

AIRMAN

PHYSICS

1. Unit of Length = Meter
2. " " Mass = Kilogram
3. " " Time = Second
4. " " Area = Square Meter
5. " " Volume = Cubic Meter
6. " " Speed = ms^{-1} or kmh^{-1}
7. " " Acceleration = ms^{-2}
8. " " Pressure = Pascal or Nm^{-2}
9. " " Charge = Coulomb
10. " " Liquid Volume = Liter
11. " " Momentum = Kgm s^{-1}
12. " " Lenses = Dioptor
13. " " Capacitor = Farad
14. " " Current = Ampere
15. " " Resistance = Ohm
16. " " Temperature = Kelvin
17. " " Stress = Nm^{-2}
18. " " Electric power = Watt
19. " " Spring constant = Nm^{-1}

20. Unit of frequency: Hertz
21. " Specific Heat: Joule per Kg per Kelvin
22. " Intensity of Sound: Watt per square meter
23. " Weight: Newton
24. " force = Newton
25. " E.M.F = Volt
26. " Potential Difference = Volt
27. " Heat: Joule
28. " Energy: Joule
29. " Work: Joule
30. " Torque: Nm

EQUATIONS

1. Momentum: $P = mv$
2. Mass: $F = ma$
3. Friction: $FS = \mu R$
4. Centripetal Force: $FC = \frac{mv^2}{r}$
5. Centrifugal Force: $FC = -\frac{mv^2}{r}$
6. Work or Weight: $W = F \times S$
7. Kinetic Energy: $K.E = \frac{1}{2} mv^2$
8. Potential Energy: $P.E = mgh$

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9. Mechanical Advantage: $MA = \frac{L}{E} \rightarrow$ effort

10. Mechanical Advantage of Screw: $MA = 2\pi d$

11. Weight : $W = mg$

12. Area of circle: πr^2

13. Charles Law: $\frac{V_1}{T_1} = \frac{V_2}{T_2}$

14. First equation of Motion: $V_f = V_i + at$

15. 2nd equation of Motion: $S = V_i t + \frac{1}{2} at^2$

16. Third equation of Motion: $2as = V_f^2 - V_i^2$

17. Orbital velocity: $V_{orb} = \sqrt{\frac{Gm}{R}}$

18. $\sin \theta = \frac{\text{Perpendicular}}{\text{Hypotenuse}}$

19. $\cos \theta = \frac{\text{Base}}{\text{Hypotenuse}}$

20. Time period of Simple Pendulum on Earth: $T = 2\pi \sqrt{\frac{L}{g}}$

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21- Time Period of Spring attached
Body: $T = 2\pi \sqrt{\frac{m}{k}}$

22- Efficiency: $\frac{\text{Output}}{\text{Input}}$

23- Capacitor: $Q = CV$

24- Joule's Law: $W = IR^2t$

25- Current: $I = Q/t$

26- Volume: $\text{Height} \times \text{Breadth} \times \text{Length}$

27- $E = mc^2$

28- Voltage in Series Circuit: $V = V_1 + V_2 + V_3$

29- Resistance in Series Circuit: $R = R_1 + R_2 + R_3$

30- Current in Parallel Circuit: $I = I_1 + I_2 + I_3$

31- Young modulus: $Y = \frac{\text{Strain}}{\text{stress}}$

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VALUES

- 1- Value of g : 9.8 ms^{-2}
- 2- Least count of vernier Callipers: 0.1 mm
- 3- " " " Micrometer: 0.01 mm
- 4- One Horse Power: 746 mega watt
- 5- Diameter of Eye Eye: 2.5 mm
- 6- Charge on Electron: 1.6×10^{-19}
- 7- " " Proton: 1.6×10^{-19}
- 8- " " Neutron: No charge
- 9- Mass of Proton: 1.6×10^{-27}
- 10- " " Neutron: 1.6×10^{-27}
- 11- " " Electron: 9.1×10^{-31}

Remember:

- ★) Charge of Electron and Proton is equal.
- ★) Mass of Proton and Neutron is equal.

DEFINITIONS

- 1- Speed: "Distance covered in unit time."
- 2- Velocity: Rate of change of displacement.
- 3- Acceleration: Rate of change of velocity.
- 4- Displacement: Distance covered in particular direction.
- 5- Momentum: Product of mass and velocity.
- 6- Torque: The rotational effect of a force.
- 7- Power: Rate of doing work.
- 8- Energy: Capacity of doing work.
- 9- Mechanical Advantage: Ratio of Load and effort.
10. Efficiency: Ratio of output and input.
- 11- Pressure: Force exerted on unit area.
- 12- Stress: Force acting on unit area.
13. Strain: Change in shape of an object caused due to stress.
14. Tensile strain: If a stress produces a change in length then the ratio of a change in length

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to original length.

- 15- **Hook's Law:** Relationship b/w stress and strain.
- 16- **Young Modulus:** Ratio b/w stress & strain.
- 17- **Mass:** Quantity of matter in a body.
- 18- **Weight:** The force with which earth attracts towards its center.
19. **Lever:** A bar which can move around any point.
20. **Fulcrum:** The point around which lever is rotate.
21. **Viscosity:** Force that arises due to force of friction b/w different layers of a fluid of flow.
22. **Evaporation:** Process of change of a liquid into vapour.
23. **Brownian Motion:** The irregular motion of molecules.
24. **Law of inertia:** First law of Newton is also called law of inertia.

Points:

- 1- In Boyle law Temperature is constant.
- 2- In Charles law Pressure is constant.
- 3- Which store electrical charge is called Capacitor.
- 4- Resistance is an opposition to the flow of current.
- 5- In series circuit current always constant.
- 6- In parallel circuit voltage always constant.
- 7- The substance by which current passes easily is called conductor.
- 8- The substance by which current cannot pass easily called insulator.
- 9- Galvanometer is sensitive instrument which detects current in a circuit.
- 10- Ammeter is an instrument which measures current.
- 11- Voltmeter is used to measure potential difference b/w two points.

12. By connecting a low resistance in parallel with Galvanometer it will become Ammeter.
13. Galvanometer will become Voltmeter by connecting a high resistance in series.
14. The number of protons in a nucleus is called Atomic Number.
15. Total number of protons and neutrons in nucleus called Atomic Mass Number.
16. Isotopes are those elements whose atomic numbers are same but atomic mass are different.
17. Breaking of nucleus into two parts with release of large energy is called Fission Reaction.
18. A reaction in which few small nuclei diffuse to form a heavy nucleus called Fusion Reaction.
19. Diode works as a rectifier.
20. Which convert AC into DC is called Rectifier.
21. Transistor works as an Amplifier.

22. Number of transistor types Two.
23. Types of transistor are
(i) PNP (ii) NPN
24. In PNP transistor A_{e0} is toward the base.
25. In NPN transistor A_{e0} is away from base.
26. In transistor, in the center is base one side is emitter and one side is collector.
27. Diod P part is Anode.
28. Diod N part is Cathode.
29. Di-electric works as insulator.
30. Thermostate controls the Temperature.
31. Which convert electrical energy into mechanical energy is motor.
32. Which convert mechanical energy into electrical energy is generator.
33. Which convert chemical energy into electrical energy is battery.
34. Product of charge and potential difference is equal to energy.

35. Hydraulic brake works under the law of Pascal's Law

36. How many kinds of motion: Three

37. Kinds of motion is

(i) Translatory

(ii) Rotatory

(iii) Vibratory

38. How many kinds of ^{Translatory} motion: Three Three

39. Kinds of Translatory motion:

(i) Linear

(ii) Circular

(iii) Random

40. Rolling friction is less than sliding friction 100 times.

41. Scissor is First kind of lever.

42. Seesaw is First " " "

43. Door is Second " " "

44. Arm is Third " " "

45. Density of body depends upon mass

46. K.E depends upon mass

47. Momentum depends upon mass

48. Unit of inertia depends upon mass and displacement

49. Pitch depends upon Frequency

TABLE OF SCALAR

AND VECTOR QUANTITY

Scalar Quantity	Vector Quantity
1) Temperature	1) Displacement
2) Length	2) velocity
3) Volume	3) Force
4) Current	4) Acceleration
5) Mass	5) Momentum
6) Density	6) Torque
6) Density	6) Torque
7) Work	7) Weight