



COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Government of Maharashtra.)
SHIVAJI NAGAR, PUNE - 411 005

END Semester Examination

Automotive Design (AT 613)

Course: M.Tech

Branch: Automotive Technology

Semester: Sem III

Max.Marks:60

Year: 2014-2015

27 NOV 2014

Duration: 3 hrs

Time :- 2 to 5.00 p

Attempt any six questions.

- Q.1(a)What are the criteria for deciding number of cylinders for an automobile engine ? (5)
(b)What is the role of turbulence in automobile engines ? (5)
- Q.2(a)What is piston pin offset ? How it reduces piston slap ? (5)
(b) What is piston ring collapse ? (5)
- Q.3(a) Explain the nature of stresses developed in piston pin. (5)
(b)What are the basic requirements of inlet valve, exhaust valve and valve seat materials ? (5)
- Q.4(a)What are the proportions of I-section used for connecting rod shank ? Why ? (4)
(b)What are the causes of different stresses developed in connecting rod ? (6)
- Q.5(a)What are the functions of engine cylinder head ? (3)
(b)Explain the nature of different stresses developed in engine crank shaft due to radial component of force developed by gas pressure and inertia of engine parts . (7)
- Q.6(a)When single-plate dry clutch and multi-plate clutch are used in automobile vehicles? (5)
(b)What is 'quieting ramp' ? (5)

Q.7 Find suitable gear ratios for a vehicle having following specifications.

(10)

GLW = 12 kN

Maximum speed of fully loaded vehicle on level road = 110 km/hr

Rated engine speed = 5200 rpm

Tyre rolling radius = 30 cm

Maximum road gradient = 15°

Engine develops its maximum torque at 3200 rpm and engine power at the speed is 15 kW

Transmission efficiency in top gear is 92% and in first gear is 87%