

## SAMPLE QUESTIONS (30 Nos.)

Total No. of Questions for HITSEEE - 120

Duration: 2Hrs

- In the forward bias characteristic curve, a diode appears as
  - a high resistance
  - a capacitor
  - an OFF switch
  - an ON switch
- In  $\beta$  - decay
  - Atomic number decreases by one
  - Mass number decreases by one
  - Proton number remains the same
  - Neutron number decreases by one
- The explosion of atom bomb is based on the principle of
  - Uncontrolled fission reaction
  - Controlled fission reaction
  - Fusion reaction
  - Thermonuclear reaction
- The chromium ions doped in the ruby rod
  - absorbs red light
  - absorbs green light
  - absorbs blue light
  - emits green light
- The photoelectric effect can be explained on the basis of
  - Corpuscular theory of light.
  - Wave theory of light
  - Electromagnetic theory light
  - Quantum theory of light
- X-ray is
  - phenomenon of conversion of kinetic energy into radiation
  - conversion of momentum
  - conversion of energy into mass
  - principle of conservation of charge
- The dimensional formula of PV, where P is pressure and V is volume is the same as that of
  - Work
  - Power
  - Elastic modulus
  - Pressure
- Which of the following measurements is most accurate?
  - $9 \times 10^{-2}$  m
  - $90 \times 10^{-3}$  m
  - $900 \times 10^{-4}$  m
  - 0.090 m
- A body having uniform acceleration of  $10\text{ms}^{-2}$  has a velocity of  $100\text{ms}^{-1}$ . In what time, the velocity will be doubled?
  - 8 s
  - 10 s
  - 12 s
  - 14 s
- The horizontal range is four times the maximum height attained by a projectile. The angle of projection is
  - $30^\circ$
  - $45^\circ$
  - $60^\circ$
  - $90^\circ$
- Compound used for making moulds for statues is
  - Copper sulphate
  - Calcium carbonate
  - Plaster of Paris
  - Gypsum
- The general electronic configuration of carbon group elements is
  - $ns^2np^2$
  - $ns^2np^1$
  - $ns^2np^3$
  - None of the above
- The structure of NaCl crystal has
  - Body centered cubic lattice
  - Monoclinic structure
  - Octagonal structure
  - Face centered cubic lattice
- PV = Constant refers to
  - Charles law
  - Dalton's law
  - Avogadro's hypothesis
  - Boyle's law
- The crystal lattice of electrovalent compounds is composed of
  - Atoms
  - Molecules
  - Oppositely charged ions
  - Both molecules and ions
- Properties which depend only on number of particles present in solution are called
  - Additive properties
  - Constitutive properties
  - Colligative properties
  - None of the above
- Which of the following is an extensive property?
  - Volume
  - Density
  - Refractive index
  - Molar volume
- In an endothermic equilibrium reaction, increase in temperature
  - Does not alter  $K_{eq}$
  - Increases  $K_{eq}$
  - Decreases  $K_{eq}$
  - Retards the reverse reaction
- Organic compounds are soluble in
  - Polar solvents
  - Water
  - Non-polar solvents
  - HCl
- Unsaturated compounds with two double bonds are called
  - Olefins
  - Alkanes
  - Alkynes
  - Dienes

21. The order of matrix  $B = \begin{bmatrix} 1 & 2 & 5 & 7 \end{bmatrix}$  is

- a)  $1 \times 4$    b)  $4 \times 1$    c)  $2 \times 1$    d)  $1 \times 1$

22. If  $A = \begin{bmatrix} 2 & 1 & 4 \\ -3 & 2 & 1 \end{bmatrix}$  and  $X+A=0$  then the matrix X is

a)  $\begin{bmatrix} 2 & 1 & 4 \\ -3 & 2 & 1 \end{bmatrix}$    b)  $\begin{bmatrix} -2 & -1 & -4 \\ 3 & -2 & -1 \end{bmatrix}$

c)  $\begin{bmatrix} -2 & -1 & -4 \\ 3 & 2 & 1 \end{bmatrix}$    d)  $\begin{bmatrix} 2 & 1 & 4 \\ 3 & -2 & -1 \end{bmatrix}$

23.  $150^\circ$  into radians

- a)  $6\pi/5$    b)  $5\pi/6$    c)  $\pi/30$    d) None

24. If A, B are acute angles,  $\sin A=3/5$ ,  $\cos B=12/13$  then  $\cos(A+B)=$

- a)  $33/65$    b)  $65/33$    c)  $36/65$    d)  $65/36$

25. If  $\sin\theta=3/8$  and  $\theta$  is acute, then  $\cos 2\theta =$

- a)  $23/32$    b)  $5/8$    c) 1   d) none

26.  $\sin 4A + \sin 2A =$

- a)  $\sin 3A \cos A$    b)  $\sin A \cos 3A$   
c)  $2 \sin 3A \cos A$    d)  $2 \cos 3A \cos A$

27. Which of the following are statements?

- (i) May God bless you.   (ii) Rose is a flower  
(iii) Milk is white.   (iv) 1 is a prime number

- a) (i), (ii), (iii)   b) (i), (ii), (iv)  
c) (i), (iii), (iv)   d) (ii), (iii), (iv)

28. If a compound statement is made up of three simple statements, then the number of rows in the truth table is

- a) 8   b) 6   c) 4   d) 2

29. If p is T and q is F, then which of the following have the truth value T?

- (i)  $p \vee q$  (ii)  $\sim p \vee q$  (iii)  $p \vee \sim q$  (iv)  $p \wedge \sim q$

- a) (i), (ii), (iii)   b) (i), (ii), (iv)  
c) (i), (iii), (iv)   d) (ii), (iii), (iv)

30. The number of rows in the truth table of  $\sim [p \wedge (\sim q)]$  is

- a) 2   b) 4   c) 6   d) 8

### Keys

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

