BAYERO UNIVERSITY, KANO
(FACULTY OF SCIENCE)
DEPARTMENT OF PHYSICS
2014/2015 SESSION
PHY 1210 (Mechanics) - 1st C.A TEST

Group: *Physics*

Instruction: Answer **all** questions

Time: *30 Minutes*

REG. NUMBER: ---------- **FULL NAME:**----------

1. All the following are examples of vector quantities except (a) force (b) velocity (c) displacement (d) torque (e) none of the above
2. The value of 30km/min is the same as (a) 500m/s (b) 200m/hr (c) 500km/s (d) 0.7m/s (e) none of the above
3. Which among the physical quantities below has a dimension of 1? (a) stress (b) refractive index (c) density (d) work (e) energy.

Given two vectors $\vec{A} = 2\hat{\imath} + \hat{\jmath}$ *and* $\vec{B} = \hat{\imath} - \hat{k}$. *Use this information to answer Q4 to Q6*

4. The value of $\vec{A} \cdot \vec{B}$ is (a) -6 (b) 1 (b) 5 (d) 2 (e) none of the above
5. Evaluate $|\vec{A} + \vec{B}|$ (a) 2.5 units (b) 9.1 units (c) 3.31 units (d) 7.4 units (e) none of the above.
6. Simplify $3\vec{A} - \vec{B}$ (a) $5\hat{\imath} + 3\hat{\jmath} - \hat{k}$ (b) $2\hat{\imath} - \hat{\jmath} - 4\hat{k}$ (c) $3\hat{\imath} + 5\hat{\jmath} - 4\hat{k}$ (d) $5\hat{\imath} + 3\hat{\jmath} + \hat{k}$ (e) none of the above.

The distance (in metre) moved by a body at any time (in seconds) is given as $x = t^3 - 1$. *Use this information to answer to questions Q7 to Q9*

7. The distance covered by the body after 2 seconds is (a) 8m (b) 9m (c) 7m (d) 6m (e) none of the above
8. The displacement of the car from 1s to 3s is (a) 28m (b) 27m (c) 6m (d) 9m (e) none of the above
9. The velocity of the car at t = 3 seconds is (a) 27m/s (b) 13m/s (c) 28m/s (d) 34m/s (e) none of the above
10. A train covered a distance of 15km in 6 minutes. The average speed of the car in m/s is (a) 6m/s (b) 9.04km/h (c) 1.5m/s (d) 20m/s (e) none of the above
11. A pen drop from a tall building of height 35m. What is the time taken for the pen to strike the ground? Take g = 10m/s^2. (a) 2.64s (b) 0.5s (c) 43s (d) 7s (e) none of the above
12. A car starts slowly with an initial speed of 3m/s and accelerates uniformly with an acceleration of 25m/s^2 for 2 seconds. The total distance covered by the bicycle after 2 seconds is (a) 21m (b) 14m (c) 23m (d) 56m (e) none of the above.

A missile is launch into air at an angle of 45^0 *to the horizontal with an initial speed of 20m/s. Take g = 10m/s*^{2}. *Use this information to answer to questions Q13 to Q15*

13. The total time spent by the missile in air before it strikes the ground is (a) 4.23s (b) 1.7s (c) 1.2s (d) 2.8s (e) none of the above
14. The horizontal range covered by the projectile is (a) 40m (b) 60m (c) 80m (d) 100m (e) none of the above
15. The maximum height reached by the missile is (a) 7.6m (b) 9m (c) 16m (d) 25m (e) none of the above

ANSWER SHEET

1.	A	B	C	D	E	6.	A	B	C	D	E	11.	A	B	C	D	E		
2.	A	B	C	D	E	7.	A	B	C	D	E	12.	A	B	C	D	E		
3.	A	B	C	D	E	8.	A	B	C	D	E	13.	A	B	C	D	E		
4.	A	B	C	D	E	9.	A	B	C	D	E	14.	A	B	C	D	E		
5.	A	B	C	D	E	10.	A	B	C	D	E	15.	A	B	C	D	E		

BAYERO UNIVERSITY, KANO
(FACULTY OF SCIENCE)
DEPARTMENT OF PHYSICS
(2016/2017 SESSION)

MYA

GROUP D

PHY 1210 (Mechanics) – **1st C.A TEST-** *for Applied Biology Students* **TIME:** 30 Minutes

UNI. NUMBER: ..... **FULL NAME:**.....

1. The dimension of momentum is (a) LT^{-3} (b) LM(c)MLT^{-1} (d) $ML^{-3}T^{-2}$(e) none of the above
2. Which of the following is a fundamental quantity? (a) force (e) area (c) volume (d) density (e) none of the above
3. Which of the following is an SI unit?(a) m (b) A (c) s (d) N (e)all of the above

Given two vectors $\vec{A} = i - j - k$ and $\vec{B} = -i + j + 2k$. *Use this information to answer* ***Q4*** *and* ***Q5.***

4. Evaluate $\vec{B} - \vec{A}$ (a) $2i - j + 3k$ (b)$-2i + 2j + 3k$(c)$5i + k$(d)$2i - 2j - 3k$ (e) none of the above
5. What is the value of $|\vec{B} - \vec{A}|$? (a) $\sqrt{26}$(b)$\sqrt{15}$ (c) $\sqrt{14}$(d)$\sqrt{13}$ (e) none of the above
6. If a feather, stone and an iron bar are released from a same height in a room without any air resistance. Which one will fall first? (a) iron bar (b) feather (c) stone (d) all at the same time (e) none of the above
7. When an object is moving with uniform velocity, what is its acceleration? (a)infinity (b) uniform (c) non-uniform (d) negative (e) zero
8. Speed of 120 km/h when expressed in m/s is (a) 10(b) 33 (c) 17 (d) 68(e) 25
9. Total distance covered in total time taken is termed as (a) instantaneous speed (b)non-uniform speed (c) uniform speed (d) variable speed (e)average speed
10. A car stops and then starts accelerating uniformly at rate of 3 ms^{-2}. The speed of car after 20 seconds is (a) 40 ms^{-2}(b) 60 ms^{-2} (c) 100 ms^{-2} (d) 30 ms^{-2}(e) 90ms^{-2}
11. Range of projectile will be minimum when angle of projectile is(a) 0^0 (b) 30^0 (c) 60^0 (d) 90^0 (e) 90^0
12. A stone is projected horizontally with a velocity 9.8m/s from a tower of height 100m. Its speed 1s after projection is (a) 9.8m/s (b) 4.9m/s (c)3.9m/s (d) 6.9m/s (e) 13.9m/s
13. A body projected with velocity 30m/s reaches its maximum height in 1.5s. Its range is ($g=10m/s^2$) (a) 45m (b)78m (c) 45m(d) 108m (e) none of the above
14. A ball is projected vertically downwards from a height of 30m. With what velocity does it strike the ground? Take $g = 9.8m/s^2$. (a) 6m/s(b) 17m/s (c) 9.8m/s (d) 32m/s(e) 24m/s
15. A boy throws a ball at an initial velocity of 26 m/s at an angle of 20^0 above the horizontal. How highabove the projection point is the ball after 1.4 s? Take $g = 9.8m/s^2$. (a) 8.2 m (b) 24 m (c) 23 m (d) 2.8 m (e) 1.04m

ANSWER SHEET

1.	A	B	C	D	E	6.	A	B	C	D	E	11.	A	B	C	D	E
2.	A	B	C	D	E	7.	A	B	C	D	E	12.	A	B	C	D	E
3.	A	B	C	D	E	8.	A	B	C	D	E	13.	A	B	C	D	E
4.	A	B	C	D	E	9.	A	B	C	D	E	14.	A	B	C	D	E
5.	A	B	C	D	E	10.	A	B	C	D	E	15.	A	B	C	D	E

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GROUP D

PHY 1210 (Mechanics) – 1st C.A TEST- *for Applied Biology Students* **TIME:** 30 Minutes

UNI. NUMBER: .....**FULL NAME:**.....

1. The dimension of density is (a) LT^{-3} (b) LM (c) $L^{-2}T^{-3}$ (d) $ML^{-3}T^{-2}$ (e) none of the above
2. Which of the following is a derived physical quantity? (a) time (e) area (c) mass (d) distance (e) temperature
3. Which of the following is not an SI unit? (a) cm (b) A (c) kg (d) N (e) ^{0}K

Given two vectors $\vec{A} = i - j - k$ and $\vec{B} = -i + j + 2k$. *Use this information to answer* ***Q4*** *and* ***Q5.***

4. Evaluate $\vec{A} - \vec{B}$ (a) $2i + 3k$ (b) $-2i + 3j - k$ (c) $5i + k$ (d) $2i - 2j - 3k$ (e) none of the above
5. What is the value of $|\vec{A} - \vec{B}|$? (a) 2 (b) $\sqrt{6}$ (c) $\sqrt{2}$ (d) $\sqrt{13}$ (e) none of the above
6. You start from rest and accelerate with a given constant acceleration for a given distance. If you repeat the process with twice the acceleration, then the time required to travel the same distance (a) remains the same (b) is doubled (c) is halved (d) increases by a factor of $\sqrt{2}$ (e) decreases by a factor of $\sqrt{2}$
7. When an object is moving with uniform velocity, what is its acceleration? (a) zero (b) uniform (c) non-uniform (d) negative (e) none of the above
8. Speed of 90 km/h when expressed in m/s is (a) 10 (b) 68 (c) 17 (d) 52 (e) 25
9. Total distance covered in total time taken is termed as (a) instantaneous speed (b) average speed (c) uniform speed (d) variable speed (e) non-uniform speed
10. A car stops and then starts accelerating uniformly at rate of 3 ms^{-2}. The speed of car after 20 seconds is (a) 40 ms^{-2} (b) 30 ms^{-2} (c) 100 ms^{-2} (d) 30 ms^{-2} (e) 60 ms^{-2}
11. Range of projectile will be maximum when angle of projectile is (a) 0^0 (b) 30^0 (c) 45^0 (d) 15^0 (e) 90^0
12. A stone is projected horizontally with a velocity 9.8m/s from a tower of height 100m. Its speed 1s after projection is (a) 9.8m/s (b) 4.9m/s (c) 13.9m/s (d) 6.9m/s (e) none of the above
13. A body projected with velocity 30m/s reaches its maximum height in 1.5s. Its range is ($g=10m/s^2$) (a) 45m (b) 108m (c) 45m (d) 78m (e) none of the above
14. A body is projected vertically downwards with the velocity 5m/s from a height of 60m. Its time of descent is (a) 2s (b) 3s (c) 4s (d) 5s (e) none of the above
15. A ball is projected with velocity 10 m/s at angle of 30^0 with the horizontal surface. Use $g=10m/s^2$, the speed of the ball in the y-direction after 1 second will be (a) 5 m/s (b) 7m/s (c) 8 m/s (d) 9m/s (e) none of the above

ANSWER SHEET

	A	B	C	D	E
1.	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐
5.	☐	☐	☐	☐	☐
6.	☐	☐	☐	☐	☐
7.	☐	☐	☐	☐	☐
8.	☐	☐	☐	☐	☐
9.	☐	☐	☐	☐	☐
10.	☐	☐	☐	☐	☐
11.	☐	☐	☐	☐	☐
12.	☐	☐	☐	☐	☐
13.	☐	☐	☐	☐	☐
14.	☐	☐	☐	☐	☐
15.	☐	☐	☐	☐	☐

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GROUP B

1210 (Mechanics) – 1st C.A TEST- *for Applied Biology Students* **TIME: 30 Minutes**

NUMBER: ..... **FULL NAME:** .....

1. Which of the following physical quantities is not fundamental? (a) mass (b) distance (c) strain (d)electric current(e) luminous intensity
2. What is the dimension of energy? (a) ML^2T^{-2} (b) $ML^{-1}T^{-2}$ (c)MLT^{-2} (d)$M^{-1}L^{-1}T^{-2}$ (e) $L^{-2}T^{-3}$
3. Which of the following is not a derived quantity? (a) speed (b) area (c) distance (d) force (e) volume
4. If $\vec{X} = 2i - j$ and $\vec{Z} = -i - k$. What is the value of $\vec{X} \cdot \vec{Z}$? (a) 5 (b) -2 (c) 4 (d) -2 (e) 2
5. What is the value of $(\hat{\imath} \times \hat{\jmath}) - (\hat{\jmath} \times \hat{\imath})$? (a) 2i (b) $-2j$ (c) 2j (d)$2k$ (e) -2k

The distance ***x*** in metres (m) covered by a car at any time ***t*** in seconds (s) is given by$x = 1 + 3t - 2t^2$. *Use this information to answer **Q6** to **Q8**.*

6. What is the displacement of the dog from $t_1 = 2s$ to $t_2 = 5s$? (a) -25m (b) 8m (c) 85m (d) -33m (e) 25m
7. The initial velocity of the body is? (a) 3m/s (b) 4m/s (c) -4m/s (d) 18/s (e) 7m/s
8. At what time is the body at rest? (a) 3s (b) 7s (c) 0.75s (d) 1.33s (e) 0.35s

A train starts from rest and accelerates uniformly to a velocity of 80m/s for 2minutes. *Use this information to answer **Q9** and **Q10**.*

9. What is the acceleration of the train? (a) $40m/s^2$(b) $0.025m/s^2$(c) $3.02m/s^2$(d) $1.51m/s^2$(e) $0.67m/s^2$
10. The distance covered by train after 8s is (a) 9m(b)19m (c) 37m (d) 19m (e) 21m
11. A body is projected vertically upward with an initial speed of 10m/s. What is the final velocity of the body at the maximum height? Take $g = 9.8m/s^2$. (a) -10m/s (b) 10m/s (c) -9.8m/s (d) 9.8m/s (e) none of the above
12. Amango fruit fell from a top a tree with a speed 10m/s under the influence of gravity. What was the height from which the fruit fell from? Take $g = 10m/s^2$. (a) 4m (b) 5m (c) 7m (d) 15m (e) 10m

A key is projected upward at an angle of 30^0 to the horizontal with an initial speed of *15m/s*. Take $g = 10m/s^2$. *Use this information to answer **Q13** to **Q14**.*

13. What is the horizontal velocity of the key after 8 seconds? (a)13m/s (b) 19m/s (c)7.5m/s(d) 14m/s (e) 9m/s
14. The range covered by the key will be (a) 28m (b) 23m (c) 20m (d) 21m (e) 32m
15. What is the total time of flight of the key? (a) 51s (b) 1.5s (c) 8s (d) 2.5s (e) 1s

ANSWER SHEET

	A	B	C	D	E
1.	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐
5.	☐	☐	☐	☐	☐
6.	☐	☐	☐	☐	☐
7.	☐	☐	☐	☐	☐
8.	☐	☐	☐	☐	☐
9.	☐	☐	☐	☐	☐
10.	☐	☐	☐	☐	☐
11.	☐	☐	☐	☐	☐
12.	☐	☐	☐	☐	☐
13.	☐	☐	☐	☐	☐
14.	☐	☐	☐	☐	☐
15.	☐	☐	☐	☐	☐