SEPTEMBER 2023
EBS 142
GENERAL PHYSICS THEORY I
30 MINUTES

Candidate's Index Number
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B.ED)
FIRST YEAR, SECOND SEMESTER MID-SEMESTER QUIZ, SEPTEMBER 2023

27TH SEPTEMBER 2023 GENERAL PHYSICS THEORY I 1:00 PM – 1:30 PM

Answer ALL the questions.
[20 MARKS]

Items 1 to 20 are stems followed by four options lettered A to D. Read each item carefully and circle the letter of the correct or best option.

1. A measured property of a body which has magnitude only is said to be a .....
   A. derived unit.
   B. fundamental unit.
   C. scalar quantity.
   D. vector quantity.

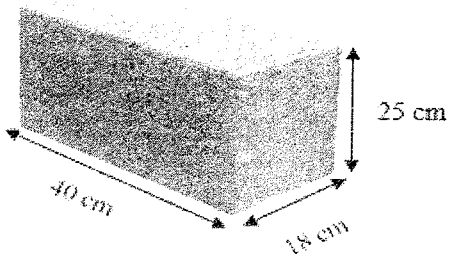
2. Which of the following quantities is basic?
   A. Density
   B. Height
   C. Pressure
   D. Weight

3. The diameter of a conducting wire can be measured by a .....
   A. meter rule
   B. micrometre screw gauge
   C. round bottom flask
   D. vernier callipers

4. Each of the following quantities are vectors **except** .....
   A. displacement.
   B. energy.
   C. force.
   D. velocity.

5. An insect crawls 8.0 m due north and then 6.0 m due east on a horizontal board. How far and in what direction is he from the starting point?
   A. 10.0 m, 37°
   B. 10.0 m, 53°
   C. 16.0 m, 37°
   D. 7.0 m, 53°

6. For the piece of metal block of mass 8.5 kg shown in the diagram below, find the pressure it exerts on the base plane in Nm^{-2}. (Take g = 9.8 ms^{-2})



   A. 4.98×10^2
   B. 8.50×10^2
   C. 1.88×10^3
   D. 1.16×10^3

7. The time taken by a particle to complete one oscillation a particle defines the .....
   A. amplitude.
   B. frequency.
   C. period.
   D. wavelength.

8. The period of oscillation of a mass-spring system can be evaluated by the formula .....
   A. $T = 2\pi\sqrt{\frac{m}{k}}$
   B. $T = 2\pi\sqrt{\frac{k}{m}}$
   C. $T = 2\pi\sqrt{\frac{l}{g}}$
   D. $T = 2\pi\sqrt{\frac{m}{g}}$

9. How long does it take a stone dropped from a height of 90 m to reach the ground? [Take g = 9.8 ms^{-2}]
   A. 18.36 s
   B. 3.51 s
   C. 4.28 s
   D. 9.18 s

10. Calculate the power with machine lifts 5000 kg of steel bars through a height of 40.0 m in 20 s. [Take g = 9.8 ms^{-2}]
   A. 20.4. kW
   B. 408.2 kW
   C. 8.2 kW
   D. 98.0 kW

11. The relationship between the extension produced in a spring and the force applied to it is established by .....
    A. Archimedes principle
    B. Hooke's law
    C. Newton's laws
    D. Young's modulus

12. To every action, there is an equal but opposite reaction. This is a statement of .....
    A. Newton's first law of motion.
    B. Newton's third law of motion.
    C. the law of conservation of energy.
    D. the law of parallelogram of forces.

13. The universal force of attraction acting between all bodies having mass is known as .....
    A. Friction.
    B. Gravity.
    C. Magnetism.
    D. Tension.

14. The vertical component of a 75 N force applied at an inclination of 40^{o} to the horizontal ground is .....
    A. 35.0 N.
    B. 48.2 N.
    C. 55.7 N.
    D. 62.9 N.

15. What type of force opposes the relative motion between solid surfaces?
    A. Compression
    B. Friction
    C. Inertia
    D. Tension

16. What does the gradient of a distance-time graph of a body give at a particular time?
    A. Acceleration
    B. Displacement
    C. Momentum
    D. Speed

17. As a lever, pair of scissors is in the same class which of the following tools? A .....
    A. crowbar
    B. nut cracker
    C. pair of pincers
    D. wheel barrow

18. The speedometer of a car reads 100 kmh^{-1}. What is the equivalent speed in ms^{-1}?
    A. 16.7
    B. 18.0
    C. 27.8
    D. 36.0

19. Which of the following physical quantities has the S.I. units of Joules?
    A. Energy
    B. Power
    C. Speed
    D. Weight

20. The fundamental interval on the Fahrenheit scale is
    A. 32^{o}
    B. 100^{o}
    C. 180^{o}
    D. 273^{o}