

S.B. Roll No.....

THEORY OF MACHINES

5th Exam/Mech/Prod/AERONAUTICAL/AEROSPACE/5349/0055/Nov' 2016

Duration : 3 hrs

M. Marks 75

SECTION – A

Q1. Complete the following

1.5x10=15

- a) Elliptical trammel is an inversion of _____ slider crank chain.
- b) In engine stroke length is _____ crank radius.
- c) Dynamic friction is always _____ than static friction.
- d) For low speeds _____ governor is suitable.
- e) A triangular prism used to raise load is called _____.
- f) Lower pair have _____ contact.
- g) Sprockets are employed in _____ drives.
- h) In _____ gear train axis of driver and follower gear are fixed.
- i) Flywheels are mostly made of _____.
- j) Balancing of _____ as well as _____ parts is complete balancing.

SECTION – B

Q2. Attempt any five questions

6x5=30

- a) Why balancing is important and how it is done?
- b) With sketch explain roller bearing and its applications.
- c) Why square thread is better in lifting than 'V' thread?
- d) Explain the turning moment diagram for single cylinder double acting steam engine.
- e) What is (i) initial tension (ii) centrifugal tension (iii) tight and slack side tension in flat belting?
- f) Describe with sketch longitudinal, transverse, torsional vibrations.
- g) Explain the construction and working of PROELL or HARTNELL governor.

SECTION -C

Q3. Attempt any two Questions.

2x15=30

- a) Analysis of a flywheel says four disturbing masses 200,300,240,260 kg are present at 200,150,250,300 mm radii of rotation. Successive angles between them is 45,75,135 degrees respectively. Ascertain the value and the position of balancing mass to be put at 200 mm radius. Follow the analytical method.
- b) (i) Discuss with sketch:- governor height, equilibrium speed, controlling force of governor and centrifugal force of governor.
(ii) A watt governor rotating at 100 rpm. Find the height and change in Height if speed is increased by 2%.
- c) Two spur gears having 24 and 30 teeth form an epicyclic gear train by being connected by an arm rotating at 100 rpm in clockwise direction. Calculate speed of 30 teeth gear when the other is fixed. Also its speed when 24 teeth gear rotate at 200 rpm in anti-clockwise direction.