Benha University
1st Term Exam (January 2017) Final Exam
Class: 1st Year Students (تخلفات)
Subject: Physics (I)

Faculty of computer & informatics
Date: 3/01/2017
Time: ٣ Hs.
Examiners: Dr. Salah Hamza

Q1) Choose the correct answer and shaded its circle in the answer sheet: [115 marks]
Note: Select one answer only - don't use corrector - don't choose more than one answer.

1. The equation $x = a\,t^2$ where (x) is the displacement, (a) is the acceleration and (t) is the time, is dimensionally
(a) Correct (b) Incorrect (c) No answer

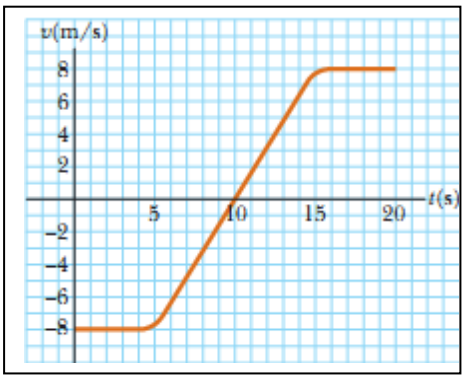
2. The slope of the displacement versus time graph gives:
(a) acceleration (b) velocity (c) average velocity

3. Chose the correct answer:
(a) $x = \upsilon_o t + \frac{1}{2}at^2$ (b) $\Delta x = \upsilon_o + at$ (c) $\Delta x = \frac{1}{2}(\upsilon_o + \upsilon)t$

4. If the position of a moving car fits the relation $x = 0.24\,t^2$, its acceleration is:
(a) $0.48\,m/s^2$ (b) $0.24\,m/s^2$ (c) $5\,m/s^2$

5. If the velocity of a moving car fits the relation $\upsilon^2 = 16 + 0.24\Delta x$, its acceleration is:
(a) $0.12\,m/s^2$ (b) $0.24\,m/s^2$ (c) $16\,m/s^2$

The velocity-time graph for an object moving along a straight path is shown in the figure.



6. Its acceleration during the time interval 0 to 5 s is
(a) $-8/5\,m/s^2$ (b) zero m/s^2 (c) $8/5\,m/s^2$

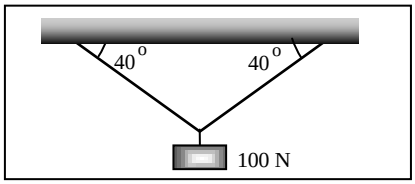
7. Its acceleration during the time interval 15 to 20 s is
(a) $-8/5\,m/s^2$ (b) zero m/s^2 (c) $8/5\,m/s^2$

8. Its acceleration during the time interval 5 to 15 s is
(a) $-8/5\,m/s^2$ (b) zero m/s^2 (c) $8/5\,m/s^2$

9. Take three steps, turn 90^o, and then walk four steps. Now count the number of steps it takes to walks in a straight line back to your starting point.
(a) 5 steps (b) 7 steps (c) 3.5 steps

10. A care of mass $1200\,kg$ travels with constant speed of $20\,m/s$. The affected force on it is
(a) 24000 N (b) zero (c) 24000 dyne

11. The tension in the two wires that support the $100\,N$ object as in the figure is
(a) $50\,N$ (b) $77.79\,N$ (c) $100\,N$



12. A $2000\,\text{kg}$ is slowed down from $20\,\text{m/s}$ to $5\,\text{m/s}$ in $4\,\text{s}$. The force affected on the car is

(a) $5700\,\text{N}$ (b) $7500\,\text{N}$ (c) $-7500\,\text{N}$

13. In U.S. system of units, the Newton is equivalent to

(a) $\text{N} \equiv \text{kg}\cdot\text{m}^{-2}\cdot\text{s}^{2}$ (b) $\text{N} \equiv \text{kg}\cdot\text{m}\cdot\text{s}^{-2}$ (c) $\text{N} \equiv \text{kg}\cdot\text{m}^{2}\cdot\text{s}^{-2}$

14. In general, the work-energy theorem states that

(a) $\Delta\text{K.E} + \Delta\text{P.E} = 0$ (b) $\text{W} = \Delta\text{K.E} - \Delta\text{P.E}$ (c) $\text{W} = \Delta\text{K.E} + \Delta\text{P.E}$

15. If dimensions of Young's modulus is given by:

(a) $\text{ML}^{-2}\text{T}^{2}$ (b) $\text{ML}^{-1}\text{T}^{-2}$ (c) $\text{ML}^{2}\text{T}^{-2}$

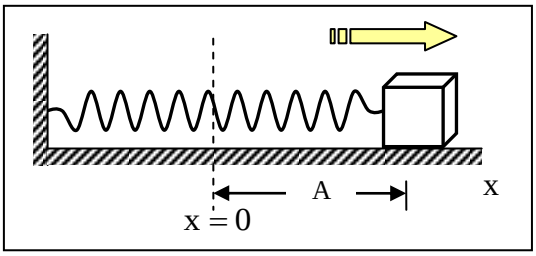
16. A vertical steel wire ($\text{Y} = 2\times10^{11}\,\text{Pa}$) of length $4\,\text{m}$ is under vertical pressure $0.75\times10^{7}\,\text{Pa}$. The distance the wire is compressed is

(a) $1.5\times10^{4}\,\text{m}$ (b) $1.5\times10^{-4}\,\text{m}$ (c) $15\times10^{-4}\,\text{m}$

17. The conservation of energy law in fluids is given by

(a) $\text{P} + \frac{1}{2}\rho\upsilon^{2} + \rho\text{gh} = \text{const.}$ (b) $\text{A}/\upsilon = \text{const.}$ (c) $\text{A}\upsilon = \text{const.}$

18. A block on the end of a spring (see the figure) is pulled to a position $\text{x} = \text{A}$ and released. Through what total distance does it travel in one full cycle of its motion? (note that the block is in equilibrium if it is at $\text{x} = 0$).



(a) 2A (b) 4A (c) A

19. If the velocity of simple pendulum fits the relation $\upsilon = -0.25\cos\left(\frac{\pi}{8}\text{t}\right)$, its angular frequency is:

(a) $0.393\,\text{rad/s}$ (b) 0.25 (c) $0.25\pi/8$

20. Pendulum of length 0.171m gives period 0.833s. What is the value of g in this location?

(a) $7.93\,\text{m/s}^{2}$ (b) $9.73\,\text{m/s}^{2}$ (c) $9.37\,\text{m/s}^{2}$

21. Pendulum of length 0.171m gives period 0.833s. What is the value of g in this location?

22. The work done on an object by a constant force is given by:

(a) $\text{F}/\Delta\text{x}$ (b) $\Delta\text{x}/\text{F}$ (c) $\text{F}\Delta\text{x}$

23. SI unit of work is

(a) Newton × meter (b) $\text{Kg}\,\text{m}^{2}\text{s}^{-2}$ (c) a and b

With our best wishes

Dr. Salah Hamza