Name ABDULLAH

Roll No 45603

1۔ہر سوال کے سامنے چار دائرے دیے گئے ہیں، صرف صحیح جواب والا دائرہ بھر دیں۔

2۔دائروں کو شیڈ (بھرنے) کے لئے نیلے یا کالے رنگ کا مار کر استعمال کریں۔

3۔جواب میں ایک سے زائد دائرے بھرنے سے جواب غلط تصور ہو گا۔

Time Allowed: 20 Minutes SECTION – A Marks : 18

1	.....is least sub multiple.	○ Femto	○ Neon	● Atto	○ Pico
2	A person walks first 10km north and then 20 km east. The resultant vector is.....	○ 22.46 km	○ 20.36 km	○ 25.23 km	● 22.36 km
3	When force applied on a body..... does not change.	○ Position	● Mass	○ Acceleration	○ Velocity
4	An example of non-conservative force is.....force.	○ Electric	○ Gravitational	● Frictional	○ Magnetic
5	Linear acceleration $a = r\alpha$ when θ = ...	○ 0°	● 90°	○ 180°	○ 360°
6	Angular form of centripetal acceleration $\vec{a}_c$ =.....	○ $\vec{r}\,\vec{\alpha}$	○ $\vec{r\omega}$	○ $r\omega^2\,\vec{r}$	● $-\omega^2\,\vec{r}$
7	The S.I unit of co-efficient of viscosity is.....	○ $N.m^{-2}$	● $N.s.m^{-2}$	○ $N.s.m^{-1}$	○ $N.s^{-1}.m^{-2}$
8	Mathematically simple Harmonic Motion can be expressed as.....	○ $a \alpha x$	○ $a \alpha x^2$	○ $a \alpha -x^2$	● $a \alpha -x$
9	The speed of mechanical wave in a medium depends upon...of the medium.	○ Density	○ Elasticity	● A and B both	○ None of these
10	The pressure will be low where the speed of the fluid is.....	● High	○ Zero	○ Low	○ Constant
11	If the frequency of a simple pendulum is 2 Hz then its time period is.....	○ 1 sec	○ 2 sec	● 0.5 sec	○ 1.5 sec
12	The principle of Young's double slits experiment is based on the deviation of..	○ Velocity	○ Amplitude	○ Frequency	● Wave length
13	The frequency of ultraviolet radiation is.....Hertz.	● 1×10^{15}	○ 1×10^{6}	○ 1×10^{9}	○ 1×10^{10}
14	Tripple point of water is.....	○ 372.16 K	● 273.16 K	○ 273.16°F	○ 273.16°C
15	The dimension of pressure is.....	● $[M^1L^{-1}T^{-2}]$	○ $[L^{-1}T^{-2}]$	○ $[M^1L^1T^{-1}]$	○ $[M^0L^1T^{-2}]$
16	What is the angle between $\vec{A}$ and $\vec{B}$ for which $\lvert\vec{A}+\vec{B}\rvert = \lvert\vec{A}-\vec{B}\rvert$.	○ 30°	○ 45°	○ 60°	● 90°
17	Slope of velocity – time graph is called.....	○ Speed	○ Velocity	○ Distance	● Acceleration
18	Work done is maximum for θ = ...	● 0°	○ 45°	○ 90°	○ 180°

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PHYSICS (New)

Inter Part – I

(Fresh/Reappear)

Note: **Time allowed for Section – B and Section – C is 2 Hours and 40 minutes.**

Section – B

Marks: 40

Q-II Attempt any TEN parts. Each part carries FOUR marks.

1. Explain Beats in Sound Waves.
2. State and explain Brewster's law of polarization.
3. When two systems are in thermal equilibrium, do they have the same amount of KE? Explain.
4. Define the number π and show that 2π radians = 360°
5. Explain briefly conditions of equilibrium.
6. What is projectile motion? Derive mathematical expression to find horizontal range of a projectile.
7. Show that total work done in a closed path in gravitational field is zero.
8. Define orbital velocity and prove that $v \propto \frac{1}{\sqrt{r}}$ where "r" is radius of orbit and 'v' is speed of a satellite.
9. State and explain briefly Torricelli's theorem.
10. Define the following:
    i. Time Period ii. Free Oscillation
    iii. Resonance iv. Phase
11. Write any four uses of ultrasonic waves.
12. Define and briefly explain scalar product of two vectors.
13. Deduce the dimensions of Gravitational Constant.

Section – C

Marks: 27

Note: Attempt any THREE questions. All questions carry equal marks.

Q-III (a) Define elastic and inelastic collisions. Derive mathematical equations for calculating the final velocities of the elastically colliding bodies in one dimension. **(5)**

(b) A 90kg man runs up a long flight of stairs in 8 sec the vertical height of the stairs is 6.5 m. Calculate his power **(4)**

Q-IV (a) Define linear and angular momentum and show that $|\vec{L}| = |\vec{r} \times \vec{P}| = mvr$ **(5)**

(b) Velocity of water in 8 inch diameter pipe is 6ft.s^{-1}. Find the velocity in 4 inch diameter pipe, which connects with it. **(4)**

Q-V (a) Explain Newton's formula for the speed of sound. How it was corrected by French Scientist Laplace. **(5)**

(b) A simple pendulum completes one vibration in one second. Find its length. **(4)**

Q-VI (a) State and explain Huygen's Principle. What is the difference between spherical and plane wave fronts? **(5)**

(b) Calculate the change in entropy when 20 kg of water is heated from 80°C to 100°C. (specific heat of water is 4180 J mole^{-1} K^{-1}) **(4)**