JAMB PHYSICS OBJECTIVE QUESTIONS

Instructions: Choose the best option for each question.

1. Which of the following is a derived quantity? A. Mass B. Length C. Time D. Force

2. The S.I. unit of power is: A. Joule B. Watt C. Newton D. Ampere

3. A body is moving with a constant velocity of 10 m/s. What is its acceleration? A. 10 m/s2 B. 0 m/s2 C. 5 m/s2 D. 20 m/s2

4. A force of 50 N acts on a mass of 5 kg. Calculate the acceleration produced. A. 10 m/s2 B. 0.1 m/s2 C. 250 m/s2 D. 55 m/s2

5. The law of conservation of energy states that energy can neither be created nor destroyed, but can be: A. Increased B. Decreased C. Transformed from one form to another D. Lost forever

6. Which of the following is true about a scalar quantity? A. It has magnitude and direction. B. It has magnitude only. C. It has direction only. D. It is always negative.

7. What is the potential energy of a 2 kg mass raised to a height of 10 m? (Take g=10 m/s2) A. 20 J B. 200 J C. 2000 J D. 2 J

8. A simple pendulum makes 20 oscillations in 40 s. What is its period? A. 0.5 s B. 2 s C. 20 s D. 40 s

9. Which of the following describes the relationship between pressure, force, and area? A. Pressure = Force × Area B. Pressure = Force / Area C. Pressure = Area / Force D. Pressure = Force + Area

10. The phenomenon where a liquid surface curves upwards when it wets the surface of a container is due to: A. Surface tension B. Adhesion C. Cohesion D. Viscosity

11. What is the unit of temperature on the S.I. scale? A. Degree Celsius B. Degree Fahrenheit C. Kelvin D. Joule

12. The transfer of heat by the actual movement of fluid particles is known as: A. Conduction B. Convection C. Radiation D. Evaporation

13. Which of the following statements is true about the specific heat capacity of a substance? A. It is the amount of heat required to change the state of 1 kg of the substance. B. It is the amount of heat required to raise the temperature of 1 kg of the substance by 1∘C. C. It is the amount of heat absorbed when a substance melts. D. It is the amount of heat required to boil 1 kg of the substance.

14. A ray of light passes from air into a glass block. Which of the following properties of light remains unchanged? A. Speed B. Wavelength C. Frequency D. Direction

15. The angle of incidence for which a ray of light passing from a denser medium to a rarer medium is refracted at 90∘ is called the: A. Angle of deviation B. Critical angle C. Refracting angle D. Total internal reflection angle

16. Which of the following is a characteristic of a virtual image formed by a plane mirror? A. It is real and inverted. B. It is real and upright. C. It is virtual and inverted. D. It is virtual and upright.

17. The phenomenon responsible for the blue color of the sky is: A. Dispersion B. Reflection C. Refraction D. Scattering

18. What is the equivalent resistance of two resistors, R1 and R2, connected in series? A. R1R2/(R1+R2) B. R1+R2 C. (R1+R2)/(R1R2) D. 1/(R1+R2)

19. Ohm's law states that the current flowing through a metallic conductor is directly proportional to the potential difference across its ends, provided that: A. The temperature remains constant. B. The resistance changes. C. The current varies. D. The voltage fluctuates.

20. A 60 W light bulb is switched on for 5 hours. How much energy is consumed? A. 300 J B. 300 Wh C. 0.3 kWh D. 1080 kJ

21. Which of the following is a property of a magnetic field line? A. They intersect each other. B. They originate from the south pole and end at the north pole outside the magnet. C. They form closed loops. D. They are weakest at the poles.

22. The process of inducing an electromotive force (e.m.f.) in a conductor by changing the magnetic flux linked with it is called: A. Electromagnetic induction B. Magnetic resonance C. Electrostatic induction D. Mutual induction

23. Which of the following is an example of an electromagnetic wave? A. Sound wave B. Water wave C. Light wave D. Seismic wave

24. The relationship between the speed of a wave (v), its frequency (f), and its wavelength (λ) is given by: A. v=f+λ B. v=f/λ C. v=fλ D. v=λ/f

25. A vibrating string produces a sound wave. The pitch of the sound depends on the wave's: A. Amplitude B. Wavelength C. Frequency D. Speed

26. Which of the following is a characteristic of a longitudinal wave? A. Particles oscillate perpendicular to the direction of wave propagation. B. Particles oscillate parallel to the direction of wave propagation. C. It requires a vacuum for propagation. D. It can be polarized.

27. The unit of radioactivity is: A. Curie B. Becquerel C. Roentgen D. All of the above

28. The process by which a heavy nucleus splits into two or more lighter nuclei is called: A. Nuclear fusion B. Nuclear fission C. Alpha decay D. Beta decay

29. Which of the following describes a p-type semiconductor? A. Doped with pentavalent impurities. B. Has an excess of free electrons. C. Has an excess of holes. D. Formed by doping with silicon.

30. The primary function of a transformer is to: A. Convert AC to DC. B. Convert DC to AC. C. Step up or step down AC voltage. D. Store electrical energy.

31. In a series RLC circuit, at resonance, the impedance is: A. Maximum B. Minimum C. Zero D. Infinite

32. The work done in moving a charge of 2 C across a potential difference of 10 V is: A. 0.2 J B. 5 J C. 12 J D. 20 J

33. Which of the following optical instruments uses a concave lens to correct short-sightedness? A. Microscope B. Telescope C. Spectacles D. Camera

34. The maximum displacement of a vibrating particle from its equilibrium position is called its: A. Wavelength B. Frequency C. Amplitude D. Period

35. The acceleration due to gravity on the moon is approximately $1/6$th that on Earth. If a body weighs 60 N on Earth, what will be its weight on the moon? A. 60 N B. 10 N C. 360 N D. 0 N

36. A machine with an efficiency of 80% performs 100 J of useful work. How much energy was supplied to the machine? A. 80 J B. 125 J C. 20 J D. 100 J

37. The principle of flotation states that a floating body displaces its own: A. Volume of fluid B. Weight of fluid C. Density of fluid D. Mass of fluid

38. Which of the following is NOT a fundamental quantity? A. Luminous intensity B. Amount of substance C. Temperature D. Area

39. A car starts from rest and accelerates uniformly to a velocity of 20 m/s in 4 s. What is its acceleration? A. 5 m/s2 B. 80 m/s2 C. 0.2 m/s2 D. 10 m/s2

40. The force between two charged objects is directly proportional to the product of their charges and inversely proportional to the square of the distance between them. This is known as: A. Faraday's Law B. Coulomb's Law C. Ohm's Law D. Newton's Law of Gravitation

41. Which of the following statements about sound waves is correct? A. They are electromagnetic waves. B. They travel fastest in a vacuum. C. They are longitudinal waves. D. They can be polarized.

42. The image formed by a convex mirror is always: A. Real, inverted, diminished B. Real, upright, magnified C. Virtual, upright, diminished D. Virtual, inverted, magnified

43. A common application of total internal reflection is in: A. Plane mirrors B. Optical fibers C. Concave lenses D. Magnifying glasses

44. The device used to measure current in an electrical circuit is a(n): A. Voltmeter B. Ammeter C. Galvanometer D. Ohmmeter

45. The half-life of a radioactive isotope is 10 years. If a sample initially contains 80 g of the isotope, how much will remain after 30 years? A. 40 g B. 20 g C. 10 g D. 5 g

46. Which of the following is a characteristic of a good fuse? A. High melting point, low resistance B. Low melting point, high resistance C. High melting point, high resistance D. Low melting point, low resistance

47. The unit of magnetic flux density is: A. Weber B. Tesla C. Henry D. Ampere-turn

48. When a body is in stable equilibrium, its center of gravity is: A. At its highest possible position B. At its lowest possible position C. Moving freely D. Outside the base of support

49. What type of energy is stored in a stretched spring? A. Kinetic energy B. Chemical energy C. Elastic potential energy D. Gravitational potential energy

50. The escape velocity from the Earth's surface is the minimum velocity required for an object to: A. Orbit the Earth B. Fall back to Earth C. Completely escape Earth's gravitational field D. Bounce off the atmosphere