PHYSICS 2024

(Science General Group)

TIME: 3 Hours **(85 Marks)**

SECTION 'A' (Multiple Choice Questions)(17)

NOTE: i) This section consists of 17 part questions and all are to be answered. Each question carries 1 mark.
ii) Do not copy the part questions in your answer book. Write only the answer in full against the proper number of the question and its part.
iii) The use of scientific calculator is allowed. All notations are used in their usual meanings

1. Select the correct answer for each from the given options:

i) A sky diver falls through the air with terminal velocity. The force of air resistance on bless is:
* half of his weight
* equal to his weight ✓
* twice of his weight
* zero

ii) The resistance of superconductor is:
* Finite
* infinite
* Change with every conductor
* Zero ✓

iii) In SHM kinetic energy is maximum at:
* mean position ✓
* extreme position
* all positions
* mean & extreme positions

iv) Energy stored in the capacitor is equal to:
* $\frac{1}{2}C^2V$ * $\frac{1}{2}CV^2$ ✓ * CV^2 * $\frac{1}{2}CV$

v) This force is called as self-adjusting force:
* weight * tension * thrust * friction ✓

vi) The dimensions of angular momentum are given by:
* $ML^{-1}T^{-2}$ * ML^2T^{-1} * L^2T^{-1} * MLT^{-4} ✓

vii) A communication channel does not consist of:
* Transmission line
* Optical fiber
* Free space ✓
* Receiving equipment

viii) A body suspended by a weighing scale weighs 10N out of water and 7N when submerged in water. This is the buoyant force on the body:
* 3N ✓ * 5N * 7N * 10N

ix) This pair of angles a projectile will obtain the equal horizontal range for a given velocity:
* $(18^o, 74^o)$
* $(23^o, 58^o)$
* $(33^o, 57^o)$ ✓
* $(37^o, 70^o)$

x) A jet engine plane develops a forward force of 2000N when the velocity of flying at 200 m/s. The power of the engine will be:
* 4×10^5 hp
* 4×10^5 kW ✓
* 4×10^5 W
* 4×10^5 MW

xi) A mass spring oscillator has a time period T, if the mass is doubled, the time period will become:
* T * 2T * $\sqrt{2}T$ ✓ * $T/\sqrt{2}$

xii) A charge of 5C is moved from one point to another point in an electric field and 1000J of work is done by the field. The potential difference between the two points will be:
* 100V * 200V ✓ * 500V * 800V

xiii) Electric resistance of a conductor does not depend upon:
* Length of conductor
* Temperature of conductor
* Area of cross-section of conductor
* Potential difference between the sides of the conductor ✓

xiv) This electromagnetic wave in the given option has the shortest wavelength:
* Radio waves
* ultraviolet waves ✓
* microwaves
* infrared waves

xv) The locus of all points in the same phase of vibration is called:
* wave number
* wave pulse
* wavelength
* wave front ✓

xvi) The maximum number of beats that can be heard by human earth:
* 3 * 5 * 7 ✓ * 9

xvii) A body moving along the circular path may have constant:
* Velocity * Acceleration * Momentum * Speed ✓