

General Science Model Test Questions 26 With Answers [Physics - 11]

1. Consider the following statements:
- Assertion (A): The energy spent in Magnetising a specimen is not recoverable and there occurs a loss of energy in the form of heat.
- Reason (R): During a cycle of magnetization the molecular magnets in a specimen are oriented and reoriented a number of times.
- Select your answer according to the coding scheme given below:
- (A) **Both (A) and (R) are true, and (R) is the correct explanation of (A)**
- (B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)
- (C) (A) is true, but (R) is false
- (D) (A) is false, but (R) is true
2. Who has developed and demonstrated the first nuclear reactor in the year 1942?
- (A) Bhor and Wheeler (B) **Enrico Fermi**
- (C) Albert Einstein (D) Bhor and Mottleson
3. The Young's modulus of Carbon Nanotubes (CNT) ranges from
- (A) 1.68 to 2 Tpa (B) **1.28 to 1.8 Tpa**
- (C) 0.168 to 0.2 Tpa (D) 0.128 to 0.18 Tpa
4. The telescope used for the research of supernovae is
- (A) **Hubble space telescope** (B) Chandrasekar space telescope
- (C) Hertzberg space telescope (D) Russel space telescope
5. The ratio of the intensity of magnetisation to the applied magnetic field strength is known as magnetic
- (A) **Susceptibility** (B) Co-ercivity (C) Retentivity (D) Permeability
6. Who is proved experimentally the existence of the neutrino?
- (A) Enrico Fermi (B) Richard P. Feymann
- (C) Rutherford (D) **Clyde L. Cowan and Frederic Reines**
7. What is the principle involved in Radar?

- (A) **Radio echoes** (B) Radio reflection
(C) Radio refraction (D) Radio scattering
8. The radius of the atomic nucleus is
(A) 10^{-3} cm (B) 10^{-10} cm (C) **10^{-13} cm** (D) 10^{-15} cm
9. 'Light rays that pass near the sun will be deflected towards it'. This effect is known as
(A) **Eienstein effect** (B) Doppler effect
(C) Lorentz effect (D) Fitzgerald effect
10. Newton's laws of motion are valid in
(A) **Inertial frames** (B) Non-inertial frames
(C) Rotating frames (D) Accelerating frames
11. The ratio of longest to the shortest wavelengths of the visible light never exceeds the number
(A) 5 (B) 3 (C) 4 (D) **2**
12. I) The dimension of gravitational constant is $M^{-1}L^3T^{-2}$
II) The dimension of surface tension is MT^{-2}
Comment about the above statements.
(A) I is true but II is false (B) II is true but I is false
(C) **Both I and II are true** (D) Both I and II are false
13. Identify the correctly matched pairs among the following.
I) Spherometer - Measures the curvature of lenses
II) Voltmeter - Measures electric voltage in a circuit
III) Theodolite - Measures horizontal and vertical angles with great accuracy
(A) I and II only (B) **I and III only**
(C) II and III only (D) I, II and III
14. In a magnetic field due to a bar magnet placed with its north pole facing north, the null points lie
(A) At the center of the magnet (B) **On the equatorial line**
(C) On the axial line (D) Nowhere in the field

15. According to Bohr's principle, which of the following is quantized?
(A) Kinetic energy (B) Potential energy
(C) Linear momentum (D) **Angular momentum**
16. Increase in conductivity with increase in temperature is seen in
(A) Insulators (B) Conductors (C) **Semiconductors** (D) Superconductors
17. Which of the following statements is not correct in case of turbulent flow of fluids?
(A) The velocity of the fluid is unsteady
(B) The flow is highly disordered
(C) **The velocity of the fluid is less than critical velocity**
(D) The velocity of the fluid is high
18. Friction closely associated with vehicles running on the road is
(A) **Rolling friction** (B) Sliding friction
(C) Slipping friction (D) Static friction
19. When two forces P and Q act in the same straight line with 7 N and 3 N each in the same direction, then the resultant of the forces is
(A) 21 N (B) 5 N (C) 4 N (D) **10 N**
20. The point at which the entire weight of the object acts is called as
(A) **Centre of gravity** (B) Centre of mass
(C) Centre of floating (D) None of these
21. The planet similar to earth in mass, size and density is
(A) Mercury (B) **Venus** (C) Mars (D) Uranus
22. The total spin of an alpha particles is
(A) $+ \frac{1}{2}$ (B) $- \frac{1}{2}$ (C) **Zero** (D) ± 1
23. Which one of the following has the shortest wavelength?
(A) **Gamma rays** (B) X-rays (C) Ultra violet ray (D) Micro waves
24. Which of the following is wrong?

- (A) Red is a prime colour **(B) White is a prime colour**
(C) Green is a prime colour (D) Blue is a prime colour
25. The spin quantum number of an Electron is
(A) $3/2$ **(B) $1/2$** (C) $5/2$ (D) $7/2$
26. One light year is equal to
(A) 9.460×10^{12} km (B) 9.460×10^{15} km
(C) 8.640×10^{12} km (D) 8.640×10^{15} km
27. 'F' – number is related to
(A) Jet – engines **(B) Camera lens**
(C) Atmospheric pressure (D) Force of buoyancy
28. If p is the momentum of an object of mass m, then p^2/m has the same dimensions as that of
(A) Acceleration (B) Force (C) Power **(D) Energy**
29. The unit of equivalent conductance is
(A) mho $\text{cm}^2 \text{equiv}^{-1}$ (B) mho $\text{cm}^{-2} \text{equiv}^{-1}$
(C) mho $\text{cm}^{-2} \text{equiv}$ (D) mho $\text{cm}^2 \text{equiv}$
30. How many electrons are these in one coulomb charge?
(A) 1.6×10^{-19} electrons **(B) 6.25×10^{18} electrons**
(C) 6.25×10^{-18} electrons (D) 1.6×10^{19} electrons
31. A bullet of mass 15 g is horizontally fired with velocity 100 ms^{-1} from a pistol of mass 2 kg. Total momentum of the pistol and bullet before firing is equal to
(A) Zero (B) 201.5 kg ms^{-1} (C) 215 kg ms^{-1} (D) 200 kg ms^{-1}
32. If you stand in a rectangular room, where two adjacent walls are covered with plane mirrors, the total number of your images will be
(A) Infinity (B) 1 **(C) 3** (D) 0
33. Audible range of rabbit is
(A) 100 – 32,000 Hz (B) 1,000 – 1,50,000 Hz

(C) 1,000 – 1,00,000 Hz (D) 900 – 2,00,000 Hz

34. “Volta” who invented electro chemical cell was a

(A) Indian (B) Australian (C) **Italian** (D) Germanian

35. In a good Auditorium the factor to be considered is

(A) **Acoustic effect** (B) Thermal effect

(C) Optical effect (D) Wind effect

36. Consider the following statements about galaxy.

- 1) The galaxy is a cluster of brilliant stars
- 2) The approximate mass of galaxy is 10^{50} kg
- 3) The galaxy in which we live is spiral galaxy
- 4) The galaxy close to the sun is Milky way

Choose the incorrect code.

(A) 1 and 3 (B) 1, 2 and 3 (C) 2, 3 and 4 (D) **2 and 4**

37. Four resistors of 10,000 ohm, 1,000 ohm, 100 ohm and 10 ohm are connected in parallel. What will be their equivalent resistance?

(A) More than 10,000 ohm (B) 10,000 ohm

(C) 10 ohm (D) **Less than 10 ohm**

38. Specific heat capacity of water is how many times more than the specific heat capacity of mercury?

(A) 20 (B) 40 (C) **30** (D) 50

39. Match list-I with list-II correctly and select your answer using the codes given below:

List-I

- (a) Sun
- (b) Solar cell
- (c) Lead acid accumulator
- (d) AC generator

List-II

1. Chemical reaction
2. Nuclear fusion reaction
3. Electromagnetic induction
4. Light energy into electricity

Codes:

a b c d

- (A) 3 2 4 1
(B) 1 3 2 4
(C) 2 4 3 1
(D) 2 4 1 3

40. Assertion (A): In traffic signals red colour light is used to stop vehicles.
Reason (R): Red light has smaller wavelength and hence amount of scattering is less.
(A) (A) is correct (R) is wrong (B) (A) is wrong (R) is correct
(C) Both (A) and (R) are correct (D) Both (A) and (R) are wrong
41. A particle executes S.H.M. The acceleration of the particle is maximum
(A) At extreme position
(B) At mean position
(C) Midway between mean and extreme position
(D) Acceleration is same at all position
42. The velocity of sound is maximum in
(A) Water (B) Air (C) Metal (D) Vacuum
43. When the frequency of an electromagnetic wave and ultrasonic wave are same, then
(A) Their wavelength should be same
(B) Wavelength of electromagnetic wave will be more
(C) Wavelength of ultrasonic wave will be more
(D) Wavelength of electromagnetic wave will be less
44. Two coils are placed close to each other. The mutual inductance of the pair of coils depends upon
(A) The materials of wires of the coils
(B) The currents in the two coils
(C) The rates at which currents are changing in the two coils
(D) Relative position and orientation of the two coils
45. A convex lens of focal length 40 cm is in contact with a concave lens of focal length 25 cm. The power of the combination is

- (A) – 1.5 D (B) – 6.5 D (C) + 1.5 D (D) +6.5 D
46. Which of the following has the least wavelength?
(A) **X-rays** (B) Microwaves (C) Ultra violet rays (D) Radio waves
47. Ozone layer of atmosphere absorbs
(A) Visible radiations (B) Infrared radiations
(C) **Ultraviolet radiations** (D) Radio waves
48. A radio active element “X” with a half life of 2 hours decay giving a stable element “Y”. After a time of t hours the ratio of atoms is 1:7 then, the value of
(A) 4 hours (B) **6 hours** (C) 5 hours (D) 14 hours
49. The condition for the two X-rays, which will reinforce each other and produce maximum intensity is
A) $2d \sin \theta = \left(n + \frac{1}{2}\right)\lambda$ B) $2d \cos \theta = \left(n + \frac{1}{2}\right)\lambda$
C) $2d \cos \theta = n\lambda$ D) $2d \sin \theta = n\lambda$
50. If the distance between earth and the moon is doubled, then the gravitational force between them would become
(A) Half (B) **One fourth** (C) Double (D) Four times
51. Zone plate behaves like
(A) A convex lens (B) A convex mirror
(C) A concave mirror (D) **As a convex and concave lens**
52. When a ray of light enters a glass slab from air
(A) **Its wavelength decreases** (B) Its wavelength increases
(C) Its frequency decreases (D) Neither wavelength nor frequency changes
53. Which of the following are vector quantities?
i) Density ii) Acceleration iii) Energy iv) Force
(A) (i) only (B) (i) and (iii) (C) **(ii) and (iv)** (D) (i), (ii) and (iii)
54. The function of AC dynamo is

- (A) To convert mechanical energy into electrical energy
(B) To convert light energy into electrical energy
(C) To convert electrical energy into mechanical energy
(D) To convert electrical energy into light energy
55. The period of a geostationary artificial satellite of the earth is
(A) Zero (B) 12 hours (C) **24 hours** (D) 48 hours
56. Why does the sky appear blue in colour?
(A) Interference of light (B) **Scattering of light**
(C) Diffraction of light (D) Polarisation of light
57. Which of the following has elasticity nearly equal to 1?
(A) Steel (B) Copper (C) **Rubber** (D) Aluminium
58. Dimensional formula for work done is
(A) **ML^2T^{-2}** (B) $ML^{-2}T^2$ (C) $ML^{-1}T^2$ (D) MLT^{-1}
59. The phenomenon of nuclear fission can be understood on the basis of
(A) **Liquid drop model of the nucleus** (B) Shell model of the nucleus
(C) Independence particle model of the nucleus (D) Meson theory of nuclear forces
60. The refractive index of glass is least for
(A) **Red colour** (B) Yellow colour (C) Violet colour (D) Green colour
61. Which one of the following planets have no satellite?
(A) **Venus** (B) Mars (C) Jupiter (D) Uranus
62. A small metal ball is suspended in a uniform electric field with the help of an insulated thread. If high energy X-ray beam falls on it
(A) **The ball will be deflected in the direction of field**
(B) The ball will be deflected opposite to direction of field
(C) The ball will not deflected
(D) The ball will fly to infinity

63. One Fermi is equal to
(A) 10^{-15}m (B) 10^{-15}cm (C) 10^{-12}m (D) 10^{-12}cm
64. In Newton's rings experiment, if the diameter of 10th ring changes from 1.40 to 1.27 cm when a drop of liquid is introduced between the lens and glass plate, what will be the refractive index of the liquid?
(A) **1.215** (B) 1.315 (C) 1.330 (D) 1.415
65. In LCR circuit, the capacitance is changed from C to 4C. To obtain the same resonant frequency, the inductance value has to be changed to which of the following L values.
(A) 2L (B) L/2 (C) **L/4** (D) 4L
66. Which of the following are correctly matched?
Select your answer by using the codes.
- | | |
|---------------|-------------------------------|
| a) Hygrometer | - humidity of air |
| b) Hydrometer | - relative density of liquids |
| c) Hydrophone | - changes in humidity |
| d) Hydroscope | - records sound in water |
- Codes:
(A) **(a) and (b) only** (B) (a) only
(C) (a) and (d) only (D) (b) only
67. Consider the following statements. Which of the following is/are correct:
1) Dimensions of very small objects are measured by screw gauge.
2) Long distances are measured by laser pulse method.
3) In shops, shirting material measured by screw gauge.
4) Screw gauge is used to measure the diameter of thin wire.
(A) 1 and 3 (B) 2 and 4 (C) 2, 3 and 4 (D) **1, 2 and 4**
68. In a public meeting the tube lights are connected in ----- and serial lights are connected in ----

(A) **Parallel and Series** (B) Series and Parallel
(C) Parallel and Parallel (D) Series and Series

69. Pick out the correct one from the following:
When the speed of the body is doubled its kinetic energy becomes
(A) Doubled (B) Half (C) **Quadruple** (D) One fourth
70. The power consumed by an electric fan of 100 W working at 220 V, daily 5 hours for a month of 30 days is
(A) 1.5 kWh (B) 15000 kWh (C) **15 kWh** (D) 30 kWh
71. The principle used for transmission of light signals through optical fibers is
(A) Interference (B) Diffraction
(C) Polarisation (D) **Total internal reflection**
72. When a capillary tube of silver metal is kept vertical in a beaker filled with water, the meniscus of water surface in tube is -----
(A) Horizontal (B) **Convex** (C) Concave (D) Biconcave
73. Which of the following sources gives best monochromatic light?
(A) A candle (B) A bulb (C) A mercury light (D) **A laser source**
74. Which of the following statement is/are correct?
i) Sound wave of frequency more than available frequency are called ultrasonics
ii) Speed of ultrasonic waves is less than speed of sound
iii) Ultrasonic wavelengths are small
iv) Ultrasonic wave is used to check take currency notes
(A) (i), (ii) and (iii) (B) (i), (ii) and (iv) (C) **(i) and (iii)** (D) (i) and (iv)
75. The relation between velocity (V), frequency (n) and wavelength (λ) of a wave is given by
(A) $V = n/\lambda$ (B) **$n = V/\lambda$** (C) $\lambda = nV$ (D) $\lambda = n/V$
76. Pressure cookers are based on the principle that
I) The boiling point of liquid increases with increase in pressure
II) The boiling point of liquid decreases with increase in pressure
III) The boiling is constant

Which one of the above is correct principle?

- (A) **I only** (B) II only (C) III only (D) I, II and III are wrong

77. Which of the following statement about 'Hubble Space Telescope (HST)' is false?

(A) H.S.T. is a space telescope designed with two hyperbolic mirror

(B) **H.S.T. is collaborated between European space agency and India's ISRO**

(C) H.S.T. measures the rate at which universe is expanding

(D) H.S.T. estimate the age of the universe

78. A person A does 500 K of work in 10 minutes and another person B does 600 J of work in 20 minutes. Let the power delivered by A and B be P_A and P_B respectively. Then

(A) $P_A = P_B$

(B) **$P_A > P_B$**

(C) $P_A < P_B$

(D) P_A and P_B are undefined

79. A monochromatic light of wavelength 589 nm is incident on a water surface having refractive index 1.33. Find the velocity of light in water.

(A) $3 \times 10^8 \text{ ms}^{-1}$

(B) 332 ms^{-1}

(C) 280 ms^{-1}

(D) **$2.25 \times 10^8 \text{ ms}^{-1}$**

80. The colour light emitted by LED depends on

(A) Its reverse bias

(B) Its forward bias

(C) The amount of forward current

(D) **Type of semiconductor material**

81. The hottest planet of our solar system

(A) Neptune

(B) **Venus**

(C) Pluto

(D) Uranus

82. A conductor of length 50 cm carrying a current of 5 A is placed perpendicular to a magnetic field of induction $2 \times 10^{-3} \text{ T}$. Find the force on the conductor.

(A) **$5 \times 10^{-3} \text{ N}$**

(B) $3 \times 10^3 \text{ N}$

(C) $4.9 \times 10^3 \text{ N}$

(D) $5 \times 10^3 \text{ N}$

83. Which atomic electromagnetic radiation transition is used to defined the S.I unit of time?

(A) Casmium – 114

(B) **Cesium – 133**

(C) Cerium – 138

(D) Chromium – 52

84. A transition in which, there is no emission of electromagnetic radiation, but the emission of two electrons from the same atom is called

(A) Bohr transition

(B) Compton effect

(C) **Auger transition**

(D) Moseley transition

85. Which one of the following is known as “Shooting Stars”?
(A) Comets **(B) Meteors** (C) Pole star (D) Stars
86. Which of the following is incorrectly paired?
(A) Wolfgang pauli - Exclusion principle
(B) James Chadwick - **Wave nature of electron**
(C) Werner Karl Heisenberg - Creation of Quantum mechanics
(D) Chandrasekar Venkata Raman - Scattering of light
87. A body is acted upon by two unequal forces in opposite directions, but not in same line. The effect is that
(A) The body will have only the rotational motion
(B) The body will have only the translational motion
(C) The body will have neither the rotational motion nor the translational motion
(D) The body will have rotational as well as translational motion
88. What is the name of the reversible process, in which the volume of a gas remains constant?
(A) Isothermal (B) Isobaric **(C) Isochoric** (D) Isotopic
89. In general, the linearity between stress and strain of a material is valid upto its
(A) Plastic limit **(B) Elastic limit** (C) Breaking point (D) Yield point
90. Einstein mass energy relationship is
(A) **$E = mc^2$** (B) $E = m/c^2$ (C) $m = E/c^2$ (D) $c = E m^2$
91. The sun’s surface temperature is about
(A) $5,500^\circ\text{F}$ (B) $5,500\text{ K}$ **(C) $5,500^\circ\text{C}$** (D) $15,600^\circ\text{C}$
92. What is the spin of the neutron?
(A) 0 h (B) 1 h **(C) $\frac{1}{2}\text{ h}$** (D) $\frac{3}{2}\text{ h}$
93. The angular speed of an electron in the n^{th} orbit of Bohr’s hydrogen atom is
(A) Directly proportional to n (B) Directly proportional to n^2
(C) Inversely proportional to n^2 (D) Inversely proportional to n

94. The principle used for the transmission of light signals through optical fibre is
(A) Reflection (B) Refraction
(C) Diffraction (D) **Total internal reflection**
95. The relation between the Centigrade, Fahrenheit and Reaumer scale is given by
(A) $C/180 = F-100/32 = R/80$ (B) **$C/100 = F-32/180 = R/80$**
(C) $C/80 = F-32/180 = R/100$ (D) $C/180 = F-32/200 = R/80$
96. Which of the following is not reversible?
(A) **Joule effect** (B) Peltier effect
(C) Seebeck effect (D) Thomson effect
97. When capacitors of capacitances C_1, C_2, C_3 are connected in series, the equivalent capacitance of combination C is given by
A) $C = C_1 + C_2 + C_3$ B) $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$
C) $C = \frac{C_1 C_2}{C_1 + C_2} + C_3$ D) $C = C_1^2 + C_2^2 + C_3^2$
98. If 5 g of U^{235} undergoes complete fission in a reactor, the energy released would be
(A) **$45 \times 10^{13} \text{ J}$** (B) $45 \times 10^7 \text{ J}$ (C) $15 \times 10^{10} \text{ J}$ (D) $60 \times 10^{15} \text{ J}$
99. A thermometer suitable for measuring a temperature of the order of 5000°C is
(A) Constant volume gas thermometer
(B) **Radiation pyrometer**
(C) Vapour pressure thermometer
(D) Resistance thermometer
100. Young's modulus of a perfectly elastic body is
(A) Zero (B) **Infinity** (C) 1 (D) Finite