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AMBO UNIVERSITY

College of Natural and Computational Sciences

Department of Physics

General Physics, Phys1011, Mid-Exam

Date 25 August 2021, Time allowed=2hrs

Instruction: Attempt all questions.

- ✎ Make your hand writing readable.
- ✎ Show the necessary steps for work out.
- ✎ Maximum mark 25%.
- ✎ Write your Id.No on each page.
- ✎ Use the back paper as rough paper.
- ✎ Switch off your mobile.
- ✎ For T/F & multiple choices use answer sheet provided

Name _____ ID-No _____ Section _____

YOUR INSTRUCTOR'S NAME _____

Check the exam booklet has 3 parts and 5 pages including this cover page.

For instructor use only

Part I =5%	Part II = 10%	Part III= 10%	25%

***** GOOD LUCK *****

Write TRUE if the statement is Correct and FALSE if the statement is Incorrect. (1pt each)

1. Zeros that follow a number are always significant figure.
2. Average velocity and average acceleration of an object do not provide the detail information about the entire of motion.
3. The direction of the velocity of a body can change when its acceleration is constant.
4. An object that is free falling is acted upon by the force of gravity alone.
5. In projectile motion, the horizontal motion is considered as a motion with constant acceleration while the vertical motion is with constant velocity.

I. Choose the letter of best answer from the given alternatives (1pt each)

1. Which one of the followings refers the uncertainty in measurement?
A. deviation of the measured value from true value
B. random error in measurement
C. Systematic error in measurement
D. All of them
2. By significant figure rules $2.5 \times 1.5 =$
A. 3 B. 3.7 C. 3.8 D. 3.75
3. The magnitudes of two vectors **A** and **B** are $A = 12$ units and $B = 8$ units. Which of the following pairs of numbers represents the largest and smallest possible values for the magnitude of the resultant vector $R = A + B$?
A. 12 units, 8 units B. 14.4 units, 4 units C. 20 units, 4 units D. 12 units, 4 units.
4. A bike accelerates uniformly from rest to a speed of 10 m/s over a distance of 50 m. the acceleration of the bike is
A) 1.33 m/s^2 B) 1 m/s^2 C) 2 m/s^2 D) 3 m/s^2 E. none
5. Which of the following is not an example of accelerated motion?
A. Vertical component of projectile motion
B. Circular motion at constant speed
C. Earth's motion about sun
D. Horizontal component of projectile motion
6. If a ball is thrown vertically upwards with 40 m/s. its velocity after two second will be :-
A. 19.6 m/s C. 30 m/s
B. 20 m/s D. 20.4 m/s
7. A cannon points at 60° above the horizontal and fires a ball from ground level with a muzzle speed of 20 m/s. The horizontal range is (Use $\cos(60^\circ) = 0.5$; $\sin(60^\circ) = 0.87$ and $g = 10 \text{ m/s}^2$)
A. 20 m B. 40 m C. 69.2 m D. 34.8 m E. None
8. Which one of the following is not Newton's first law and inertia:
A. A book lying on the table will remain at rest, until it is moved by some external agencies.
B. A person standing in a bus falls backward when the bus suddenly starts moving.
C. A passenger sitting in a moving car falls forward, when the car stops suddenly.
D. When a bus moving along a straight line takes a turn to the right, the passengers are thrown towards left.
E. None

If a man weighs 900N on earth and gravitational acceleration on Earth is 10m/s^2 , what is his weight on Jupiter where the acceleration due to gravity is 30m/s^2 ? if

A. 900N

B. 90kg

C. 2700kg

D. 2700N

10. In what condition do we say that mechanical work is done on an object? If

A. force is applied to it

B. energy is transferred

C. it is displaced

D. all of them

Answer Sheet

Name _____ ID. no. _____ Section _____

I. True/False (5%)

_____ 1

_____ 2

_____ 3

_____ 4

_____ 5

II. Multiple Choice (10%)

_____ 1

_____ 2

_____ 3

_____ 4

_____ 5

_____ 6

_____ 7

_____ 8

_____ 9

_____ 10

Part III work out. (show all necessarily step) (10pts)

1. Write briefly the three Kepler's laws of planetary motion. (3pts)

the displacement vectors $\vec{s}_1 = (3i - 4j + 4k)m$ and $\vec{s}_2 = (2i + 3j - k)m$. Calculate (3pts)

- A. $\vec{s}_1 + \vec{s}_2$
- B. $3\vec{s}_1 - 2\vec{s}_2$
- C. $|\vec{s}_1 + \vec{s}_2|$

A block of mass $m=10\text{kg}$ is released from top of an inclined plane of side 10m and inclination of 37° from horizontal as figure below. The coefficient of kinetic friction between the block and the surface is 0.2 . (4pts) (use $g=10\text{m/s}^2$, $\sin 37^\circ=0.6$, $\cos 37^\circ=0.8$). calculate

- A. Normal force
- B. Kinetic friction
- C. Acceleration of the block
- D. Velocity at bottom

