Subject: Physics

XII Th Model Set: 1

Section-1 (objective Type Questions)

For the following Question Nos. 1 to 28 there is only one correct answer against each question. For each question, mark the correct option on the answer sheet: $28 \times 1 = 28$

Q① The value of absolute electrical permittivity of free space is

(a) $8.85 \times 10^{-12}\ C^2 N^{-1} m^{-2}$ (b) $8.85 \times 10^{-12}\ C^2 N m^{-2}$

(c) $9 \times 10^{-9}\ N m^2 C^{-2}$ (d) $9 \times 10^{9}\ N m^2 C^{-2}$

Q② Coulomb's force between two point charges varies with distance 'r' between them as

(a) r (b) $\frac{1}{r}$

(c) r^2 (d) $\frac{1}{r^2}$

Q③ S.I. unit of electric dipole moment is

(a) Am (b) Am^{-1}

(c) Cm (d) Cm^{-1}

Q④ Dimensional formula of dielectric strength is

(a) $[MLT^3A^1]$ (b) $[ML^3TA^1]$

(c) $[ML\bar{T}^3A^1]$ (d) $[ML\bar{T}^3A]$

(5) 64 identical drops each of capacity 5 μF combine to form a big drop. What is the capacity of the big drop:

(a) 4 μF (b) 25 μF

(c) 20 μF (d) 164 μF

(6) Kilowatt - hour (KWh) is the unit of

(a) energy (b) power

(c) torque (d) force

(7) The resistivity of a metallic wire is ρ. When its length is doubled, its new resistivity is

(a) 2ρ (b) ρ/2

(c) 4ρ (d) ρ

(8) A current flow in a wire of resistance 5 Ω having p.d. 7 V for 20 minutes. The heat produced is

(a) 140 Cal (b) 280 Cal

(c) 700 Cal (d) 2800 Cal

(9) Resistance of an ideal ammeter is

(a) infinite (b) zero

(c) 1 Ω (d) 10 Ω

(10) A cyclotron is used to accelerate

(a) Electron (b) Neutrons

(c) Positive ions (d) None of these

(11) tesla is the unit of

(a) electric flux (b) magnetic flux

(c) electric field (d) magnetic field

(12) A charged particle moving in a magnetic field has increased in its velocity, then its radius of the circle

(a) decreases (b) increases

(c) remains the same (d) becomes half

(13) Angle of dip at the magnetic equator is

(a) 0° (b) 45°

(c) 90° (d) 30°

(14) The cause of induced e.m.f. in a closed coil is

(a) magnetic flux (b) magnetic field

(c) change in magnetic flux (d) None of these

(15) Lenz's law is in accordance with the law of conservation of

(a) mass (b) energy

(c) momentum (d) charge

(16) Dimensional formula of Self inductance is

(a) $[ML^2T^{-2}A^{-2}]$ (b) $[ML^2T^{-2}A^{-1}]$

(c) $[ML T^{-2}A^{-1}]$ (d) $[ML T^{-2}A^{3}]$

(17) The peak value of a.c. voltage on a 220 V mains is

(a) $200\sqrt{2}$ V (b) $230\sqrt{2}$ V

(c) $220\sqrt{2}$ V (d) $240\sqrt{2}$ V

(18) Power factor of a Series LCR circuit is

(a) R (b) Z/R

(c) R/Z (d) RZ

(19) The power factor varies between

(a) 2 and 2.5 (b) 3.5 to 5

(c) 0 to 1 (d) 1 to 2

(20) Transformer is based upon the principle of

(a) Self induction (b) Mutual induction

(c) Eddy current (d) None of these

(21) The unit of reactance is

(a) mho (b) ohm

(c) farad (d) ampere

(22) Electric and magnetic field vectors in e.m. waves are

(a) perpendicular to each other (b) parallel to each other

(c) 270° to each other (d) None of these

(23) Who was the first to give a practical demonstration of the production of e.m. wave:

(a) J.C. Bose (b) Marconi

(c) Maxwell (d) Hertz

(24) If a convex lens of focal length 75 c.m. and a concave lens of focal length 50 c.m. are combined together, what will be their resulting power:

(a) +6.6 D (b) 0.66 D

(c) −6.6 D (d) −0.66 D

(25) S.I. unit of power of lens is

(a) joule (b) candela

(c) dioptre (d) watt

(26) The momentum of a photon is P. The corresponding wavelength is

(a) h/p (b) hp

(c) p/h (d) $h/\sqrt{p}$

(27) What is the unit of radioactivity:

(a) joule (b) MeV

(c) a.m.u. (d) Curie

(28) Hi-Fi means

(a) high fexation (b) high fidelity

(c) high fitting (d) high filling.

— X —

Model Objective Answers:

Answers:-

1. → (a)
2. → (d)
3. → (c)
4. → (c)
5. → (c)
6. → (a)
7. → (d)
8. → (d)
9. → (b)
10. → (c)
11. → (d)
12. → (b)
13. → (a)
14. → (c)
15. → (b)
16. → (a)
17. → (c)
18. → (c)
19. → (c)
20. → (b)
21. → (b)
22. → (a)
23. → (d)
24. → (d)
25. → (c)
26. → (a)
27. → (d)
28. → (b)

Subject: Physics

Section-1 (Objective Type Questions)

XII[15] Model set: 2

For the following Question Nos. 1 to 28 there is only one correct answer against each question. For each question, mark the correct option on the answer sheet:

$28 \times 1 = 28$

Q① The ionisation energy of 10 times ionised Sodium atom is

(a) $\frac{13.6}{112}$ eV (b) $\frac{13.6}{11}$ eV

(c) $13.6 \times (11)^2$ eV (d) 13.6 eV

Q② A nucleus has 6 protons and 6 neutrons. The volume of the nucleus in (fermi)^3 (given $R_0 = 1.3$ fermi) is

(a) 25.0 (b) 60.28

(c) 101.35 (d) 110.4

Q③ Who discovered X-rays?

(a) Roentgen (b) Marie Curie

(c) Rutherford (d) all of these

Q④ An electric field can deflect

(a) X-rays (b) neutron

(c) α-particle (d) γ-rays

Q⑤ The volume of a nucleus is smaller than that of atom by a factor of

(a) 10^{-1} (b) 10^{-5}

(c) 10^{-10} (d) 10^{-15}

Q⑥ Resistance of a Semiconductor
(a) decreases with increase in temp.
(b) increases with increase in temp.
(c) increases for germanium and decreases for silicon
(d) is not affected by change in temp.

Q⑦ Majority charge carriers in p-type materials are
(a) holes (b) electrons
(c) both holes & electrons (d) none of these

Q⑧ In a transistor configuration, β-parameter is
(a) $\frac{I_b}{I_c}$ (b) $\frac{I_c}{I_b}$
(c) $\frac{I_c}{I_e}$ (d) $\frac{I_e}{I_c}$

Q⑨ n-type germanium is obtained on doping intrinsic germanium with
(a) Phosphorus (b) Aluminium
(c) Boron (d) Gold

Q⑩ In a diode, when there is saturation current, the plate resistance is
(a) zero (b) infinite
(c) some finite quantity (d) data sufficient

Q⑪ The relationship between the two current gains α and β in a transistor is
(a) $\beta = \frac{\alpha}{1+\alpha}$ (b) $\alpha = \frac{\beta}{1-\beta}$
(c) $\alpha = \frac{\beta}{1+\beta}$ (d) $\alpha = \frac{1+\beta}{\beta}$

Q(12) The frequency limit generally used for ground wave propagation is

(a) 2000 KHZ (b) 1600 KHZ

(c) 1000 KHZ (d) 100 KHZ

Q(13) Transducer is a device which

(a) transforms power (b) transfers data from one place to another

(c) Converts one form of energy into another (d) transponder

Q(14) AVC in a receiver means

(a) automatic volume control (b) automatic voltage control

(c) audio voice control (d) anti virus control

Q(15) The thermions are

(a) photons (b) Positrons

(c) protons (d) electrons

Q(16) Charge on electron was discovered by

(a) J.J. Thomson (b) Neils Bohr

(c) Millikan (d) Chadwick

Q(17) The rest mass of photon is

(a) 1.76×10^{-35} kg (b) zero

(c) 9×10^{-31} kg (d) 1 a.m.u.

Q(18) If particles are moving with same velocity, then max^m de-Broglie wavelength is for

(a) proton (b) neutron

(c) α-particle (d) β-particle

Q(19) The time taken by a photoelectron to come out after the photon strikes is approximately

(a) 10^{-1} sec (b) 10^{-4} sec

(c) 10^{-10} sec (d) 10^{1} sec

Q(20) If the refractive index of a material of equilateral prism is $\sqrt{3}$, then angle of minimum deviation of the prism is

(a) 30° (b) 45°

(c) 60° (d) 75°

Q(21) If the critical angle for a material to air is 30°, the refractive index of the material will be

(a) 1.0 (b) 1.5

(c) 2.0 (d) 2.5

Q(22) The phase difference between any two points situated on the same wavefront is

(a) 2π (b) π

(c) 0 (d) $\pi/2$

Q(23) The image formed by an objective of a compound microscope is

(a) virtual & enlarged

(b) virtual & diminished

(c) real & diminished

(d) real & enlarged

Q (24) The law of force that governs the force between two electric charges was discovered by:

(a) ampere
(b) faraday
(c) ohm
(d) coulomb

Q (25) The dielectric constant of metals is:

(a) 1
(b) greater than 1
(c) zero
(d) infinite

Q (26) Which of the following relations is called as current density?

(a) $\frac{I}{A}$
(b) $\frac{A}{I}$
(c) $\frac{I^2}{A}$
(d) $\frac{I^3}{A^2}$

Q (27) A galvanometer can be changed into ammeter by providing

(a) Low resistance in series,
(b) Low resistance in parallel,
(c) High resistance in series,
(d) High resistance in parallel.

(6)

Q(28) If $\vec{E}$ and $\vec{B}$ represent electric and magnetic field vectors of the electromagnetic waves, then the direction of propagation of the electromagnetic waves is that of

(a) $\vec{E}$ (b) $\vec{B}$

(c) $\vec{E} \times \vec{B}$ (d) $\vec{B} \times \vec{E}$

—X—

Set-2

Answers: -

Model objective Answers:

Q① → (c)

Q② → (d)

③ → (a)

④ → (c)

⑤ → (d)

⑥ → (a)

⑦ → (a)

⑧ → (b)

⑨ → (a)

⑩ → (b)

⑪ → (c)

⑫ → (c)

⑬ → (c)

⑭ → (a)

⑮ → (d)

⑯ → (c)

⑰ → (b)

⑱ → (d)

⑲ → (c)

⑳ → (c)

㉑ → (c)

㉒ → (c)

㉓ → (d)

㉔ → (d)

㉕ → (d)

㉖ → (a)

㉗ → (b)

㉘ → (c)

—X—

Set-3
XII th, Physics

Section – 1 (Objective Type)

In the following Question Nos. 1 to 28 there is only one correct answer against each question. For each question, mark the correct option on the answer sheet :

28 × 1 = 28 Marks

Q① The torque acting on electric dipole of dipole moment $\vec{p}$ placed in electric field of intensity $\vec{E}$ is

(a) $\vec{p} \times \vec{E}$ (b) $\vec{p} \cdot \vec{E}$

(c) pE (d) $\vec{p}/\vec{E}$

Q② The electric dipole moment of an electric dipole made up of two opposite charges having magnitude $+3.2 \times 10^{-19}$ C and -3.2×10^{-19} C separated by a distance 2.4×10^{-10} m is

(a) 7.68×10^{-27} C-m (b) 7.68×10^{-29} C-m

(c) 7.86×10^{-29} C-m (d) 7.86×10^{-27} C-m

Q③ Kilowatt-hour (kWh) is the unit of

(a) energy (b) power

(c) torque (d) force

Q④ The algebraic sum of all currents meeting at any point in an electrical circuit is

(a) infinite (b) positive

(c) zero (d) negative

Q(5) The power of electric circuit is

(a) $V.R$ (b) $V^2.R$

(c) V^2/R (d) $V^2.RI$

Q(6) Dimension of magnetic field is

(a) $I^{-1}ML^0T^{-2}$ (b) $I^0ML T^{-2}$

(c) $IMLT^{-1}$ (d) $IM^{-1}L^{-1}T^{-2}$

Q(7) Impedance of L-R circuit is

(a) $R^2+W^2L^2$ (b) $\sqrt{R+WL}$

(c) $R+WL$ (d) $\sqrt{R^2+W^2L^2}$

Q(8) The direction of propagation of electromagnetic wave is

(a) Parallel to $\vec{B}$ (b) Parallel to $\vec{E}$

(c) Parallel to $\vec{E}\times\vec{B}$ (d) Parallel to $\vec{B}\times\vec{E}$

Q(9) The value of amplitude modulation index is

(a) Always 0 (b) between 1 and ∞

(c) between 0 and 1 (c) always ∞

Q(10) Boolean expression for NOR gate is

(a) $A+B=Y$ (b) $\overline{A.B}=Y$

(c) $A.B=Y$ (d) $\overline{A+B}=Y$

Q(11) The intensity of electric field at any point on the surface of a charged conductor is

(a) zero (b) ⊥r to the surface
(c) tangential to the surface (d) at 45° to the surface

Q(12) Permittivity of free space is

(a) $9\times10^{9}\ mF^{-1}$ (b) $1.6\times10^{-19}\ C$
(c) $8.85\times10^{-12}\ Fm^{-1}$ (d) $8.85\times10^{9}\ Fm^{-1}$

Q(13) When a ray of light enters a glass slab, its wavelength

(a) increases (b) decreases
(c) remains unchanged (d) data are not complete

Q(14) Electron-Volt (eV) is the measure of

(a) charge (b) potential difference
(c) Current (d) energy

Q(15) Lenz's law is associated with

(a) charge (b) mass
(c) energy (d) principle of conservation of momentum

Q(16) The final image in astronomical telescope is

(a) real & erect (b) real & inverted

(c) virtual & inverted (d) virtual & erect

Q(17) When two converging lenses of same focal length f are placed in contact, then the focal length of the combination is

(a) f (b) 2f

(c) f/R (d) 3f

Q(18) The transverse nature of light wave supports

(a) Interference (b) reflection

(c) polarisation (d) dispersion

Q(19) The colour of a thin film is due to

(a) Scattering (b) interference

(c) dispersion (d) diffraction

Q(20) If ϕ is the phase difference between ac current and emf, then the value of power factor is

(a) $\tan\phi$ (b) $\cos^2\phi$

(c) $\sin\phi$ (d) $\cos\phi$

Q(21) Unit of Self - induction is

(a) Weber (b) Ohm

(c) Henry (d) gauss

Q(22) The working of dynamo is based on the principle of

(a) heating effect of current (b) electromagnetic induction

(c) magnetic induction (d) electric induction

Q(23) The equation of an ac is represented by $I = 0.6 \sin 100 \pi t$. The frequency of ac is

(a) 50π (b) 50

(c) 100π (d) 100

Q(24) Nickel is

(a) diamagnetic (b) paramagnetic

(c) ferromagnetic (d) none of these

Q(25) Brewster's law is

(a) $\mu = \sin 2p$ (b) $\mu = \cos 2p$

(c) $\mu = \tan 2p$ (d) $\mu = \tan^2 2p$

Q(26) With the increase of temperature, the resistance of a semiconductor

(a) increases (b) decreases

(c) sometimes increases & sometimes decreases (d) remains unchanged

Q(27) The ratio of peak value & r.m.s. value of ac is

(a) 2 (b) $\sqrt{2}$

(c) $\frac{1}{\sqrt{2}}$ (d) $\frac{1}{2}$

Q(28) Which frequency range is used for TV transmission ?

(a) 30Hz – 300Hz (b) 30KHz – 300KHz

(c) 30MHz – 300MHz (d) 30GHz – 300GHz

– X –

Set-3

Objective Model Answers

XII 15, Physics

28×1 = 28 Marks

Q① → (a)

Q② → (b)

Q③ → (a)

Q④ → (c)

Q⑤ → (c)

Q⑥ → (a)

Q⑦ → (d)

Q⑧ → (c)

Q⑨ → (c)

Q⑩ → (d)

Q⑪ → (b)

Q⑫ → (c)

Q⑬ → (b)

Q⑭ → (d)

Q⑮ → (c)

Q⑯ → (c)

Q⑰ → (c)

Q⑱ → (c)

Q⑲ → (b)

Q⑳ → (d)

Q㉑ → (c)

Q㉒ → (b)

Q㉓ → (b)

Q㉔ → (c)

Q㉕ → (c)

Q㉖ → (b)

Q㉗ → (b)

Q㉘ → (c)

Set-4

XII Th Physics

Section-1

(Objective Type)

28×1 = 28 marks

Q① 64 indentical drops each of capacity 5 μF combine to form a big drop. What is the capacity of big drop?

(a) 164 μF (b) 20 μF

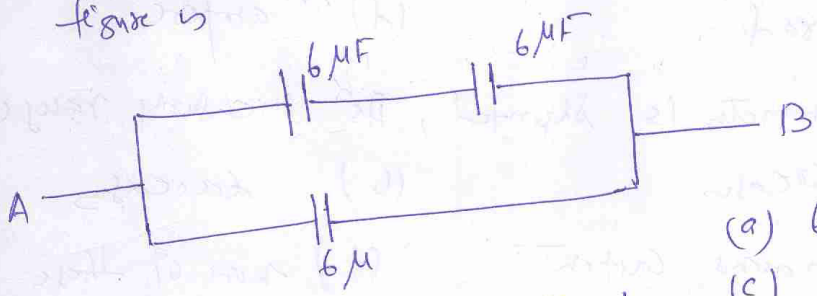
(c) 4 μF (d) 25 μF

Q② Dimension of permeability is

(a) $ML\bar{T}^2\bar{I}^2$ (b) $ML\bar{T}^2\bar{I}^2$

(c) $ML\bar{T}^2I^2$ (c) $ML\bar{T}^2\bar{I}$

Q③ The equivalent capacity between A & B in the given figure is



(a) 6 μF (b) 18 μF

(c) 9 μF (d) $\frac{1}{9}$ μF

Q④ β-rays are deflected in

(a) gravitational field (b) only in magnetic field

(c) only in electric field (d) both in magnetic & electric field

Q⑤ The power factor of L-R circuit is

(a) $R+WL$ (b) $\frac{R}{\sqrt{R^2+W^2L^2}}$

(c) $R\sqrt{R^2+W^2L^2}$ (d) WL/R

Q⑥ Dimension of ~~electromagnetic~~ electromotive force (e.m.f.) is

(a) ML^2T^{-2} (b) $ML^2T^{-2}I^{-1}$

(c) MLT^{-2} (d) $ML^2T^{-3}I^{-1}$

Q⑦ ampere-hour is unit of

(a) Power (b) Charge

(c) energy (d) potential difference

Q⑧ The unit of reactance is

(a) mho (b) ohm

(c) farad (d) ampere

Q⑨ When an ammeter is shunted, its measuring range

(a) increases (b) decreases

(c) remains constant (d) none of these

Q⑩ Hot wire ammeter measures

(a) Peak value of ac (b) average value of ac

(c) r.m.s. ac (d) none of these

Q⑪ If N_1 & N_2 are numbers of primary & secondary coils of a step up transformer, then

(a) $N_1 > N_2$ (b) $N_2 > N_1$

(c) $N_1 = N_2$ (d) $N_1 = 0$

Q(12) SI unit of magnetic moment is

(a) JT^{-2} (b) Am^2

(c) JT (d) Am^{-1}

Q(13) The optical fibre works on the principle of

(a) Scattering (b) Refraction

(c) dispersion (d) Total internal reflection

Q(14) When the tube length of microscope is increased, its magnifying power

(a) increases (b) decreases

(c) becomes zero (d) remains unchanged

Q(15) The energy of a photon of wavelength λ is

(a) $hc\lambda$ (b) hc/λ

(c) $h\lambda/c$ (d) λ/hc

Q(16) Which one of the following has max^{m} penetrating power?

(a) X-rays (b) Cathode rays

(c) α-rays (d) γ-rays

Q(17) The majority current-carrier in p-type semiconductor is

(a) electron (b) hole

(c) photon (d) proton

Q(18) The majority current-carrier in n-type semiconductor is

(a) Proton (b) hole

(c) α-particle (d) electron

Q(19) The Boolean expression for AND gate is

(a) $\overline{A \cdot B} = Y$ (b) $A + B = Y$

(c) $A \cdot B = Y$ (d) $\overline{A + B} = Y$

Q(20) The Boolean expression for OR gate is

(a) $A + B = C$ (b) $A \cdot B = 0$

(c) $\overline{A} = A$ (d) $C = A\overline{B}$

Q(21) Which series comes in visible region of hydrogen spectrum ?

(a) Lyman series (b) Balmer series

(c) Paschen series (d) Brackett series

Q(22) Which series comes in ultraviolet region of hydrogen spectrum ?

(a) Lyman series (b) Balmer series

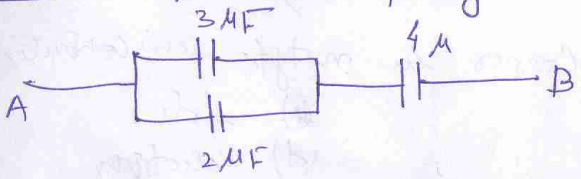
(c) Paschen series (d) Pfund series

Q(23) Which series not comes in infrared region of hydrogen spectrum ?

(a) Humphreys series (b) Pfund series

(c) Brackett series (d) Lyman series

Q(24) The equivalent capacity between A and B is



(a) $\frac{20}{9}$ μF (b) 9 μF

(c) 1 μF (d) $\frac{1}{9}$ μF

Q(25) A current flows in a wire of resistance 5Ω having potential difference 7 volt for 20 minutes. The heat produced is

(a) 140 Cal (b) 280 Cal

(c) 700 Cal (d) 2800 Cal

Q(26) The peak voltage of an A.C. is 440 volt. Its virtual voltage is

(a) 220 V (b) 440 V

(c) $220\sqrt{2}$ V (d) $440\sqrt{2}$ V

Q(27) A biconvex lens ($\mu = 1.5$) has equal curvature each of 20 cm. Its power of the lens is

(a) 5 D (b) 10 D

(c) 2.5 D (d) 20 D

Q(28) virtual current is equal to

(a) $\sqrt{2}$ Peak current (b) $\frac{\text{Peak current}}{2}$

(c) $\frac{\text{Peak current}}{\sqrt{2}}$ (d) $\frac{\text{Average current}}{\sqrt{2}}$

—X—

Set-4

XII th Physics

Objective Model Answers

28×1 = 28 Marks

Q① → (b)

Q② → (a)

Q③ → (c)

Q④ → (d)

Q⑤ → (b)

Q⑥ → (d)

Q⑦ → (b)

Q⑧ → (b)

Q⑨ → (a)

Q⑩ → (c)

Q⑪ → (b)

Q⑫ → (b)

Q⑬ → (d)

Q⑭ → (a)

Q⑮ → (b)

Q⑯ → (d)

Q⑰ → (b)

Q⑱ → (d)

Q⑲ → (c)

Q⑳ → (a)

Q㉑ → (b)

Q㉒ → (a)

Q㉓ → (d)

Q㉔ → (a)

Q㉕ → (d)

Q㉖ → (c)

Q㉗ → (a)

Q㉘ → (c)

—X—