Q.31 Find the power transmitted by a pulley if a shaft rotating at 300rpm and transmitting the torque of 60 NM? (CO-4)

Q.32 A flywheel having a mass of 4 tones has a radius of gyration of 2m. What amount of energy this flywheel will store in it in changing its speed from 240 to 250 rpm? (CO-4)

Q.33 Draw a labeled diagram of an open belt drive and write its formula for finding the belt length? (CO-2)

Q.34 Briefly describe working of universal balancing machine? (CO-2)

Q.35 Classify flywheel, also write their uses?

SECTION-D

Note : Long Answer type question. Attempt any two questions. (2x10=20)

Q.36 Explain construction and working of Davis steering mechanism? (CO-2)

Q.37 What are the various types of constrained motions? (CO-2)

Q.38 A shaft carries four masses A, B, C and D of 5kg, 10kg, 15kg and 20kg respectively. The masses rotate in same plane having the radii of 20, 40, 30 and 25 m respectively. The angular position of masses B, C, and D are 60^0, 120^0, 135^0 from the mass A. Determine the magnitude and of the balancing mass at a radius of 100 mm? (CO-4)

Roll No.....

4th Sem./ Automobile Engineering
Subject : Mechanics of Vehicles

Time : 3 Hrs. **M.M. : 100**

SECTION-A

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

Q.1 _____ is the study to know the displacement, velocity and acceleration of a part of the machine.

A) Kinematics b) Statics
c) Kinetics d) All of the above

Q.2 In Theory of machines _____ deals with various forces when the body is stationary.

a) Kinematics b) Kinetics
c) Statics d) All of the above

Q.3 A kinematic pair consists of

a) Two links b) Three links
c) Four links d) Any number of links

Q.4 which of the following forms a higher pair?

a) Sliding pair b) Turning pair
c) Rolling pair d) Turning pair

Q.5 A lower pair has

A) Surface contact b) Line contact
c) Point contact d) All of the above

Q.6 A rigid body in space has _____ degrees of freedom.

a) Two b) Three
c) Six d) Eight

Q.7 The crank and lever mechanism will produce

a) Translating motion b) Rotary motion
c) Oscillating motion d) Zig-Zag motion

Q.8 Which of the following is an inversion of single slider crank chain?

A) Beam engine
b) Reciprocating engine
c) Scotch yoke mechanism
d) Elliptical trammel

Q.9 If crank is fixed in single slider crank chain, we get

a) Rotary engine b) Beam engine
c) Reciprocating engine d) Oscillating engine

Q.10 Which of the following is not a type of constrained motions?

a) Completely b) Incompletely
c) Successfully d) Unsuccessfully

SECTION-B

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

Q.11 Name any one type of balancing machine?

Q.12 What is the function of braking?

Q.13 Define stopping distance?

Q.14 Define stopping time?

Q.15 Name any one type of steering mechanism?

Q.16 Define rolling resistance?

Q.17 Give full form of FWD?

Q.18 What is the function of Hook joint?

Q.19 Name any one type of gear box?

Q.20 Give one example of higher pair?

SECTION-C

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

Q.21 Describe any two inversions of four bar chain? (CO-2)

Q.22 Differentiate between static and dynamic balancing machine? (CO-2)

Q.23 Describe double slider crank chain mechanism with neat diagram? (CO-2)

Q.24 What is the effect of centrifugal force on vehicle stability? (CO-3)

Q.25 Classify vibrations? (CO-4)

Q.26 What are the causes of vibration in rotating bodies? (CO-3)

Q.27 Draw and interpret fluctuation of energy of a flywheel? (CO-4)

Q.28 Differentiate between rear wheel drive and four wheel drive? (CO-2)

Q.29 Explain working of epicyclic gear box with neat diagram?

Q.30 Write three advantages and three disadvantages of a V belt drive over flat belt drive? (CO-2)