

SAMPLE QUESTIONS

Total No. of Questions for HITSEEE - 120

Duration: 2Hrs

- If a point lies at a distance x from the midpoint of the dipole, the electric potential at this point is proportional to
 - $\frac{1}{x^2}$
 - $\frac{1}{x^3}$
 - $\frac{1}{x^4}$
 - $\frac{1}{x^{3/2}}$
- Two balls at the same temperature collide. What is conserved?
 - Momentum
 - Kinetic energy
 - Velocity
 - Temperature
- In the case of insulators, as the temperature decreases, resistivity
 - decreases
 - increases
 - remains constant
 - becomes zero
- When two 2Ω resistances are in parallel, the effective resistance is
 - 2Ω
 - 4Ω
 - 1Ω
 - 0.5Ω
- The part of the AC generator that passes the current from the coil to the external circuit is
 - field magnet
 - split rings
 - slip rings
 - brushes
- Electromagnetic waves are
 - transverse
 - may be longitudinal or transverse
 - longitudinal
 - neither longitudinal nor transverse
- The path difference between two monochromatic light waves of wave length 4000 \AA is $2 \times 10^{-7}\text{ m}$. The phase difference between them is
 - π
 - 2π
 - $3\frac{\pi}{2}$
 - $\pi/2$
- In an N – type semiconductor, there are
 - Immobile negative ions
 - No minority carriers
 - Immobile positive ion
 - Holes as majority carriers
- The reverse saturation current in a PN junction diode is only due to
 - majority carrier
 - minority carriers
 - acceptor ions
 - donor ions
- The electron in the atom of an element which determines its chemical and electrical properties are called
 - Valence electrons
 - Revolving electrons
 - Excess electrons
 - Active electrons
- The total number of moles present in 111 gram of CaCl_2 is
 - 0.5 mole
 - 1 mole
 - 2 moles
 - 3 moles
- If MHPO_4 is the formula of metal phosphate, what is formula for corresponding metal chloride?
 - MCl
 - MCl_3
 - MCl_2
 - MCl_4
- "No two electrons in an atom will have all the four quantum numbers the same". This is known as
 - Pauli Exclusion principle
 - Hunds rule of maximum multiplicity
 - Heisenberg's uncertainty principle
 - Aufbau principle
- The elements with atomic numbers 21- 30 belong to
 - s-block
 - p-block
 - f-block
 - d-block
- The law of octaves was stated by
 - Dobereiner
 - Mendeleev
 - Moseley
 - Newland
- With respect to chlorine, hydrogen will be
 - Electronegative
 - Electropositive
 - Neutral
 - None of these
- In the first transition series, the incoming electron enters the
 - 3d orbital
 - 3s orbital
 - 3p orbital
 - 3d orbital
- Atoms having the same atomic number but different mass number are known as
 - Isomers
 - Isobars
 - Isotopes
 - Isotones
- The element that loses its valence electron readily is said to have
 - High ionisation energy
 - Low ionisation energy
 - Low electronegativity
 - Low electron affinity
- Barium salts when heated in Bunsen flame gives
 - Blue colour
 - Red colour
 - Apple green colour
 - Yellow colour

21. $\int \tan x dx$

a) $\text{Logcos}x+c$

b) $\text{Logsec}x+c$

c) \sec^2x+c

d) $\frac{\tan^2 x}{2} + c$

22. $\int \sin^2 x dx$

a) $\frac{\sin^3 x}{3} + c$

b) $-\frac{\cos^2 x}{2} + c$

c) $\frac{1}{2} \left[x - \frac{\sin 2x}{2} \right] + c$

d) None

23. $\int e^{x^5} 5x^4 dx =$

a) $e^{5x} + c$ b) $5e^{5x} + c$ c) $e^{x^5} + c$ d) $5e^{x^5} + c$

24. $\int xe^x dx =$

a) $e^x - x + c$

b) $xe^x - 1 + c$

c) $x(e^x - 1) + c$

d) $e^x(x-1) + c$

25. $\int \log x dx =$

a) $x \log x - x + c$ b) $X + \log x + c$ c) $X \log x + c$ d) None

26. Differentiation of $\log_a x$ is

a) $\frac{1}{a} \log a$ b) $\frac{x}{\log a}$ c) $\frac{a}{\log x}$ d) $\frac{\log_a e}{x}$

27. $\frac{d}{dx} \sin \log x =$

a) $\frac{\cos \log x}{x}$ b) $\frac{\cos x}{x}$ c) $\frac{\sin x}{x}$ d) None

28. If $x = \sin t$ and $y = \cos t$, then $\frac{dy}{dx} =$

a) $\sin t \cos t$ b) $-\cot t$ c) $-\tan t$ d) None

29. $y = x^2$ then $y_3 =$

a) $2x$ b) 0 c) 2 d) X

30. $y = \sin^{-1}(3x-4x^3)$ then y'

a) $\frac{3}{\sqrt{1-x^2}}$

b) $\frac{3}{\sqrt{x^2-1}}$

c) $\frac{-3}{\sqrt{1-x^2}}$

d) $\frac{-3}{\sqrt{x^2-1}}$

Keys

Q. No.	Answers	Q. No.	Answers	Q. No.	Answers
1	a	11	b	21	a
2	a	12	c	22	c
3	b	13	a	23	c
4	c	14	d	24	d
5	d	15	d	25	a
6	a	16	b	26	d
7	a	17	a	27	a
8	c	18	c	28	c
9	b	19	b	29	d
10	a	20	c	30	a