BITT POLYTECHNIC

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SUBJECT : THEORY OF MACHINE (MEC405)   **SEMESTER : 4TH**

OBJECTIVE QUESTION

1. Turning moment diagram is a graph between

a. Torque and Crank angle   b. Torque and crank radius

c. Force and crank radius   d. none of the above

ANS – a

2. In reciprocating engine, which of the following restraining body does not exist?
a. Connecting rod
b. Crank
c. Slider
d. Lever

ANS – d

3. A kinematic pair consists of
a. Two links
b. Three links
c. Four links
d. Any number of links

ANS - a

4. A kinematic pair cannot be classified according to
a. Nature of contact between the links
b. Type of relative motion between the links
c. Nature of mechanical constraints between the links
d. Number of links connected

ANS - d

5. A lower pair has
a. Surface contact
b. Line contact
c. Point contact
d. All of the above

ANS - a

6. In four bar kinematic chain, the relation between the number of pairs (p) and number of links (L) is given by
a. L=2p-4
b. L=4p-2
c. L=3p-2
d. L=2p-3

ANS - a

7. Which of the following is not a type of constrained motions?
a. Completely
b. Incompletely
c. Successfully
d. Unsuccessfully

ANS - d

8. Mechanism is a kinematic chain in which
a. None of the link is fixed
b. One link is fixed
c. Two links are fixed
d. None of the above

ANS - b

9. A four bar kinematic chain has _____ turning pairs
a. One
b. Two
c. Three
d. Four

ANS – d

10. A single slider kinematic chain has ___ turning pairs and ___ sliding pairs.
a. One, one
b. Two, one
c. Three, one
d. Two, two

ANS - c

SHORT QUESTION

1. Define kinematic link.
2. Define kinematic pair.
3. Define and explain Geneva mechanism.
4. Define and explain higher pair and lower pair. Give two example of each.
5. What is inversion? State the inversion of single slider crank chain.
6. Differentiate between flywheel and governor.
7. Find the velocity of point 'B' and midpoint 'C' of link AB. (Where AB=50mm and Шab=50rad/sec).
8. Find the magnitude and direction of centripetal and tangential component of acceleration for link OA, if point 'A' moves with uniform velocity about fixed 'O'. (Where OA=100mm and Шoa=50rad/sec).
9. What is a mechanism?
10. Provide the relation between linear velocity and angular velocity?

LONG QUESTIONS

1. Explain with neat sketch the working of crank and slotted lever quick return mechanism.
2. In a slider crank mechanism, crank is 30 mm long and length of connecting rod is 120mm. The crank makes an angle of 30° with IDC and rotates with uniform speeds of 200rpm clockwise.
   Determine graphically:
   a. Angular acceleration of connecting rod.
   b. Acceleration of slider.
3. Describe with the help of a neat sketch the construction and working of a 'Porter governor'.
4. Calculate the change in vertical height of watt governor, when its speed increases from 200 rpm to 210rpm.
5. State coefficient of fluctuation of energy. Give its numerical expression.