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Roll No. 1

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5th Sem. / Mechanical Engg./ Mech. (Prod.)/
Mechatronics/ CAD/ CAM

Subject : Theory of Machines

Time : 3 Hrs.

M.M. : 100

SECTION-A

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

Q.1 When one of the links of a kinematic chain is fixed, the chain is known as _____. (CO-1)

Q.2 Elliptical trammel is used for drawing _____. (CO-1)

Q.3 _____ is the ratio of the pitch circle diameter to the number of teeth. (CO-4)

Q.4 The difference between the maximum and minimum speeds during a cycle is called the _____. (CO-5)

Q.5 Watt governor is a type of _____ governor. (CO-6)

Q.6 The follower in which the contacting end is a roller is called as _____. (CO-7)

Q.7 The interval of time taken by the motion to

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repeat itself is called a _____. (CO-9)

Q.8 When the system vibrates under the influence of external force, the vibrations are said to be _____ vibrations. (CO-9)

Q.9 When the particles of a shaft or disc moves in a circle about the axis of the shaft then the vibrations are said to be _____ vibrations. (CO-9)

Q.10 Watt indicator mechanism is an inversion of _____. (CO-1)

SECTION-B

Note: Very short answer type questions. Attempt any ten questions out of twelve questions. 10x2=20

Q.11 Define resistant body. (CO-1)

Q.12 Define lower pair. (CO-1)

Q.13 State inversion of mechanism. (CO-1)

Q.14 Define slip of belt. (CO-2)

Q.15 Define addendum of a gear. (CO-4)

Q.16 Define pressure angle of a gear. (CO-4)

Q.17 Define centrifugal governor. (CO-6)

Q.18 What do you understand by isochronism of a governor. (CO-6)

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- Q.19 State angle of dwell of a cam. (CO-7)
Q.20 Define offset follower. (CO-7)
Q.21 Name two types of cams. (CO-7)
Q.22 Define frequency of vibrations. (CO-9)

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten questions. 5x8=40

- Q.23 Define theory of machine and its branches. (CO-1)
Q.24 Define kinematic chain and name types of kinematic chains. (CO-1)
Q.25 Describe simple gear train with neat diagram. (CO-4)
Q.26 Explain turning moment diagram for four stroke petrol engine. (CO-5)
Q.27 Explain the principle of flywheel. (CO-5)
Q.28 What do you understand by the hunting of a governor. <https://www.hsbteonline.com> (CO-6)
Q.29 Discuss working of Watt's governor. (CO-6)
Q.30 Define the cam. How it works? (CO-7)
Q.31 Explain types of free vibrations. (CO-9)
Q.32 Write note on vibration damping. (CO-9)

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SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions. 3x10=30

- Q.33 Discuss in details any two inversions of a double slider crank chain mechanism with the help of neat sketches. (CO-1)
Q.34 Drive an expression for the ratio of driving tensions for a flat belt drive. (CO-3)
Q.35 Explain the construction and working of Hartnell governor with the help of neat diagram. (CO-6)
Q.36 Draw the displacement diagram for a cam, rotating clockwise with simple harmonic motion to give a knife edge follower, at the end of a valve rod, motion describe below: (CO-7)
a) To raise the valve through 50 mm during 120° rotation of cam.
b) To keep the valve fully raised through next 30°.
c) To lower the valve during next 60°.
d) To keep the valve closed during rest of the revolution.

Note : Course outcome (CO) mentioned in the question paper is for official purpose only.

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