General Science Model Test Questions 27 With Answers [Physics - 12]

1. The plastic nylon is best described as

(A) Polymerised hydrocarbon **(B) Polyamide**

(C) Polyester (D) Polyurethane

2. In common emitter circuit, the value voltage gain is

(A) Maximum (B) Minimum

(C) Same as in other configuration (D) Zero

3. The mass number of a nuclear is equal to the number of

(A) Electrons it contains (B) Protons it contains

(C) Neutrons it contains **(D) Nucleons it contains**

4. The potential energy of a particle executing simple harmonic motion is the maximum at its

(A) Extreme position

(B) Mean position

(C) The midpoint of mean and extreme position

(D) One third of amplitude from the mean position

5. The distance between two consecutive nodes in a stationary wave is

(A) λ/2 (B) λ (C) 3λ/2 (D) λ/4

6. Match List I with List II:

List-I	List-II
(a) Apple falls from tree	1. Frictional Force
(b) Car comes to stop	2. Electric Force
(c) Beam of Ink drops in printer	3. Buoyant Force
(d) Helium Balloon rises from Land	4. Gravitational Force

Codes:

	a	b	c	d
(A)	1	2	3	4
(B)	3	2	4	1

(C) 4 1 2 3

(D) 2 3 1 4

7. Absolute zero of temperature means

(A) 0^o C (B) 0^o F **(C) -273^o C** (D) -273^o F

8. When light enters from one medium to another then which characteristic is not changed?

(A) Colour of light (B) Velocity of light

(C) Wavelength of light **(D) Frequency of light waves**

9. Which law is called as the law of periods?

(A) Kepler's First Law (B) Kepler's Second Law

(C) Kepler's Third Law (D) Newton's Law of Gravitation

10. Projectile motion is a combination of horizontal motion with constant ---------- and vertical motion with constant ----------

(A) Acceleration, velocity **(B) Velocity, acceleration**

(C) Displacement, velocity (D) Velocity, displacement

11. Nuclear force is

(A) Charge dependent

(B) Spin independent

(C) Both charge and spin independent

(D) Spin dependent but charge independent

12. Calculate the dimensions of Planck's constant 'h', using the equation $E = h\gamma$, where $E \rightarrow$ energy and $\gamma \rightarrow$ frequency

(A) MLT^{-1} **(B) ML^2T^{-1}** (C) $ML^{-1}T^{-2}$ (D) $ML^{-2}T^{-1}$

13. In Transmission Electron Microscope (TEM) ---------- is used to magnify the objects.

(A) Light (B) Optical lenses **(C) Electrons** (D) Scanner

14. The base current of the transistor is $I_B = 50\ \mu A$ and collector current is $I_C = 25$ MA determine the value of β?

(A) 500 (B) 300 (C) 250 (D) 100

15. Which of the following will radiate heat to the large extent?

(A) White polished surface (B) White rought surface

(C) Black polished surface **(D) Black rought surface**

16. The converse of Seebeck effect is

(A) Thomson's effect (B) Joule's effect

(C) Magnetic effect **(D) Peltier effect**

17. AC Frequency of 100 KHz to 100 MHz is required for

(A) Satellite purpose (B) Domestic purpose

(C) Transmission of audio and video signals (D) (A) and (B)

18. A Conducting polymer acting as an LED is being used in -------- of mobile phones.

(A) Battery (B) Speakers (C) Mics **(D) Display**

19. In the following rays which is not involved in Radio Activity

(A) X-rays (B) α-rays (C) β-rays (D) γ-rays

20. The times taken by the light to reach the earth from the sun is

(A) 10 seconds (B) 50 seconds (C) 100 seconds **(D) 500 seconds**

21. Which of the following has maximum value of surface tension?

(A) Water (B) Alcohol (C) Ether **(D) Mercury**

22. Cherenkov counters are

(A) Mechanical counters **(B) Scintillation counters**

(C) Ruby lasers (D) Coolidge tubes

23. The vertical upgradient of temperature in the atmosphere is called as

(A) Inversion of temperature (B) Saturated temperature

(C) Lapse rate (D) Latent heat

24. Which of the following phenomena is responsible for the production of shadow?

(A) Interference of light (B) Diffraction of light

(C) Polarization of light **(D) Rectilinear propagation of light**

25. 1 horse power =

(A) 646 W (B) 684 W **(C) 746 W** (D) 846 W

26. Dimensions of momentum are

(A) $ML^{-2}T$ **(B) MLT^{-1}** (C) $ML^{-2}T^{-2}$ (D) $ML^{2}T^{-1}$

27. Technique used in mass production of integrated chips is

(A) Photography (B) Atomic force microscopy

(C) Photo lithography (D) Holography

28. A satellite is orbiting the earth, if its distance from the earth is increased, then

a) its angular velocity would increase

b) its linear velocity would increase

c) its angular velocity would decrease

d) its time period would increase

(A) (a) and (b) are correct (B) (a) and (c) are correct

(C) (b) and (c) are correct **(D) (c) and (d) are correct**

29. A copper wire has a resistance R. On doubling its length the specific resistance will

(A) Be halved (B) Be doubled

(C) Become four times **(D) Remain the same**

30. Why tungsten is used in Bulbs?

(A) Natural source of Light (B) Easy to Bend

(C) Melting point is high (D) It absorbs heat

31. Colours of thin film is because of the phenomena of

(A) Diffraction of light (B) Refraction of light

(C) Interference of light (D) Polarisation of light

32. The ground state energy of the electron in the Hydrogen atom is

(A) -13.6 eV (B) -3.41 eV (C) +13.6 eV (D) -10.5 eV

33. Which of the following instruments has lowest resistance?

(A) Move Coil Gavanometer (B) 0 – 20A Ammeter

(C) 0 – 10A Ammeter (D) Voltmeter

34. The Quantum energy in a lattice with elastic wave is called

(A) Photon **(B) Phonon** (C) Electron (D) Proton

35. When diameter of the objective lens of a telescope increases, the resolution of the telescope

(A) Decreases **(B) Increases**

(C) Remains the same (D) Depends on the focus length of the lens

36. Who produced and tested the first hydrogen bomb?

(A) Edward Teller and Stanislaw Ulam (B) Robert Oppenheimer

(C) Fukui and Miyamoto (D) D.A.Glaser

37. The relative humidity of the atmosphere is determined with a

(A) Hydrometer **(B) Hygrometer** (C) Hypsometer (D) Hydrophone

38. Which of the following is preferred for accelerating electrons?

(A) Betatron (B) Cyclotron (C) Van de Graft Generator (D) Synchrotron

39. Raman effect is due to

(A) Interference of light (B) Polarization of light

(C) Diffraction of light **(D) Scattering of light**

40. In household wiring, copper wire 2.05 mm in diameter is often used. Find the resistance of a 35.0 m long wire. Specific resisatance of copper is 1.72×10^{-8} Ω m.

(A) 18 Ω (B) 1.8 Ω **(C) 0.18 Ω** (D) 0.018 Ω

41. Which breaking system is most efficient at high speed?

(A) Electric breaking **(B) Magnetic breaking**

(C) Drum breaking (D) Disc breaking

42. In a grating the total number of rulings per unit length is N, the resolving power of a grating for an order n is

(A) nN (B) N/n (C) n/N (D) n^2N

43. The velocity of a ball thrown with a speed of 200 ms^{-1} at an angle of 60° with the horizontal, at its maximum height is

(A) 100 ms^{-1} (B) 200 ms^{-1} (C) 400 ms^{-1} (D) 173 ms^{-1}

44. Pick out the correct reasons:

Oil is mixed with petrol for two wheelers due to the following reason(s):

1) It lubricates the engine parts.
2) It removes heat inside two engines.
3) It allows for the deposit of carbon on the spark plug.

(A) (1), (2) and (3) **(B) (1) and (2) only**

(C) (2) and (3) only (D) (1) and (3) only

45. Match the following:

(a) Osmium	1. Best conductor of electricity
(b) Lithium	2. Heaviest Metal
(c) Tungsten	3. Lightest metal
(d) Silver	4. Highest melting point -3300°C

Codes:

	a	b	c	d
(A)	1	2	3	4
(B)	2	1	4	3
(C)	**2**	**3**	**4**	**1**
(D)	3	4	1	2

46. A man sitting in the revolving chair with stretched hands, suddenly bend his hands, the angular velocity

(A) Decreases **(B) Increases** (C) Zero (D) Constant

47. Which of the following statements is/are wrong?

1) Light year is a unit of time

2) Astronomical unit (AU) is a unit of distance

3) Parsec is a unit of mass

(A) (2) and (3) (B) (1) and (3) (C) (3) only **(D) (1) only**

48. The principle used in lightning conductors is

(A) Corona discharge (B) Self-induction

(C) Mutual induction (D) Electro magnetic induction

49. Relation between electric field and potential

(A) dV = -E/dx (B) dV = -dx/E **(C) E = -dV/dx** (D) E = -dx/dV

50. A parallel plate capacitor with air between the plates has a capacitance of 10 μF. What will be the capacitance, if the distance between the plates be reduced to half and the space between them is filled with a substance of dielectric constant 10.

(A) 100 μ F **(B) 200μ F** (C) 1μ F (D) 400μ F

51. 1 Wh (Watt hour) is equal to

(A) 36×10^5 J (B) 36×10^4 J **(C) 3600 J** (D) 3500 J

52. The resistivity range of semi conductors is

(A) $10^{-6} - 10^{-8}$ Ω m (B) $10^8 - 10^{14}$ Ω m

(C) $10^5 - 10^8$ Ω m **(D) $10^{-2} - 10^4$ Ω m**

53. The unit of electro chemical equivalent

(A) kg ms^{-1} (B) kg m^{-3} (C) kg m^{-1} **(D) kg c^{-1}**

54. rms value of alternating current is

(A) 0.707 Io (B) 70.7 Io (C) 0.636 Io (D) 63.6 Io

55. In an acceptor circuit, the value of impedance and current

(A) Impedance minimum, current maximum

(B) Impedance maximum, current minimum

(C) Both impedance and current minimum

(D) Both impedance and current maximum

56. The frequency range of visible light in electromagnetic spectrum is

(A) 4×10^{14}Hz – 1×10^{13}Hz **(B) 8×10^{14}Hz – 4×10^{14}Hz**

(C) 3×10^{11}Hz – 1×10^{9}Hz (D) 3×10^{7}Hz – 3×10^{4}Hz

57. Which are true statements?

I) The dark lines found in solar spectrum is called as Fraunhoffer lines.

II) The central core of sun is called as chromoshpere.

III) Fraunhoffer lines are used identify elements present in sun's atmosphere.

(A) I and II are true (B) II and III are true

(C) I and III are true (D) I, II and III are true

58. Total energy of the electron (E_n) is half of the potential energy (E_p). What will be the kinetic energy (E_k)?

(A) $-E_n$ (B) $+E_n$ (C) $-2\ E_n$ (D) $+2\ E_n$

59. In Thomson experiment the beam of electron remains undeflected when passed through the electric field E = 10^5 V/m and the magnetic field is B=10^{-2} tesla. Calculate the velocity of the electron.

(A) 10^3 m/s (B) 10^5 m/s **(C) 10^7 m/s** (D) 10^9 m/s

60. In Sommerfield atom model which one of the following atomic orbit is an elliptical orbit

(A) 1s **(B) 2s** (C) 2p (D) 3d

61. Consider the following statement and choose the correct answer from the codes given below:

Assertion (A): According to relativity, the mass of the body changes with velocity.

Reason (R): Electrons accelerated in cyclotron with very high velocity acquire increased mass.

(A) (A) alone is correct and (R) is incorrect

(B) (A) and (R) are correct and (R) is the correct explanation of (A)

(C) (A) and (R) are incorrect

(D) (A) and (R) are correct but (R) is not the correct explanation of (A)

62. If one milligram of a substance is fully converted into energy, then the energy produced is

(A) 9×10^{16} J (B) 1 J **(C) 9×10^{10} J** (D) 3×10^8 J

63. The energy liberated in proton-proton cycle is

(A) 26.7 eV **(B) 26.7 MeV** (C) 14.7 MeV (D) 14.7 eV

64. Arrange the following particles in the increasing order of their rest masses

I) Proton II) Electron III) Neutron IV) Photon

(A) II – IV – III – I **(B) IV – II – I – III**

(C) IV – II – III – I (D) II – IV – I – III

65. A sinusoidal carrier wave of amplitude 10 mV is modified by an audio signal wave of amplitude 6 mV. What is the amplitude of Upper Side Band (USB)?

(A) 0.6 mV (B) 0.3 mV **(C) 3 mV** (D) 6 mV

66. The principle of fiber optical communication is?

(A) Reflection (B) Radio reflection

(C) Total internal reflection (D) Transmission

67. Which one of the following pairs is not correctly matched regarding satellite communication?

(A) Geostationary satellite : 36,000 Km

(B) Commercial satellite : 6 GHz – 4 GHz

(C) First man-made satellite : Aryabhatta

(D) Satellite communication : Micro wave link repeater

68. When a current carrying conductors is placed along the direction of the magnetic field, the force acting on it is?

(A) F = BI l **(B) F = 0** (C) F = BI l cos θ (D) F = BI l tan θ

69. The ratio of Ne and He gases used in He – Ne laser is

(A) 4 : 1 (B) 10^6 : 1 (C) 1 : 4 (D) 1 : 10^6

70. What is the order of Boiling point of amines?

(A) Secondary amine > Primary amine > Tertiary amine

(B) Secondary amine < Primary amine < Tertiary amine

(C) Secondary amine > Primary amine > Tertiary amine

(D) Primary amine > Secondary amine > Tertiary amine

71. Glass is an example for

(A) Gaseous state (B) Liquid state (C) Solid state **(D) Vitreous state**

72. Which is used as a power source in long mission space probes?

(A) U-235 (B) U-232 **(C) Pu-238** (D) Pu-241

73. Which one is used as fuel in Nuclear reaction in power plants?

(A) $_{92}U^{235}$ (B) $_{92}U^{236}$ (C) $_{92}U^{239}$ (D) $_{92}U^{234}$

74. The device based on Wheatstone's bridge is

(A) Wattmeter (B) Potentiometer

(C) Bridge rectifier **(D) Meter bridge**

75. Which of the statements are correct or incorrect?

I) Electrostatic shielding is the process of isolating a certain region of space from external field.

II) It is based on the fact that electric field inside a conductor is infinity.

(A) I, II correct (B) I, II incorrect

(C) I incorrect II correct **(D) I correct II incorrect**

76. State which of the following statements are true?

I) Electric dipole kept in a uniform electric field will experience a torque

II) Electric field is equal to negative gradient of potential

III) Electric field is a scalar quantity

(A) I, II are correct (B) II, III are correct

(C) III, I are correct (D) I, II, III are correct

77. In the case of insulators, as the temperature decreases, resistance

(A) Decreases **(B) Increases** (C) Remains constant (D) Becomes zero

78. A toaster operating at 240 V has a resistance of 120 Ω, the power is

(A) 400 W (B) 2 W **(C) 480 W** (D) 240 W

79. The period of rotation of a charged particle in a uniform magnetic field does not depend upon

(A) Charge (B) Magnetic induction **(C) Velocity** (D) Mass

80. Which of the following statements are true?

Current sensitivity of a galvanometer can be increased by

I) Increasing the number of turns in the coil
II) Increasing the magnetic induction
III) Decreasing the area of the coil
IV) Increasing the couple per unit twist of the suspension wire

(A) I, II (B) II, III (C) III, IV (D) I,IV

81. In a coil of radius 10 cm having 100 turn carrying a current of 1 A, the magnitude of the magnetic field at the centre of the coil is

(A) $2\pi \times 10^{-4}$ T (B) $4\pi \times 10^{-4}$ T (C) $3\pi \times 10^{-6}$ T (D) $5\pi \times 10^{-6}$ T

82. In a step up transformer, the transformer radio k is

(A) k < 1 (B) k = 1 **(C) k > 1** (D) k = 0

83. Pick out the wrong statement. In transformer energy losses

(A) Hysteresis loss can be minimized by using silicon steel

(B) Copper loss can be minimized by using thin wires

(C) Eddy current loss can be minimized by stelloy

(D) Copper loss can be minimized by using thick waves

84. In an ac circuit with a capacitor only, the current will be

(A) Leasing voltage by π phase difference

(B) Leading voltage by π/2 phase difference

(C) Lagging behind the voltage by π phase difference

(D) Lagging behind the voltage by π/2 phase difference

85. Which of the following rays are travelling with velocity of light?

I) α - rays II) β - rays III) γ - rays IV) X – rays

(A) I and II (B) II and III **(C) II and IV** (D) I and IV

86. If λ_x, λ_{uv}, λ_m are wavelengths of X-rays, uv rays and microwaves respectively then which of the following is correct?

(A) $\lambda_x = \lambda_{uv} = \lambda_m$ (B) $\lambda_x > \lambda_{uv} > \lambda_m$

(C) $\lambda_x < \lambda_{uv} < \lambda_m$ (D) $\lambda_{uv} > \lambda_m = \lambda_x$

87. Atomic spectrum should be

(A) Pure line spectrum (B) Emission band spectrum

(C) Absorption line spectrum (D) Absorption band spectrum

88. The wave number for Balmer series at long wavelength limit

(A) R (B) R/4 (C) 3 R/24 **(D) 5 R/36**

89. Which of the following statements are true?

I) The cathode rays are a stream of electrons

II) The elliptical orbits of electron in the atom were proposed by de Broglie

III) Canal rays can produce fluorescence.

(A) I and II (B) II and III (C) I, II and III **(D) I and III**

90. Which of the following statements are true?

I) Photoelectric effect can be explained on the basis of quantum theory of light.

II) The photoelectric effect is instantaneous process.

III) To produce large number of photoelectrons the cathode of photosensitive material is coated with high work function material.

(A) I, II (B) II, III (C) I, III (D) I, II, III

91. The number of frames of references in the universe is

(A) Zero (B) 10^5 **(C) Infinity** (D) 9 billion

92. The equation showing relation between currents in a transistor circuit is

(A) $I_E = I_B + I_C$ (B) $I_C = I_B + I_E$

(C) $I_B = I_E + I_C$ (D) $I_E = I_B - I_C$

93. Which of the following diodes is operated in a reverse bias made?

(A) P – N junction **(B) Zener**

(C) Tunnel (D) LED

94. Since the input impedance of an ideal operational amplifier is infinite

(A) Its input current is zero

(B) Its output resistance is high

(C) Its output voltage becomes independence of load resistance

(D) It becomes a current controlled device

95. In super let FM receiver if the incoming frequency is 150 x 10^3 KHz, what will be the frequency produced by local oscillator?

(A) 160.7 Hz **(B) 160.7 MHz** (C) 160.7 KHz (D) 167 KHz

96. In a broadcasting studio a 1000 KHz carrier is modulated by an audio signal of frequency range 100 – 5000 Hz. What are the maximum and minimum frequencies of USB and LSB?

(A) 1005 Hz, 1000 Hz and 999.9 Hz, 995 Hz

(B) 10.05 MHz, 10.001 MHz and 9.999 MHz, 9.95 MHz

(C) 1005 KHz, 1000.1 KHz and 0.9999 KHz, 995 KHz

(D) 1.005 KHz, 1.0001 KHz and 0.9999 KHz, 0.995 KHz

97. Which of the following act as the propellents for rocket motors used in space vehicles?

(A) Liquid O_2 **(B) Liquid H_2** (C) Liquid N_2 (D) Liquid propylene

98. Which one of the following statements is correct?

(A) Entropy of the University remains constant, energy of the universe remains constant

(B) Entropy of the Universe tends to a maximum, energy of the universe tends to a maximum

(C) Entropy of the universe tends to a maximum, energy of the universe remains constant

(D) Energy and entropy of the universe tends to a minimum

99. The atmosphere is mainly heated by which one of the following?

(A) Direct rays of the Sun (B) Reflected solar radiation

(C) Long wave terrestrial radiation (D) Burning of organic material

100. Two spheres of radii r_1 and r_2 cm are joined by a thin wire and a total charge q is given to them. If q_1 and q_2 be their individual charges, then

(A) $q_1 = q_2$ **(B) $q_1/q_2 = r_1/r_2$**

(C) $q_1/q_2 = r_1/r_2$ (D) $q_1 = r_1/q$ and $q_2 = r_2/q$

101. The nuclei $_6C^{13}$ and $_7N^{14}$ can be described as

(A) Isotones (B) Isobars (C) Isotopes of carbon (D) Isotopes of nitrogen

102. The potential barrier of germanium PN Junction is

(A) 1.1 eV (B) 0.7 V **(C) 0.3 V** (D) 1.1 V

103. Which of the following Noble gas is used for Inflating Aeroplane tyres?

(A) Helium (B) Neon (C) Argon (D) Xenon

104. The first Indian Communication satellite put in geo – stationary orbit is

(A) PSLV (B) Aryabhatta **(C) APPLE** (D) Rohini

105. The system of unit accepted universally was

(A) CGS (B) FPS **(C) MKS (or) SI units** (D) HKS

106. 'Bunsen burner' works, based on the principle of

(A) De Morgan theorem **(B) Bernouli's theorem**

(C) Surface theorem (D) Photo conductivity