



**SECTION-B**

2. What are straight line mechanisms? Describe one type of exact straight line motion mechanism with the help of a sketch.
3. Discuss briefly the various types of belts used for the transmission of power.
4. The mass of flywheel of an engine is 6.5 tonnes and the radius of gyration is 1.8 meters. It is found from the turning moment diagram that the fluctuation of energy is 56 kN-m. If the mean speed of the engine is 120 r.p.m, find the maximum and minimum speeds.
5. What is the function of a flywheel? How does it differ from that of a governor?
6. Write short note on coefficient of insensitiveness of governors.

**SECTION-C**

7. What is the significance of degrees of freedom of a kinematic chain when it functions as a mechanism? Give examples.
8. A cam is to give the following motion to a knife-edged follower :
  - a. Outstroke during  $60^\circ$  of cam rotation;
  - b. Dwell for the next  $30^\circ$  of cam rotation;
  - c. Return stroke during next  $60^\circ$  of cam rotation, and
  - d. Dwell for the remaining  $210^\circ$  of cam rotation.
9. The stroke of the follower is 40 mm and the minimum radius of the cam is 50 mm. The follower moves with uniform velocity during both the outstroke and return strokes. Draw the profile of the cam when
  - a. The axis of the follower passes through the axis of the cam shaft, and
  - b. The axis of the follower is offset by 20 mm from the axis of the cam shaft. Discuss the controlling force and stability of a governor and show that the stability of a governor depends on the slope of the curve connecting the controlling force ( $F_C$ ) and radius of rotation ( $r$ ) and the value ( $F_C/r$ ).

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