulator
   (ii) Current regulator
   (iii) Cut-out relay

Que:-5 **Attempt All**

(A) Define cornering force and slip angle. Explain Oversteer and Under steer geometry with diagram **[05]**
(B) Define following terms with diagram **[06]**
(i) Caster (ii) Camber (iii) Toe in (iv) Toe out (v) Kingpin inclination

OR

Que:-5 **Attempt All**

(A) Explain 3-way catalytic converter used as pollution control equipment. **[06]**
(B) Enlist different garaging equipments and tools and write their purpose. **[05]**

Que:-6 **Attempt Any three.** **[12]**

(A) Give classification of brakes and Explain Disc caliper type braking system.
(B) Give Euro norms chart for petrol and diesel vehicle.
(C) Discuss the baffle type muffler in exhaust system.
(D) Explain the Thermostatic type temperature gauge with circuit.

END OF PAPER

BEST OF LUCK