BABCOCK UNIVERSITY, ILISHAN-REMO, OGUN STATE
DEPARTMENT OF BASIC SCIENCES
MID-SEMESTER EXAMINATIONS

100LEVEL | **PHY101 – GENERAL PHYSICS I** | **2017/2018 SESSION**

Instruction: Attempt ALL questions by circling the correct option.
Show ALL WORKINGS where necessary in any space provided

Time: 30mins
Date: 1/11/2017

Useful Constants: 1hp = 746W, 1rev = $2\pi rad$, Mass of Electron = $9.11 \times 10^{-31} kg$

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Department: COMPUTER SCIENCE **Course of Study:** COMPUTER SCIENCE

1) The dimension of force is MLT^{-2}
a) LT^2 b) MLT^{-1} c) MLT^{-2} d) MT^{-2} e) MLT^{-3}

2) The dimension of power is given as ML^2/T^3
a) ML^2T^3 b) ML/T c) ML^2/T^3 d) MLT^{-2} e) MLT^{-4}

3) Calculate the dot and vector products of Vectors $\vec{A}$ and $\vec{B}$, given that $\vec{A} = 6\hat{\imath} + 3\hat{\jmath}$ and $\vec{B} = -4\hat{\imath} + 5\hat{\jmath}$.
a) -9, 42k b) 9, -42k c) 9, 42k d) -9, -42k e) none of the above

$-24 + 15$
$= -9$

4) If force $\vec{F}$ has a component in direction of displacement, the work done by the force is
a) Negative b) Positive c) Neutral d) All of the above e) None of the above

5) A 6.0kg block initially at rest is pulled to the right along a horizontal frictionless surface by a constant force of 12N. Find the speed of the block after is has moved 3.0m
a) 29m/s b) 3.37m/s c) 4.2m/s d) 3.5m/s e) 30m/s

6) The Kilowatt-hour (KW.h) is the commercial unit of electrical energy. What is the equivalent of 3KW.h in joules?
a) 108MJ b) 3.6MJ c) 36J d) 10.8MJ e) 18MJ

7) A model car moves around a circular track of radius 03m at 5 revolutions per second. What is the angular speed ω?
a) $31.42 rads^{-1}$ b) $314.2 rads^{-1}$ c) $3.142 rads^{-1}$ d) $342 rads^{-1}$ e) $0.3142 rads^{-1}$

8) All of the four jet engines of an Airbus A380 develops a thrust of 322,000N. When the airplane is flying at 250m/s, what horse power does the engines develop?
a) 18,000hp b) 180,000hp c) 108,000hp d) 10×8^2hp e) 1,000,810hp

9) An electron travelling on a straight trajectory has a kinetic energy of 8.01×10^{-16}J. What is the velocity?
a) 4.19×10^7m/s b) 7.21×10^2m/s c) 8.01×10^{-16}m/s d) 9.11×10^{-31}m/s e) 41.9×10^7m/s .

10) A bob pendulum 90cm long swings through a 15cm arc. Find the angle θ in radians and degrees through which it swings.
a) 0.9rad & 0.72° b) 0.17rad & 0.72° c) 0.17rad & 9.6° d) 9.6rad & 17.2° e) 0.17rad & 97.3°