Q.29 What is clutch? Why multi-plate clutches are preferred in automobiles?
Q.30 Discuss the function of Universal joint?
Q.31 What is Pneumatic and Hydraulic Braking Systems in a Automobile?
Q.32 What are the causes of vibrations?
Q.33 Explain briefly, the longitudinal, transverse and torsional vibrations.
Q.34 What is Dynamic balance? Write the different conditions which must be satisfied for Dynamic balance.
Q.35 High rotational speeds of the machines have increased the need of balancing. why?

SECTION-D

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

Q.36 Derive an expression for thermal efficiency of Diesel cycle.
Q.37 The mass of flywheel of an engine is 6.5 tones and the radius of gyration is 1.8 meters. It is found from turning moment diagram that the fluctuation of energy is 56 kN-m. If the mean speed of the engine is 120rpm, find the maximum and minimum speeds.
Q.38 Write the remedial measures for minimizing the vibrations.

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4th Sem / T & D Prod.
Subject:- Basics of Mechanical Engineering

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Heat does not spontaneously flow from a colder body to a hotter one. Which of the following thermodynamics law states this?
a) Zeroth law of thermodynamics
b) First law of thermodynamics
c) Second law of thermodynamics
d) Third law of thermodynamics

Q.2 In a four-stroke internal combustion engine,
a) The piston does four complete strokes within cylinder
b) For each cycle, the crankshaft completes two revolutions
c) Both of the mentioned
d) None of the mentioned

Q.3 The ratio of maximum fluctuation of speed to the mean speed is called
a) Fluctuation of speed
b) Maximum fluctuation of speed
c) Coefficient of fluctuation of speed
d) None of the above

Q.4 The point on the cam with the maximum pressure angle is known as the

a) Cam center b) Pitch point
c) Trace point d) Prime point

Q.5 Which one of the following drives is used for transmitting power without slip?

a) Belt Drive b) Rope drive
c) Cone pulleys d) Chain Drives

Q.6 Which of the following is correct for the speed ratio of a gear train?

a) Speed of driver/ speed of driven
b) Speed of driven/Speed of driver
c) Number of teeth on driver/Number of teeth on driven
d) None of these

Q.7 The following is also known as flywheel or coupling

a) Fluid clutch b) Cone clutch
c) Centrifugal clutch d) All of the above

Q.8 The energy absorbs by brake is always kinetic:

a) Kinetic or potential b) Potential
c) Both (a) & (b) d) Strain Energy

Q.9 When there is a reduction in amplitude over every cycle of vibration, then the body is said to have

a) Free vibration b) Forced vibration
c) Damped vibration d) None of the above

Q.10 Balancing of single rotating mass by balancing masses in same plane and in different planes cannot take place

a) True b) False

SECTION-B

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

Q.11 Thermodynamics
Q.12 Four stroke engine
Q.13 Mass moment of inertia
Q.14 Cylindrical cam
Q.15 Pressure angle
Q.16 Slip
Q.17 Gear train
Q.18 Dynamic friction
Q.19 Static balance
Q.20 Damped vibration

SECTION-C

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

Q.21 What is an I.C engine? How these engines can be classified?
Q.22 Explain Zeroth law of Thermodynamics.
Q.23 What is Indicated power and Brake power?
Q.24 What is the function of flywheel? Write its various uses.
Q.25 Derive an expression for maximum fluctuation of energy for flywheels.
Q.26 Differentiate between pitch point and trace point.
Q.27 With the help of a diagram explain angular belt drive.
Q.28 Derive the formula for speed ratio for simple gear train.