**BABCOCK UNIVERSITY, ILISAN-REMO, OGUN STATE**
**BASIC SCIENCE DEPARTMENT**

**MID. SEM. EXAM** **2018/19 SESSION: 1ST SEMESTER**

**PHYS 101** **GENERAL PHYSICS I**

**1YARD = 0.9144M 1M=3.281FT g=9.8M/S²**

**TIME: 30mins** **15mks**

1. The age of the earth is $1.3 \times 10^{17}$ seconds. What is this age in years
2. What is the significance of the Greenwich Meridian in the location of matter on the face of the earth?
3. A parking lot is 134.3m long and 37.66m wide. What is the perimeter of the lot?
4. A warehouse is 20.0yards long, 10.9 yards wide, and 15.0ft high. What is its volume in SI units?
5. Given two vectors $\bar{A} = 2.0\hat{\imath} + 3.0\hat{\jmath} - 3.0\hat{K}$ and $\bar{B} = 3.0\hat{\imath} + 1.0\hat{\jmath} - 3.0\hat{k}$. Find the magnitude of the vector difference $\bar{A} - \bar{B}$.
6. What is the cross product of $4\hat{\jmath}$ and $-2\hat{\imath}$.
7. An object moves such that its displacement varies with time as $x=3.0 + 0.2t^4$ meters. Find its instantaneous velocity at time t=3s.
8. If $\bar{r} = bt^2\hat{\imath} + ct^3\hat{\jmath}$, where b and c are positive constants, when does the velocity vector make an angle of $45.0^0$ with the x and y axes?
9. A particle is projected such that its maximum range is 26.4m.What is the speed at which it is launched?.
10. An object travels at a constant speed in a circle of radius 9.0m and completes one revolution in 3.0seconds. the object's speed is _____
11. The earth has a radius of 6380km and turns around once on its axis in 24hrs. What is the radial acceleration of an object at the earth's equator.
12. A crate with mass 32.5kg initially at rest on a warehouse floor is acted on by a net horizontal force of 140N. What acceleration is produced. (Assume the floor is frictionless)
13. The angular momentum l of a particle is given by the vector product of its linear momemtum p and its position vector $\bar{r}$. If $\bar{p} = 9\hat{\imath} + 10\hat{\jmath} + 15\hat{k}$ and $\bar{r} = 2\hat{\imath} + 3\hat{\jmath} + 5\hat{k}$, find $\bar{L}$
14. The first several digits of π are known to be π=3.14159265358979..... What is π to five significant figures?
15. The imaginary line that circles the Earth midway between the north and south poles is called_____