

SAMPLE TEST PAPER

PHYSICS
MOCK TEST PAPER

Set - 1

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Physics Mock Test Set - 1

1. The speed at which the current travels in a conductor is nearly

- (a) $3 \times 10^4 \text{ ms}^{-1}$
- (b) $3 \times 10^6 \text{ ms}^{-1}$
- (c) $3 \times 10^8 \text{ ms}^{-1}$
- (d) $3 \times 10^{10} \text{ ms}^{-1}$

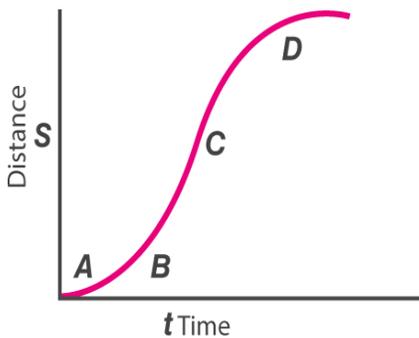
2. The radius of the earth is 6400 km and $g = 10 \text{ m/s}^2$. In order that a body of 5 kg weighs zero at the equator, the angular speed of the earth is

- (a) $1/80 \text{ rad/s}$
- (b) $1/400 \text{ rad/s}$
- (c) $1/800 \text{ rad/s}$
- (d) $1/1600 \text{ rad/s}$

3. A missile is launched with a velocity less than the escape velocity. The sum of its kinetic and potential energy is

- (a) Positive
- (b) Negative
- (c) Zero
- (d) may be positive or negative

4. Below is the distance-time curve traced by the particle. What is the maximum instantaneous velocity of the particle around the point



- (a) D
- (b) B
- (c) A
- (d) C

5. Choose the correct statement

- (a) A body can be accelerated by frictional force
- (b) There can be zero friction
- (c) Kinetic friction is greater than rolling friction
- (d) Frictional force and area of contact between the two surfaces are proportional

6. Let two bodies be with masses 2kg and 5kg respectively. Let these bodies be at rest with the same force acting on them. Calculate the ratio of times that is required by both the bodies to reach the final velocity.
- (a) 2:5
(b) 25:4
(c) 5:3
(d) 4:25
7. The mass of a body which is equal to the ratio of the force acting on a body to the acceleration produced in the body is
- (a) the gravitational mass
(b) the electromagnetic mass
(c) the internal mass
(d) the inertial mass
8. If the length of a wire is reduced to half, then it can hold the
- (a) same load
(b) one fourth load
(c) half load
(d) double load
9. According to Hooke's law of elasticity, if stress is increased, then the ratio of stress to strain
- a) remains constant
b) increases
c) becomes zero
d) decreases
10. The displacement y of a particle executing periodic motion is given by $y = 4 \cos^2(t/2) \sin(1000t)$. This expression may be considered to be a result of superposition of the following number of harmonic motions.
- (a) two
(b) three
(c) four
(d) five
11. How many different resistances are possible with two equal resistors?
- (a) 2
(b) 3
(c) 4
(d) 5
12. Consider two objects: a disk and a sphere that has the same radius but different masses which roll down the two inclined planes with the same altitude and length. Out of the two objects, which one gets to the bottom of the plane first?
- (a) It is dependent on the masses of the objects

- (b) Disk
- (c) Sphere
- (d) Both reach at the same time

13. The angular momentum of a rigid body is L and its kinetic energy is halved. What happens to its angular momentum?

- (a) L
- (b) $2L$
- (c) $L / 2$
- (d) $L / 4$

14. What is the acceleration of the rolling sphere at the centre of the plane with inclination, Θ to the horizontal?

- (a) Zero
- (b) Less than $g \sin \Theta$
- (c) Greater than $g \sin \Theta$
- (d) $g \sin \Theta$

15. The atmospheric pressure is 106 dyne/cm^2 . What is its value in the SI unit?

- (a) 105 newton/m^2
- (b) 106 newton/m^2
- (c) 104 newton/m^2
- (d) 103 newton/m^2

16. A resonance air column of length 40 cm resonates with a tuning fork of frequency 450 Hz . Ignoring end correction, the velocity of sound in air will be

- (a) 720 m/s
- (b) 820 m/s
- (c) 920 m/s
- (d) 1020 m/s

17. With the increase in temperature, the frequency of the sound from an organ pipe

- (a) Decreases
- (b) Increases
- (c) Remain unchanged
- (d) Changes erratically

18. A man of 60 kg weight is standing at rest on a platform. He jumps up vertically a distance of 1 m and the platform at the same instant moves horizontally forward with the result that the man lands 1 meter behind the point on the platform from where he took the jump the total work done by the man at the instant he lands is

- (a) 300 J
- (b) 150 J
- (c) 600 J
- (d) zero

- 19. Which is the type of collision in which both the linear momentum and the kinetic energy of the system remain conserved?**
- (a) Inelastic Collision
 - (b) Elastic Collision
 - (c) Destructive collision
 - (d) None of the options
- 20. Real gases show mark able deviation from that of ideal gas behavior at**
- (a) High temperature and low pressure
 - (b) Low temperature and high pressure
 - (c) High temperature and high pressure
 - (d) Low temperature and low pressure
- 21. 1:2 is the ratio of the lengths of the two wires A and B which are made from the same material. 2:1 is the ratio of their diameter. What will be the ratio of their length if the wires are stretched by the same force?**
- (a) 2:1
 - (b) 1:8
 - (c) 1:4
 - (d) 8:1
- 22. Absorptive power of perfectly black body is**
- (a) Zero
 - (b) Infinity
 - (c) One
 - (d) Constant
- 23. Which of the following is a thermodynamics law?**
- (a) Zeroth law of thermodynamics
 - (b) Faraday's Law of thermodynamics
 - (c) Ideal Gas Law of thermodynamics
 - (d) Boyle's Law of thermodynamics
- 24. Heat does not spontaneously flow from a colder body to a hotter one. Which of the following thermodynamics laws states this?**
- (a) Zeroth law of thermodynamics
 - (b) First law of thermodynamics
 - (c) Second law of thermodynamics
 - (d) Third law of thermodynamics
- 25. Which of the following is an application of thermodynamics?**
- (a) Refrigerators
 - (b) Gas compressors
 - (c) Power plants
 - (d) All of the mentioned

26. A current carrying coil is placed in a uniform magnetic field. If the coil turns through an angle θ , then the torque is directly proportional to:
- (a) $\sin \theta$
 - (b) $\cos \theta$
 - (c) $\cot \theta$
 - (d) $\tan \theta$
27. The sensitivity of a tangent galvanometer can be increased by increasing:
- (a) the radius of the coil
 - (b) the external magnetic field
 - (c) the number of turns of the coil
 - (d) all the above
28. The permeability of a paramagnetic substance is:
- (a) very large
 - (b) negative
 - (c) less than unity
 - (d) small but more than unity
29. Which one of the following is the unit of electric field?
- (a) Coulomb
 - (b) Newton
 - (c) Volt
 - (d) N/C
30. The dimensional formula of is:
- (a) $[MLT^{-2}A^{-1}]$
 - (b) $[ML_0T^{-3}A^{-1}]$
 - (c) $[ML_0T^{-2}A^{-1}]$
 - (d) None of these
31. Consider a uniform electric field in the z-direction. The potential is a constant
- (a) for any x for a given z
 - (b) for any y for a given z
 - (c) on the x-y plane for a given z
 - (d) all of these
32. A test charge is moved from lower potential point to a higher potential point. The potential energy of test charge will
- (a) remain the same
 - (b) increase
 - (c) decrease

(d) become zero

33. Power factor of an ac circuit is a measure of:

- (a) virtual power
- (b) power lost in the circuit
- (c) mean power
- (d) all the above

34. Given three equal resistors, how many different combinations (taken all of them together) can be made?

- (a) 3
- (b) 4
- (c) 5
- (d) 6

35. Whenever the magnetic flux linked with an electric circuit changes, an emf is induced in the circuit. This is called

- (a) electromagnetic induction
- (b) lenz's law
- (c) hysteresis loss
- (d) kirchhoff's laws

36. Bonds in a semiconductor are

- (a) trivalent
- (b) covalent
- (c) bivalent
- (d) monovalent

37. Number of electrons in the valence shell of a semiconductor is

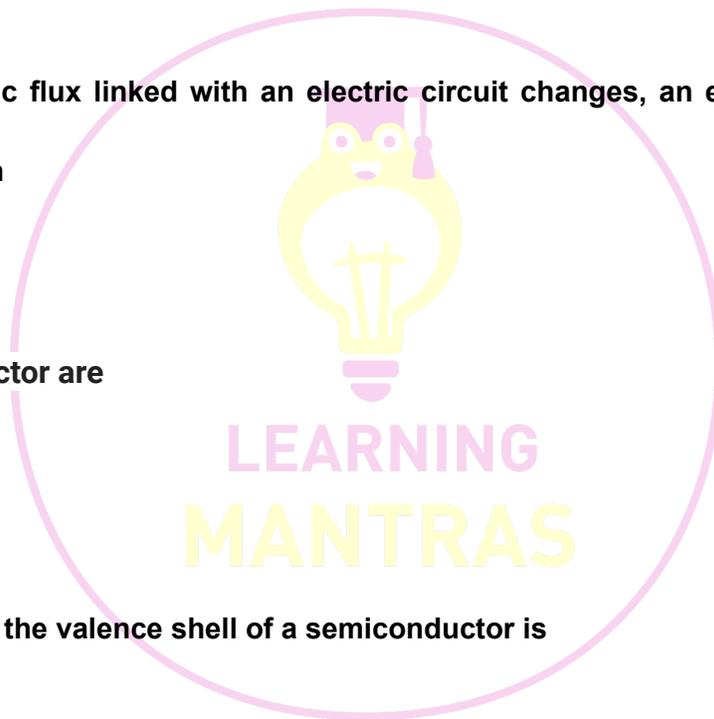
- (a) 1
- (b) 2
- (c) 3
- (d) 4

38. When a β -particle is emitted from a nucleus then its neutron-proton ratio

- (a) increases
- (b) decreases
- (c) remains unchanged
- (d) may increase or decrease depending upon the nucleus

39. The quantity which is not conserved in a nuclear reaction is

- (a) momentum
- (b) charge



- (c) mass
- (d) none of these

40. Protons and alpha particles have the same de-Broglie wavelength. What is the same for both of them ?

- (a) Energy
- (b) Time period
- (c) Frequency
- (d) Momentum

41. Kinetic energy of emitted electrons depends upon :

- (a) frequency
- (b) intensity
- (c) nature of atmosphere surrounding the electrons
- (d) none of these

42. Which of the following is not a property of light?

- (a) It can travel through vacuum
- (b) It has a finite speed
- (c) It requires a material medium for its propagation
- (d) It involve transportation energy

43. Two points P and q are situated at the same distance from a source of light but on opposite sides. The plane difference between the light waves passing through P and q will be:

- (a) n
- (b) $2n$
- (c) $\pi/2$
- (d) zero

44. Resolving power of telescope can be increased by increasing

- (a) the wavelength
- (b) the diameter of objective
- (c) the diameter of eyepiece
- (d) the focal length of eyepiece

45. Polarisation of light proves

- (a) corpuscular nature of light
- (b) quantum nature of light
- (c) transverse wave nature of light
- (d) longitudinal wave nature of light

Answer Key

| | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|
| 1- a | 2- c | 3- b | 4- d | 5- c | 6- a | 7- d | 8- a |
| 9- a | 10- b | 11- b | 12- c | 13- c | 14- b | 15- a | 16- a |
| 17- b | 18- c | 19- b | 20- b | 21- b | 22- c | 23- c | 24- c |
| 25- c | 26- b | 27- b | 28- d | 29- d | 30- c | 31- d | 32- c |
| 33- b | 34- b | 35- a | 36- b | 37- d | 38- b | 39- c | 40- d |
| 41- a | 42- c | 43- d | 44- b | 45- c | | | |



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