

Physics Paper I

College Name- Hutatma Rajguru Mahavidyalaya, Rajgurunagar

Class- F. Y. B. Sc.

Semester- First and Second

Subject: Physics Paper I (Mechanics and Properties of Matter, Heat & Thermodynamics)

Name of teacher- N.D.Barne

Syllabus pattern- 2013 Pattern

Topic- MCQ for practice

Mechanics and Properties of Matter

1. The Speed is Vector quantity and Velocity is a Scalar Quantity
 - a) Both true b) First true and second False c) First False and Second True
 - d) Both False

Ans : d
2. The Inertia is the property of a system to oppose the change in it's state
 - a) True b) False

Ans : a
3. Rohit standing on the spring balance. The reading of spring balance is 52kgf. If Rohit jumps out side balance, then reading of spring balance...
 - a) First increases then decrease to zero b) Remain same c) Increase d) Decrease

Ans : a
4. Fundamental force included...
 - a) Nuclear Force b) Gravitational Force c) Electrostatic force d) All the above

Ans : d
5. If we view the objects from an inertial frame, the Pseudo Force disappear

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- a) True b) False

Ans : a

6. Newton's second law is known as law of inertia

- a) True b) False

Ans : b

7. What is the unit of energy in SI unit system

- a) Joule b) erg c) Watt d) Newton

Ans : a

8. An object of mass 10g is moving with velocity 20 cm/s. What is its kinetic energy?

- a) 2.0×10^5 erg b) 2.0×10^4 erg c) 2.0×10^3 erg d) 2.0×10^2 erg

Ans : c

9. The force is called as conservative force for which work done is independent of.....

- a) Time b) Distance c) Path d) Mass

Ans : c

10. Gravitational Force is non-conservative force

- a) True b) False

Ans : b

11. The work done by conservative force is dependent of path

- a) True b) False

Ans : b

12. Frictional forces are conservative forces.

- a) True b) False

Ans : b

13. The internal resistive force per unit area of the body is called...

- a) Stress b) Strain c) Force d) velocity

Ans : a

14. Within the elastic limit, Stress is directly proportional to strain

- a) True b) False

Ans : a

15. Poisson ratio is

- a) Stress / strain b) Strain / Stress c) lateral strain / longitudinal strain
force / area

Ans : c

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16. Unit of Poisson ratio

- a) Erg b) Newton c) No unit d) cm

Ans : c

17. Liquids and gases possess only the bulk modulus

- a) True b) False

Ans : a

18. The ratio of volume stress to volume strain is called as ..

- a) Bulk Modulus b) Young Modulus c) Modulus of Rigidity d) Poisson Ratio

Ans : a

19. Rain drops are spherical because of

- a) Surface tension b) Elasticity c) Viscosity d) Shortage of rain

Ans : a

20. For the liquid which wets the solid surface, the angle of contact is

- a) Obtuse b) Acute c) 90° d) 180°

Ans : b

21. Surface tension depends on...

- a) Temperature b) Presence of impurity in solid c) Contamination of the liquid surface d) All of these

Ans : d

22. The SI unit of surface tension (Force / length) is

- a) Newton b) Erg c) Newton / Meter d) Meter / Newton

Ans : c

23. The Angle of Contact may vary between

- a) 0° - 45° b) 0° – 180° c) 180° - 360° d) 90° - 180°

Ans : b

24. With the rise in temperature, Surface tension decreases

- a) True b) False

Ans : a

25. Usually, the range of Reynold number for streamlined flow is

- a) $300 < R < 1000$ b) $2000 < R < 3000$ c) $1000 < R < 3000$ d) $R < 1000$

Ans : c

26. The Equation of Continuity for a gas may be written as

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- a) $A_1V_1 = A_2V_2$ b) $A_1 = A_2$ c) $V_1 = V_2$ d) $A_1V_2 = A_2V_1$

Ans : a

27. The Steady flow is also called Streamline flow

- a) True b) False

Ans : a

28. The motion of water in high fall is an example of turbulent flow

- a) True b) False

Ans : a

29. Two streamlines can intersect.

- a) True b) False

Ans : b

30. The unit of coefficient of viscosity in CGS is dyne-second/cm² is called as ...

- a) Decapoise b) poise c) viscosity d) surface tension

Ans : b

Heat & Thermodynamics

1. The Ideal gas is

- a) The particles of the gas do not interact with each other
- b) The particles of the gas interact with each other
- c) The particles of the gas are same
- d) The particles of the gas are different

Ans- a

2. Boyle's Law stated as:

- a) At constant pressure , $PV = \text{constant}$
- b) At constant volume, $PV = \text{constant}$
- c) At constant energy, $PV = \text{constant}$
- d) At constant temperature, $PV = \text{constant}$

Ans= d

3. The equation of state for a perfect gas is ,

- a) $PV = \text{constant}$
- b) $PV = k$

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- c) $PV = RT$
- d) $PV = a/b$

Ans= c

4. Thomas Andrews experiment based on _____

- a) Nitrogen
- b) Hydrogen
- c) CO_2
- d) Calcium

Ans= c

5. Using Van der Waal's equation , critical constant is

- a) $V=5$
- b) $V_c = 3b$
- c) $V= 1$
- d) $V= a$

Ans= b

6. For Ideal gas, Joule Thomson expansion would always result in

- a) Increase in temperature
- b) Decrease in temperature
- c) Temperature remains constant
- d) Temperature is equal to 1.

Ans = c

7. In Isothermal process,

- a) Temperature remains constant
- b) Pressure remains constant
- c) Volume remains constant
- d) Temperature does not constant

Ans= a

8. In an Adiabatic process,

- a) The value of heat is not zero
- b) The value of heat is zero
- c) The value heat is below zero
- d) The value of heat is 1

Ans= b

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9. Indicator diagram is

- a) A graphical representation of the state of system of two variables
- b) A presentation of the system
- c) A graph of only one variable
- d) There is no graphical presentation

Ans= a

10. Using First Law of thermodynamics,

- a) Q is zero
- b) Q is not equal to zero
- c) $Q=1$
- d) $Q=2$

Ans= a

11. Open system means

- a) Only energy exchange
- b) Only matter exchange
- c) Energy and matter exchange
- d) Both are not exchange

Ans= c

12. An isothermal Process is governed by _____

- a) Boyle's Law
- b) Charles Law
- c) Gay-Lussac Law
- d) Avogadro's Law

Ans= a

13. When a gas heated , change takes place in _____

- a) Pressure
- b) Volume
- c) Temperature
- d) All of these

Ans= d

14. Efficiency of carnot's engine is

- a) $T_1 - T_2 / T_1$
- b) T_1
- c) T_2
- d) Zero

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Ans= a

15. The efficiency of carnot's engine is, given $T_1 = 373 \text{ K}$ and $T_2 = 273 \text{ K}$.

- a) 0.26
- b) 0.1
- c) 0.2
- d) 0.3

Ans= a

16. The unit heat is

- a) joule
- b) K
- c) Mol
- d) Kg

Ans= a

17. The carnot's cycle consist of

- a) Isothermal process
- b) Adiabatic process
- c) Both are absent
- d) Both are present

Ans=d

18. The definition of entropy is

- a) The ratio of change in heat and temperature
- b) Product of heat and temperature
- c) Sum of heat and energy
- d) Sum of work and temperature

Ans= a

19. The statement of second law of thermodynamic:

- a) Heat cannot flow from cold body to hot body
- b) Heat flow itself
- c) Heat is absent
- d) Entropy decreases

Ans= a

20. The Heat engine is

- a) Only heat is present
- b) A device that converts heat into mechanical work
- c) Does not convert heat into work

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d) Only work is present

Ans= b

21. The Heat engine contain

- a) Carnot engine
- b) Two stroke engine
- c) Otto and Diesel engine
- d) Bio-diesel engine

Ans= c

22. Working of Refrigerator is

- a) Opposite to biodiesel engine
- b) Two stroke engine
- c) CNG
- d) Carnot engine

Ans= d

23. Otto engine is called as

- a) Diesel Engine
- b) Petrol Engine
- c) Both
- d) None of these

Ans= b

24. What are commonly used in thermometer?

- a) Mercury
- b) Hydrogen
- c) Water
- d) Chlorine

Ans= a

25. The unit of temperature is

- a) Only Celsius
- b) Only Kelvin
- c) Only Fahrenheit
- d) All of these

Ans= d

26. Formula to convert Celsius into Kelvin

- a) $K = 273 + C$
- b) $K = 300 - C$

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- c) $K = 270 - C$
- d) None of these

Ans= a

27. The value of temperature in Kelvin is, given=27degree Celsius

- a) 300
- b) 400
- c) 200
- d) 246

Ans= a

28. Platinum Resistance is a

- a) Type of engine
- b) Type carnot engine
- c) Type otto engine
- d) Type of thermometer

Ans= d

29. Thermocouple is a

- a) Only one wire is connected
- b) Two wire are separated
- c) Two wire of different metal alloys welded together
- d) None of these

Ans = c

30. Air conditioning is a _____

- a) Artificial system or machine for controlling temperature and moisture
- b) Natural system for controlling temperature and moisture
- c) Maintain temperature only
- d) None of these

Ans= a

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