Q.28 Explain the principle, working and application of a flywheel.

Q.29 Describe various types of followers.

Q.30 Differentiate between fluctuation of speed and fluctuation of energy.

Q.31 Explain the types of vibrations.

Q.32 What do you mean by crowning of pulley? Why it is done?

Q.33 Derive an expression for power transmitted in flat belts.

Q.34 What are the remedies for controlling vibrations.

Q.35 Write short note on balancing of rotating masses in single plane.

SECTION-D

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

Q.36 Draw a displacement diagram of cam with base circle 50mm, having ascent of 20mm with SHM for 60degree, dwell for 30 degree, then descent for 90 degree with uniform velocity and rest dwell.

Q.37 Write short note on

a) Pantograph

b) Oldhams coupling

Q.38 An engine flywheel has a mass of 6 tonnes and the radius of gyration is 1.75m. If the maximum and minimum speed are 120 rpm and 115 rpm. Find the maximum fluctuation of energy.

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6th Sem / Branch : Mechatronics

Subject:- Mechanisms and Machines

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Which one is the inversion of double slider crank chain?

a) Oldhams coupling b) Pendulum pump

c) Beam engine d) None of the above

Q.2 The power transmitted by belt drive is designed on the basis of

a) Angle of contact on larger pulley

b) Angle of contact on smaller pulley

c) Average angle of contact of the two pulleys

d) None of the above

Q.3 In lower pair, there is

a) A surface contact b) A point contact

c) A line contact d) None of the above

Q.4 The vibration in which amplitude goes on reducing over every cycle of vibration, then the vibration is known as

a) Forced b) Damped

c) Free d) None of the above

Q.5 The gear used to connect two intersecting co-planer shafts are

a) Straight spur gear b) Straight bevel gear
c) Spiral gear d) None of the above

Q.6 Unbalance in rotating parts may be due to

a) Unmachined portion of casting
b) Lack of homogeneity in the material
c) Non symmetry of parts
d) All of the above

Q.7 The equation of rotation is _____

a) $T = I w$ b) $T = r w$
c) $T = m * k * k$ d) $T = I \alpha$

Q.8 A railway bridge is a

a) Mechanism b) Structure
c) Machine d) All of the above

Q.9 The pulley and the belt drive act as

a) Cylindrical pair b) Turning pair
c) Rolling pair d) None of the above

Q.10 The product of circular pitch and diametrical pitch is _____

a) $2 * n$ b) n
c) $1 / n$ d) None of the above

SECTION-B

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

Q.11 A _____ is one in which there occurs a surface or area contact between two members.

Q.12 Forward motion of the driver without carrying the belt with it, called _____ of the belt.

Q.13 A change in belt tension thereby causing the elastic belt to extend and contract is known as _____

Q.14 A graph which plots the movement of a cam follower against time is called _____

Q.15 Give two causes of vibrations.

Q.16 What is the formula for ratio of driving tensions of pulleys.

Q.17 The motion during the follower is at rest is called ____

Q.18 Velocity ratio of gear train is equal to _____

Q.19 Unbalance forces in machines cause _____

Q.20 A vibration in which the element moves to and fro in a direction perpendicular to the direction of the advance of the wave is called _____

SECTION-C

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

Q.21 Write short note on inversions.

Q.22 Explain double slider crank chain mechanism.

Q.23 Describe various types of belt drives.

Q.24 Explain the velocity ratio and crowning with reference to the pulleys.

Q.25 What do you mean by centrifugal tension and its effects?

Q.26 Explain various types of chain drive and their applications.

Q.27 Describe a compound gear train with its terminology.