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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(AE) (2011 onwards) (Sem.-6)
COMPUTER AIDED AUTOMOTIVE DESIGN

Subject Code : BTAE-601

Paper ID : [A2380]

Time : 3 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. Write briefly :

- (a) State law of gearing.
- (b) What is engine tuning?
- (c) How the lubrication of gear box is done?
- (d) Differentiate acceleration and gradability.
- (e) Discuss in gradient resistance.
- (f) Explain king pin bearing.
- (g) Explain in brief pressure and stresses in crankshaft.
- (h) What is slip in belt?
- (i) State gear ratio.
- (j) Describe king pin bearing.

SECTION B

2. A flat belt is required to transmit 35 kW from a pulley of 1.5 m effective diameter running at speed of 300 rpm. The angle of contact is spread over $11/24$ of the circumference. Coefficient of friction for the surface is 0.25. Determine the maximum tension in the belt.

3. Explain in detail valve gear mechanism.
4. Write a note on moments and stresses in different sections of front axle.
5. Describe in brief torque and mechanical efficiency at different vehicle speeds.
6. Distinguish between flat belt and V belt on the basis of power transmitted, space, grip and application.

SECTION C

7. An open belt drive connects two pulleys 1.2 and 0.5 m diameter on parallel shafts 3.6 m apart. The belt has a mass of 0.9 kg/m length, and maximum tension in it is not to exceed 2.0 kN. The 1.2 m pulley, which is the driver, runs at 200 r.p.m. Due to belt slip on one of the pulleys, the velocity of driven shaft is only 450 r.p.m. Calculate torque on each of two shafts, the power transmitted, and power lost in friction. $\mu=0.25$. What is efficiency of the drive?
8. Write short notes on :
 - (a) Wheel spindle bearing
 - (b) Power and torque curve
9. Explain in brief “*Final drive design consideration in different types of propeller shafts*”. Also discuss in detail final drive and rear axle.