WORKSHEET 2

A. Tick (✓) the correct option.

1. The CGS unit of torque is
   - a. Newton.
   - b. dyne cm.
   - c. Newton-metre.
   - d. none of these.

2. If the couple has a tendency to rotate the body in anticlockwise direction, its moment is taken
   - a. positive.
   - b. negative.
   - c. zero.
   - d. none of these.

3. The algebraic sum of moments of weights of particles of a body about the centre of gravity is
   - a. infinity.
   - b. negative.
   - c. positive.
   - d. zero.

4. SI unit of couple is
   - a. Newton-metre.
   - b. Newton.
   - c. Watt.
   - d. Dioptre.

5. When a body remains in the state of uniform motion under the influence of external forces, it is said to be in
   - a. static equilibrium.
   - b. translational equilibrium.
   - c. dynamic equilibrium.
   - d. none of these.

B. Fill in the blanks.

1. A rigid body executes _____ when each particle of the body moves in a circular path.

2. The point on a rigid, where a force acts is called _____

3. The gravitational unit of torque in SI system is _____

4. If a couple has a tendency to rotate the body in clockwise direction, its moment is taken _____

5. When a body moves in circular path with uniform speed, its motion is called _____

C. State whether the following statements are true or false.

1. The centrifugal force is outward-direction fictitious force.

2. Torque is the measure of capacity of a force to turn a body.

3. Centrifugal force is always directed radially towards the centre of the circle.

4. 1 Nm is equivalent to 10^7 dyne m.

5. A rigid body executes translational motion when each particle of the body has the same displacement in the same time internal.

D. Match the following.

1. SI unit of torque   dyne cm
2. Centrifugal force   kgf m
3. Gravitational unit of torque in SI system   N m
4. Centripetal force   fictitious force
5. CGS unit of torque   real force

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Class: .... X ....   Date: ....

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E. Answer the following questions.

Very short answer questions

1. What are the units of couple in SI system?

2. What is the relationship between SI unit and CGS unit of torque?

Short answer questions

1. Define force.

2. Give two examples of uniform circular motion.

Long answer questions

1. Differentiate between centripetal and centrifugal forces.

2. A uniform metre scale is balanced at 40 cm mark, when weighs 40 gf and 10 gf are suspended at 20 cm and 70 cm mark respectively. Calculate the weight of the scale.

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

1. b   2. a   3. d   4. a   5. c

B. Fill in the blanks.

1. rotational motion   2. point of action of force

3. kgf m   4. negative

5. uniform circular motion

C. State whether the following statements are true or false.

1. T   2. T   3. F   4. F   5. T

D. Match the following.

1. SI unit of torque   N-m

2. Centrifugal force   fictitious force

3. Gravitational unit of torque in SI system   kgf m

4. Centripetal force   real force

5. CGS unit of torque   dyne cm

E. Answer the following questions.

Very short answer questions

1. Newton metre (Nm) and kgf m

2. $1 \text{ Nm} = 10^7 \text{ dyne cm}$

Short answer questions

1. Force is a push or pull, which changes or tends to change the state of rest or of uniform motion, the direction of motion or the shape and the size of a body.

2. Examples of uniform circular motions are:

   • The motion of the earth and other planets around the sun.

   • The motion of moon around the earth.

Long answer questions

1. Refer Table 1.2, Page 21 of the textbook.

2.
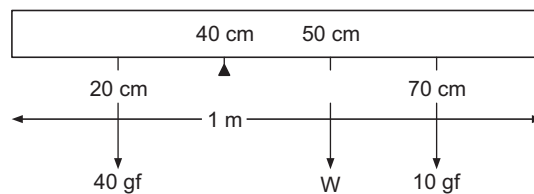
Taking moments about 40 cm mark.

$$\text{Moment in clockwise direction} = 10 \times W + 30 \times 10$$

$$= 10W + 300$$

$$\text{Moment in anticlockwise direction} = 40 \times 20$$

$$= 800$$

According to the principle of moments,

$$\text{Clockwise moments} = \text{Anticlockwise moments}$$

$$10W + 300 = 800$$

$$10W = 500$$

$$W = 50 \text{ gf}$$