

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 2

Total No. of Questions : 09

B.Tech.(AE) (Sem.-6th)
AUTOMOTIVE DESIGN - II
Subject Code : AE-302
Paper ID : [A0719]

Time : 4 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students has to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students has to attempt any **TWO** questions.

SECTION-A

1. Answer briefly :

- a) Why the face of the pulley is crowned?
- b) What is meant by sprocket for a chain?
- c) What is the material used for leaf spring?
- d) What do you mean by interference in involute gears?
- e) Name various forces acting on worm and worm gears.
- f) How bearings are classified?
- g) What is the function of connecting rod in an internal combustion engine?
- h) Why the area of inlet valve port is made larger than the area of exhaust valve port?
- i) How are timing gears lubricated?
- j) What is the material for crank shaft?

SECTION-B

2. An engine shaft running at 120 rpm is required to drive a machine shaft by means of a belt. The pulley on the engine shaft is of 2 m diameter and that of the machine shaft is 1 m diameter, if the belt thickness is 5 mm, determine the speed of the machine shaft, when there is no slip.
3. Discuss surging phenomenon in springs.
4. What conditions must be satisfied in order that a pair of spur gears may have a constant velocity ratio? Discuss.
5. Explain the various stresses induced in connecting rod.
6. Discuss design aspects of intake manifolds.

SECTION-C

7. A 80 mm long journal bearing supports a load of 2800 N on a 50 mm diameter shaft. The bearing has a radial clearance of 0.05 mm and the viscosity of the oil is 0.021 kg/m-s at the operating temperature. If the bearing is capable of dissipating 80 J/s, determine the maximum safe speed.
8. A four stroke internal combustion engine has the following specifications: Brake power = 7.5 kW, Speed = 1000 rpm, Indicated mean effective pressure = 0.35 N/mm², Minimum gas pressure = 3.5 N/mm², Mechanical efficiency = 80%. Determine : The dimensions of the cylinder, if the length of stroke is 1.4 times the bore of the cylinder, and Wall thickness of the cylinder, if the hoop stress is 35 MPa.
9. Discuss the procedure of design of lubrication system for crank shaft.