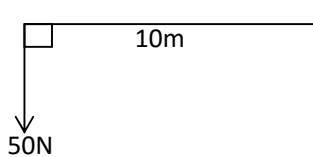


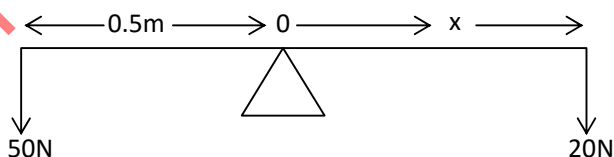
**SECOND TERM EXAMINATION 2017/2018 ACADEMIC SESSION**  
**SUBJECT: PHYSICS CLASS: SS 2**

**SECTION A: OBJECTIVE**  
**INSTRUCTION: ANSWER ALL QUESTIONS**

1. The S.I unit of moment of a force is \_\_\_\_\_ (a) kgm (b) Nm (c) Jm (d)  $\text{Nm}^{-1}$
2. What is the angular speed of a body vibrating at 50 cycles per second? (a)  $200\pi$  rad/s (b)  $100\pi$  rad/s (c)  $50\pi$  rad/s (d)  $0.01\pi$  rad/s
3. Two forces 6N and 8N act eastwards and northwards respectively on a body. Calculate the magnitude of their resultant. (a) 2N (b) 7N (c) 10N (d) 14N
4. Which of the following correctly gives the relationship between linear speed,  $v$  and angular speed,  $\omega$  of a body moving uniformly in a circle of radius  $r$ ?  
(a)  $V = \omega r$  (b)  $v = \omega$  (c)  $v = \omega r^2$  (d)  $v^2 = \omega r$
5. .
6. .
7. Calculate the moment of the force in the diagram below:



- (a) 50Nm (b) 5Nm (c) 500Nm (d) 5000Nm
8. A stationary ball is hit by an average force of 50N for a time of 0.03 second. What is the impulse experienced by the body? (a) 15Ns (b) 1.5Ns (c) 15.2Ns (d) 1.0Ns
9. .
10. .
11. .
12. .
13. .
14. An aeroplane flies 3km due west and then 4km due north. Find its resultant displacement from its starting point. (a) 5km (b) 10km (c) 15km (d) 20km
15. Two forces 10N each are inclined at  $120^\circ$  to each other, what is their resultant force? (a) 10N (b) 20N (c) 30N (d) 40N
16. \_\_\_\_\_ is the turning effect of a force about a point. (a) Momentum (b) Weight (c) Speed (d) Moment
17. Moment of a force depends on two factors, the magnitude of the force and \_\_\_\_\_  
(a) distance (b) velocity (c) speed (d) acceleration
- 18.



Calculate the value of  $x$  in the diagram above (a) 125m (b) 0.5 m (c) 1.25m (d) 12.5m

19. .
20. .

21. .
22. .
23. The period of a simple pendulum give as \_\_\_\_\_ (a)  $2\pi\sqrt{\frac{m}{k}}$  (b)  $2\pi\sqrt{\frac{l}{g}}$  (c)  $2\pi\sqrt{\frac{m^2}{k}}$  (d)  $2\pi\sqrt{\frac{l^2}{g}}$
24. .
25. .
26. .
27. .
28. The S.I unit of frequency is \_\_\_\_\_ (a) second (b) Hertz (c) kilogram (d) Newton
29. Angular acceleration is related to linear acceleration by \_\_\_\_\_ (a)  $a \propto r$  (b)  $a = \alpha^2 r$  (c)  $a^2 = \alpha r$  (d)  $a = \alpha r^2$
30. 1 complete oscillation is equivalent to \_\_\_\_\_ (a)  $2\pi$  radians (b)  $3\pi$  radians (c)  $4\pi$  radians (d)  $5\pi$  radians

**Objective Questions No 5, 6, 9, 10, 11, 12, 13, 19, 20, 21, 22, 23, 24, 25, 26, 27 removed from this free version**

## SECTION B: THEORY

Answer any **THREE** questions in this section.

1.
  - (a) Define the period,  $T$  of a simple harmonic motion and state its unit.
  - (b) A uniform beam 6m long and weighing 40N rests on supports at P and Q placed left and right 1m from each end of the beam. Weights of 100N and 80N are placed near P and Q respectively on each end of the beam, calculate the reaction at P and Q.
  - (c) Give one example of simple harmonic motion.
  
2.
  - (a) A body of mass 0.02kg is suspended from the end of a spiral spring whose force constant is  $0.4 \text{ Nm}^{-1}$ , an angular velocity of  $4.46 \text{ rads}^{-1}$  and an amplitude of 0.2m. calculate:
    - (i) The total energy
    - (ii) Maximum velocity of the motion
    - (iii) Maximum acceleration
  - (b) What is momentum?
  - (c) A body of mass 5kg moves with a velocity of  $5 \text{ ms}^{-1}$ , what is its momentum.
  
3.
  - (a) State the two conditions necessary for equilibrium of parallel coplanar forces.
  - (b) A mass of 2kg is supported by two cords which makes angles of  $30^\circ$  and  $50^\circ$  with the vertical. Find the forces on the two cords.
  - (c) Give one example of application of couple.
  
4.
  - (a) State the principle of the triangle of forces.
  - (b) A body (p) of mass 5kg moving with a velocity of  $30 \text{ ms}^{-1}$  collides with another body, (Q), moving in opposite direction with a velocity of  $20 \text{ ms}^{-1}$ . If both bodies now move in the direction at a velocity of  $10 \text{ ms}^{-1}$ , calculate the mass of Q.
  - (c) Define the amplitude,  $A$  of a simple harmonic motion.

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