Q.23 Enlist various rope materials with their applications.
Q.24 Explain slip and creep with reference to belts.
Q.25 Explain the condition for maximum Horse power of the pulley.
Q.26 Describe various types of gears.
Q.27 Differentiate between the types of flywheels.
Q.28 Write short note on turning moment diagram.
Q.29 Write short note on types of cams.
Q.30 Describe the causes and effects of vibrations.
Q.31 Write a short note on balancing of various masses rotating in different planes.
Q.32 Explain four bar chain.
Q.33 Explain displacement diagram.
Q.34 Derive an expression for ratio of driving tensions of pulleys.
Q.35 Derive an expression for a compound gear train.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 An engine flywheel has a mass of 5 tonnes and the radius of gyration is 1.50m. If the maximum and minimum speed are 130 rpm and 120 rpm. Find the maximum fluctuation of energy.
Q.37 Draw a displacement diagram of cam with base circle 60mm, having ascent of 20mm with uniform velocity for 90 degree, dwell for 60 degree, then descent for 60degree with SHM and the rest dwell.
Q.38 Write short note on
a) Whit worth quick return motion mechanism
b) Beam Engine

Roll No. .....

6th Sem / Branch : Mechtronics
Sub.: Mechanisms & Machines

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 If he shortest link is fixed, what type of mechanism is obtained:
a) Crank level mechanism
b) Linkage is not planar
c) Double crank mechanism
d) Double rocker mechanism

Q.2 The number of links in a pantograph mechanisms is equal to
a) 2 b) 3
c) 4 d) 5

Q.3 The method of obtaining different mechanisms by fixing is turn different links in a kinematic chain, is known as
a) Inversion b) Structure
c) Mechanism d) Machines

Q.4 Which of the following has positive drive
a) Belt drive b) Chain drive
c) Rope drive d) Gear drive

Q.5 Diameter of a gear is 10cm and no of teeth is 25. The module of the gear is

a) 2.5 b) 4
c) 0.2 d) 2

Q.6 A circular bar moving in a round hole is an example of

a) Incompletely constrained motion
b) Partially constrained motion
c) Completely constrained motion
d) None of the above

Q.7 In a turning moment, diagram, the variations of energy above and below the mean resisting torque line is called

a) Fluctuation of speed
b) Fluctuation of energy
c) Mean torque
d) Co-efficient of fluctuation of energy

Q.8 In order to balance the reciprocating masses

a) Primary forces and couples must be balanced
b) Secondary forces and couples must be balanced
c) Both A & B
d) None of the above

Q.9 Torsional vibrations are said to occur when the particles of a body moves

a) Perpendicular to its axis
b) Parallel to its axis
c) In a circle about its axis
d) None of these

Q.10 The smaller and generally the driving gear of a pair of mated gear is called

a) Rack b) Pinion
c) Module d) Pitch

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 V-belts are belts with a _____ cross-section.

Q.12 Flywheels store energy in the form of the angular momentum of a spinning mass, called a _____.

Q.13 The cam is the _____ member, and the follower is the _____ member.

Q.14 _____ converts vibrational energy into heat, eliminating the vibrational energy through friction.

Q.15 The ratio of number of teeth on the follower to the number of teeth on the driver gear is called_____.

Q.16 _____ is done to prevent the slipping off the belt from the pulley.

Q.17 Roller chain passes over a _____gear, with the teeth of the gear meshing with the holes in the links of the chain.

Q.18 Expand SHM.

Q.19 _____ is an inertial tension in belts that acts outwardly away from the center of rotation.

Q.20 _____ refers to the process of fixing the links of a kinematic chain one at a time in order to obtain alternative mechanisms.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Write short note on any one slider crank inversion.

Q.22 Differentiate between lower pairs and higher pairs with examples.