

C- PHYSICS

91. A ball is dropped from rest. What is its speed after 3 seconds?

- A. 15 m/s
- B. 25 m/s
- C. 30 m/s
- D. 45 m/s

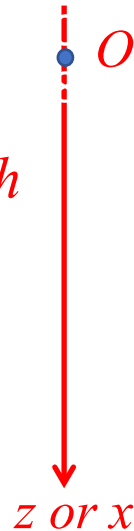
Free fall:

$$Z = x = \frac{1}{2}gt^2$$

$$V = gt \text{ and } V^2 = 2gz \text{ or } V^2 = 2gh$$

$$V = gt = 10 \times 3 = 30 \text{ m/s}$$

Correct answer is: C



92. In order to make a mercury-in-glass thermometer respond more quickly to changes in temperature its construction should be changed by:

- A. Making the capillary tube thinner
- B. Making the bulb much larger
- C. Using thicker glass walls around the bulb
- D. Using much thinner glass walls around the bulb

Correct answer is: A

93. A neutron has

- A. No electric charge
- B. single positive charged
- C. double positive charge
- D. A double negative charge

Correct answer is: A

94. Which of the following is a scalar quantity?

- A. Velocity
- B. Retardation
- C. Speed
- D. Displacement

Correct answer is: C

95. Which one of the following statements about expansion is correct?

- A. Pyrex glass expands much less than ordinary glass under the same conditions.
- B. Liquids do not expand when heated
- C. Gases do not expand when heated
- D. Water expands uniformly from 0 °C upwards

Correct answer is: A

97. Which of the following temperatures on the absolute (Kelvin) scale corresponds to 100 C°?

- A. 0 K
- B. 100K
- C. 273K
- D. 373K

$$T_K = t_c + 273 \Rightarrow T_K = 100 + 273 = 373K$$

Correct answer is: D

96. Which of the following instruments is used to measure a charge?

- A. Voltmeter
- B. Electrometer
- C. Ohm-meter
- D. Ammeter

Correct answer is: B

98. The image formed by a shaving or make-up mirror is

- A. real and erect
- B. real and inverted
- C. virtual and erect
- D. virtual and inverted

Correct answer is: C

100. A vehicle travels a distance of 160 km in 5 hours. The average speed is

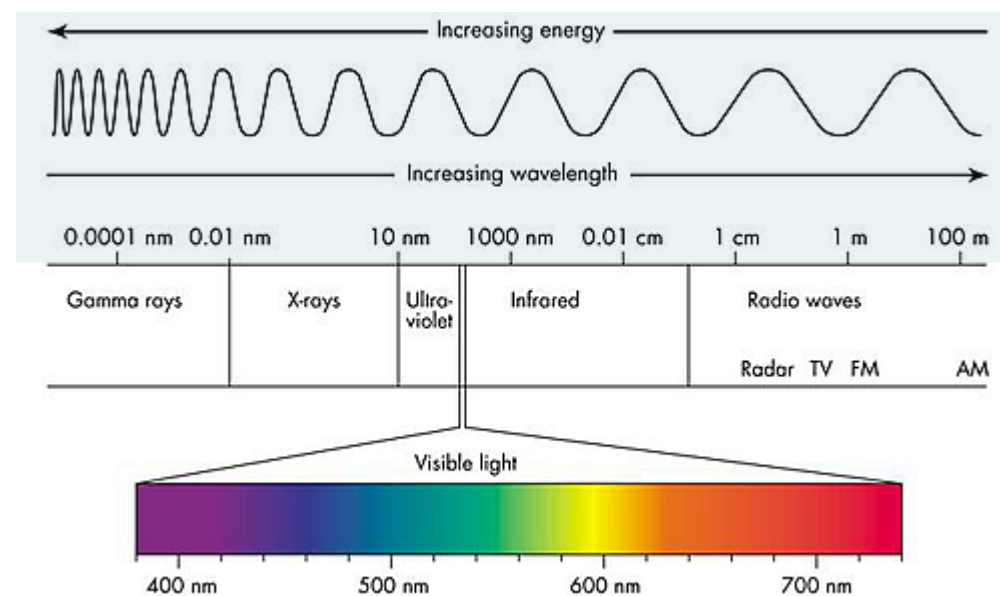
- A. 32 km/hr
- B. 40 km/hr
- C. 80 km/hr
- D. 165 km/hr

$$\text{Average speed : } V_a = \frac{d}{t} = \frac{160}{5} = 32 \text{ km/h}$$

Correct answer is: A

99. Which of the following types of waves has the highest wavelength?

- A. X-rays
- B. Infrared
- C. Light
- D. Radio



Correct answer is: D

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91. Which system gives the lowest acceleration?

- A. 65N acting on 40 kg
- B. 10N acting on 8 kg
- C. 18N acting on 30 kg
- D. 80N acting on 100 kg

$$F = ma \Rightarrow a = \frac{F}{m}$$

$$A. \Rightarrow a = \frac{65}{40} = 1.625 \text{ m/s}^2$$

$$B. \Rightarrow a = \frac{10}{8} = 1.25 \text{ m/s}^2$$

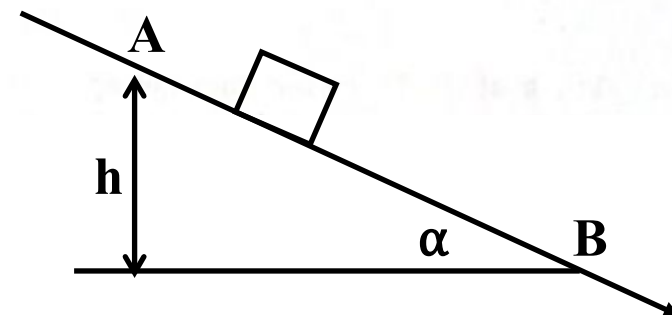
$$C. \Rightarrow a = \frac{18}{30} = 0.6 \text{ m/s}^2$$

$$D. \Rightarrow a = \frac{80}{100} = 0.8 \text{ m/s}^2$$

Correct answer is: C

92. A 1200 kg car coasts from rest down a driveway that is inclined 20° to the horizontal and is 15m long. How fast is the car going at the end of the driveway if the friction is negligible? ($g = 10 \text{ N/kg}$)

- A. 10cm/s
- B. 100cm/s
- C. 10m/s
- D. 100m/s



$$V^2 = 2gh \Rightarrow V = \sqrt{2gh}$$

$$\sin \alpha = \frac{h}{AB} \Rightarrow h = AB \sin \alpha = 15 \sin 20^\circ = 5.13 \text{ m}$$

$$V = \sqrt{2 \times 10 \times 5.13} = 10 \text{ m/s}$$

$$V^2 = 2gh \Rightarrow V = \sqrt{2gh}$$

Correct answer is: C

93. Which of the following instruments is used to measure an ohmic resistance?

- A. voltmeter
- B. electrometer
- C. ohm-meter
- D. ammeter

Correct answer is: C

94. All sound is caused by

- A. electromagnetism
- B. electrically
- C. transverse waves
- D. vibrations

Correct answer is: D

95. For a fixed mass of gas, halving pressure

- A. doubles the volume at constant temperature
- B. doubles the volume if the temperature doubles also
- C. halves the volume if the temperature halves also
- D. does not affect the volume at constant temperature

Ideal gas law: $\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$

Given: $P_2 = \frac{P_1}{2}$

A. $T_1 = T_2 \Rightarrow \frac{P_1 V_1}{T_1} = \frac{\frac{P_1}{2} V_2}{T_1} \Rightarrow V_1 = \frac{V_2}{2} \Rightarrow V_2 = 2V_1$

Correct answer is: A

96. A temporary magnet should be made from

- A. Copper
- B. Steel
- C. Tin
- D. Aluminum

Correct answer is: B

98. Which of the following does not apply to sound waves?

- A. They transmit energy
- B. They result from vibration
- C. They travel fastest in a vacuum
- D. They can be diffracted

Sound does not propagate in vacuum.

Correct answer is: C

97. The nucleus of the atom of a certain element contains 8 protons and 9 neutrons. Its mass number is

- A. 5
- B. 6
- C. 17
- D. 12

Mass number $A = Z + N = 8 + 9 = 17$

Correct answer is: C

99. Which of the following describes particles in a solid?

- A. close together and stationary
- B. close together and vibrating
- C. close together and moving around at random
- D. far apart and stationary

Correct answer is: B

100. An alpha particle consists of

- A. 2 protons and 2 electrons
- B. 4 protons
- C. 2 protons and 2 neutrons
- D. 4 neutrons

Alpha particle is helium nucleus : ${}^4_2\text{He}$

$Z=2$ protons and $N = A-Z=4-2=2$ neutrons

Correct answer is: C