Q.24 Explain the turning moment diagram with reference to internal combustion engine.
Q.25 Differentiate between open & crossed belt drives.
Q.26 Differentiate between belt drive and chain drive.
Q.27 Enlist the factors affecting rolling resistance.
Q.28 What is tractive effort? Give its significance.
Q.29 Write a short note on vehicle stability on banked road and unbanked road.
Q.30 Name any two commonly used steering mechanisms. Also state which is preferred?
Q.31 Enlist the factors on which the stopping distance and stopping time of vehicle depends.
Q.32 Differentiate between static & dynamic balancing.
Q.33 Write a short note on dynamic balancing.
Q.34 What are the various types of free vibration.
Q.35 List five harmful effects of vibrations on machines.

SECTION-D

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

Q.36 A fly wheel having a mass of 4000 kg has a radius of 2m. What amount of energy this flywheel will store in it in changing it's speed from 460 rpm to 462 rpm?
Q.37 Discuss in details any two inversions of a single slider crank chain mechanism with the help of neat sketches.
Q.38 Explain the method of balancing of several masses rotating in same plane by a single mass in the same plane.

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4th Sem / Auto.
Subject:- Mechanics of Vehicles

Time : 3Hrs. M.M. : 100

SECTION-A

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

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

Q.2 The pair is known as a higher pair, when the relative motion between the elements of a pair is
a) turning only
b) sliding only
c) rolling only
d) partly turning and partly sliding

Q.3 In a four stroke I.C. engine, the turning moment during the compression stroke is
a) Positive throughout
b) negative throughout
c) positive during major portion of the stroke
d) negative during major portion of the stroke

Q.4 Hard steering is a result of
a) very loose steering linkage
b) worn out steering linkage
c) too loose front wheel bearings.
d) incorrect lubricant

Q.5 The velocity ratio of two pulleys connected by an open belt or crossed belt is
a) directly proportional of their diameters
b) inversely proportional to their diameters
c) directly proportional to the square of their diameters
d) inversely proportional to the square of their diameters

Q.6 The V-belts are particularly suitable for ____drives.
a) short b) long
c) medium d) none of the mentioned

Q.7 When the axes of first and last gear are co-axial, then gear train is known as
a) Simple gear train b) compound gear train
c) reverted gear train d) epicyclic gear train

Q.8 What will happen if the traction force is negative?
a) The vehicle will accelerate
b) The vehicle will decelerate
c) The vehicle will first accelerate and then decelerate
d) The vehicle will run at a constant speed

Q.9 On what principle does the braking system in the car work?
a) Frictional force b) Gravitational force
c) Magnetic force d) Electric force

Q.10 When a body is subjected to transverse vibrations, the stress induced in a body will be
a) shear stress b) tensile stress
c) compressive stress d) none of the mentioned

SECTION-B

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

Q.11 How a kinematic chain is converted into a mechanism?

Q.12 What is degree of freedom?

Q.13 What is turning moment diagram?

Q.14 State law of belting.

Q.15 Define inertia load.

Q.16 Describe vehicle stability.

Q.17 Define steering angle.

Q.18 Define reference plane.

Q.19 Write types of balancing.

Q.20 Define resonance.

SECTION-C

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

Q.21 Differentiate between machine and structure.

Q.22 Explain slider crank mechanism.

Q.23 What is Hook's joint? Give, its importance.