University # Name

King Saud University
College of Science
Department of Physics and Astronomy

15

2nd term 1435-1436	Physics 103	First mid term
Monday 10 /6/ 1436 H	30th March 2015	7:00 – 8:30 PM

"Submit only this first page to the Examiner/ Invigilator"

Name	
University number	
Section/ Dr Name	

Write your answers for each question in CAPITAL LETTERS in the table given

Q. 1	Q. 2	Q. 3	Q. 4	Q. 5
Q. 6	**Q. 7**	**Q. 8**	**Q. 9**	**Q. 10**
Q. 11	**Q. 12**	**Q. 13**	**Q. 14**	**Q. 15**

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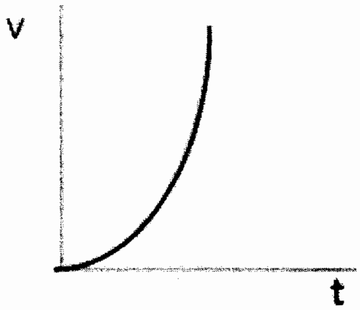
Take g = 9.8 ms^{-2} where ever needed

1	A dimensionally wrong equation (formula) in physics A. must be wrong B. may be wrong C. may be correct D. must be correct E. none of these
2	If the volume of an object as a function of time is calculated by $V = At^3 + B/t$, where V is volume, t is time, and A&B are constants, the dimension of A is: A. T^{-3} B. L^3T^{-3} C. L^3T D. $L^{-1}T^{-3}$ E. L^2T^{-1}
3	A ball of mass 8 kg and a feather of mass 8 g were dropped on the moon's surface (no air on the moon) from a height of 1.40 m. The acceleration due to gravity on the moon is 1.67 m/s². Determine the ratio of the time taken to reach the surface of the moon by the ball to that of the feather (i.e. $t_{ball}/t_{feather}$). A. 0 B. 1 C. 10 D. 100 E. 1000
4	A motor bike is moving at constant acceleration of 2 m/s². Calculate the time taken to change the velocity from 20 km/h to 40 km/h. A. 2.78 s B. 0.93 s C. 1.85 s D. 7.58 s E. 10.42 s
5	An antelope (ظبي) jumps to a height of 10.0 m. Determine the take-off (عاقلاع) speed of that the antelope. A. 12.36 m/s B. 14 m/s C. 17 m/s D. 7.17 m/s E. 22 m/s
6	According to the graph, acceleration is A. increasing B. decreasing C. constant D. zero E. none of the above 
7.	Choose the correct response to make the sentence true: A component of a vector is......... larger than the magnitude of the vector. A- Always B- Sometimes C- Never D- depending on the direction E- None of these
8	A hiker begins a trip by first walking 4.0 km to the east then walks 3.0 km in north direction, what is the magnitude and direction of her resultant displacement? A- 5 Km , 53.1° from the east to the north B- 7 Km , 53.1° from the east to the north C- 25 Km , 63.8° from the east to the north D- 7 Km , 36.8° from the east to the north E- 5 Km , 36.8° from east to north
9	The magnitude of the sum of two vectors **A** and **B**, |**A**+**B**| is equal to |**A**|+|**B**| A. Vectors **A** and **B** are perpendicular B. angle between vectors **A** and **B** is 45° C. Vectors **A** and **B** are in opposite direction D. Vectors **A** and **B** are in the same direction E. None of these

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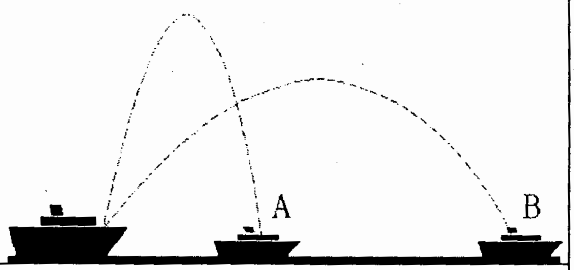
10	A particle initially located at the origin has an acceleration of **a** = 4.0**j** m/s^2 and an initial velocity of $\mathbf{v}_i$ = 10**i** m/s. Find the speed of the particle at t = 3.00 s A. 22.4 m/s B. 17.1 m/s C. 26.0 m/s D. 15.6 m/s E. 15.45 m/s
11	A battle ship simultaneously fires two shells at enemy ships. If the shells follow the trajectories shown, which ship gets hit first? Ignore air resistance. A. Ship A B. Ship B C. both will be hit at the same time D. Depends on the shell mass E. Need more information 
12	Projectile motion is a form of motion where an object moves in _______ path; the path that the object follows is called its trajectory. Please fill in the blank from the list: A. circular B. hyperbolic C. parabolic D. Elliptical E. linear
13	A long-jumper leaves the ground at an angle of 25.0° above the horizontal and at a speed of 12.0 m/s. Calculate his maximum height from the ground. A. 1.85 m B. 1.31 m C. 2.05 m D. 8.80 m E. 3.64 m
14	In a uniform circular motion the direction of the centripetal acceleration is A. along the tangent B. along the radius towards the center C. perpendicular to the plane of the circle D. along the radius outwards the center E. Along the axis of the circle passing from the center
15	A 1600 kg car is traveling with speed of 16 m/s, rounds a curve 48 m in radius. The centripetal acceleration of the car has the magnitude: A. 4.0 m/s^2 B. 3.0 m/s^2 C. 5.0 m/s^2 D. 5.3 m/s^2 E. 6.0 m/s^2

The End