

1. In the case of a curved beam subjected to pure bending, which of the following is true?

- (a) Neutral axis coincides with the centroidal axis.
- (b) Neutral axis lies between the centroidal axis and the center of curvature.
- (c) Location of neutral axis depends upon the magnitude of bending moment
- (d) There is no neutral axis.

2. Spur gears are used for

- (a) connecting two intersecting shafts
- (b) transmitting power between two intersecting shafts
- (c) transmitting power between two parallel shafts
- (d) transmitting power between two inline shafts

3. Which of the following bearings are termed as antifriction bearings?

- (a) Journal bearings
- (b) Gas lubricated bearings
- (c) Ball and roller bearings
- (d) Air bearings

4. In a slider-crank mechanism, the crank is rotating with an angular velocity of 20 rad/s in counterclockwise direction.

At the instant when the crank is perpendicular to the direction of the piston movement, velocity of the piston is 2 m/s.

Radius of the crank is

- (a) 100 cm
- (b) 10 cm
- (c) 1 cm
- (d) 0.1 cm

5. Two parallel shafts whose axes are separated by a distance of 75 mm are to be connected by a spur gear set so that the output shaft rotates at 50% of the speed of the input shaft. Which of the following could be the possible pitch circle diameters of the gears.

- (a) 25 mm and 50 mm
- (b) 30 mm and 60 mm
- (c) 50 mm and 100 mm
- (d) 60 mm and 120 mm