

Sem - V
Mechanical/TOM-2
18/11/2014

(OLD COURSE) Q.P. Code : 11970

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is compulsory.
(2) Attempts any four from remaining six questions.
(3) Assume suitable data if necessary.
(4) Figures to the right indicate full marks.

1 Explain any four :-

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- (a) Internal Expanding brake
 - (b) Importance of pressure angle of a cam
 - (c) Centrifugal clutch
 - (d) Gear Train Classification
 - (e) Limitation of Watt Governor.
2. (a) Derive an expression for Gyroscopic acceleration from first principle. 6
(b) Explain "Cam Terminology". 4
(c) A multiplate clutch transmits 55KW of power at 1800 rpm. the co-efficient of friction is 0.1. The inner radius is 80mm and is 0.65 times the outer radius. If the intensity of pressure is not to exceed 160KN/m^2 , determine the number of pair of friction surfaces needed to transmit the required torque. 10
3. (a) The controlling force curve of a spring controlled governor is straight line. The weight of each ball is 40N and extreme radii of rotation are 120mm and 180mm. If the values of the controlling force at the above radii be respectively 200N and 360N and the friction of the mechanism is equivalent to 2N at each ball, find. 10
- (i) The extreme equilibrium speed of Governor.
 - (ii) Equilibrium speed
 - (iii) The co-efficient of insensitiveness at radius of 150mm
- (b) Derive an expression for road reaction in case of a four wheeler with brakes applied on : 10
- (i) The rear wheels only
 - (ii) The front wheels only
 - (iii) All the four wheels
4. (a) In epicyclic gear train is composed of a fixed annular wheel A having 150 teeth. Meshing with A is a wheel B, which drives wheel D through an idler wheel C, D being concentric with A. Wheels B and C are carried on an arm which revolves clockwise at 100 rpm about the axis of A and D. If the wheel B and D have 25 teeth and 40 teeth respectively. Find the number of teeth of gear C and the speed sense of rotation of gear C. 10

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