

# GUJCET 2024 Question Paper Mar 31 (Physics and Chemistry)

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## GUJCET Physics Questions

**Ques 1.** The magnitude of the drift velocity per unit electric field is known as \_\_\_\_.

**Ans.** Mobility

**Ques 2.** A solenoid has a core of a material with a relative permeability of 400. The solenoid windings are insulated from the core and carry a current of 2A. If the number of turns is 1000 per meter then the value of magnetic intensity will be \_\_\_\_.

**Ans.**  $8 \times 10^5 \text{ Am}^{-1}$

**Ques 3.** A square loop of side 10 cm and resistance  $0.5 \Omega$  is placed vertically in the east-west plane. A uniform magnetic field of 0.10 T is set across the plane in the northeast direction. The magnetic field decreases to zero at 0.70 S at a steady rate. Then the magnitude of the induced current during this time interval will be \_\_\_\_.

**Ans.**  $2.0 \times 10^{-3} \text{ A}$

**Ques 4. As shown in the circuit diagram, find the value of I \_\_\_\_\_.**

**Ans. 2.5 A**

**Ques 5. Vs/Am is the unit of which physical quantity?**

**Ans.  $\mu_0$**

**Ques 6. A silver wire has a resistance of 2152  $\Omega$  at 27.5°C and a resistance of 270  $\Omega$  at 100°C. Then the temperature coefficient of the resistivity of silver will be \_\_\_\_\_.**

**Ans.  $3.9 \times 10^{-3} \text{ } ^\circ\text{C}^{-1}$**

**Ques 7. An ideal ammeter and an ideal voltmeter has resistances of \_\_\_\_\_  $\Omega$  and \_\_\_\_\_  $\Omega$  respectively.**

**Ans. (0,  $\infty$ )**

**Ques 8. A short bar magnet placed with its axis at 30° and a uniform external magnetic field of 0.5T experiences a torque of magnitude equal to 4.5  $\times 10^{-2}$  J. Then the magnitude of the magnetic moment of the magnet will be \_\_\_\_\_.**

**Ans. 36  $\times 10^{-2}$  JT<sup>-1</sup>**

**Ques 9.** The SI unit of the current density is \_\_\_\_\_.

**Ans.**  $\text{Am}^{-2}$

**Ques 10.** A coil has  $N$  turns and current passes through it is  $I$  ampere then we obtain  $L$  Henry of self inductance. Now if the current change to  $5I$ , then the new self-inductance will be \_\_\_\_\_ H.

**Ans.**  $L$

**Ques 11.** An inductor of  $50.0 \text{ mH}$  is connected to a source of  $220 \text{ V}$ . Then the rms current in the circuit will be \_\_\_\_\_. The frequency of the source is  $50 \text{ Hz}$ .

**Ans.**  $14 \text{ A}$

**Ques 12.** In LCR series a. c. circuit at resonance, the value of power factor will be \_\_\_\_\_.

**Ans.**  $1$

**Ques 13.** For obtaining wattless current \_\_\_\_\_ is connected with a.c. supply.

**Ans.** Only  $L$

**Ques 14. As indicated below which one is the equation of Ampere-Maxwell law?**

**Ans.**  $\oint \mathbf{B} \cdot d\mathbf{l} = \mu_0 i_c + \mu_0 \epsilon_0 d\Phi_B/dt$

**Ques 15. A parallel plate capacitor with air between the plates has a capacitance of 4 pF. If the distance between the plates is reduced by half and the space between them is filled with a substance of dielectric constant 6, the value of capacitance will be**

**Ans.** 48 pF

**Ques 16. The focal length of a plane mirror is \_\_\_\_\_ m.**

**Ans.**  $\infty$

**Ques 17. A ray coming from an object which is situated at a distance  $o$  in the air and falls on a spherical glass surface ( $n=1.5$ ). Then the distance of the image will be \_\_\_\_\_.  $R$  is the radius of curvature of a spherical glass.**

**Ans.**  $3R$

**Ques 18. For a thin prism, if the angle of the prism is  $A$  and the refractive index is  $\mu$ , then the angle of minimum deviation will be \_\_\_\_\_.**

**Ans.**  $2.4^\circ$

**Ques 19.** Cellular phones use radio waves to transmit voice communication in the \_\_\_\_\_ band.

**Ans.** UHF

**Ques 20.** The phase difference between any two particles in a given wavefront is \_\_\_\_\_ rad.

**Ans.** 0

**Ques 21.** To emit an electron from the metal, the minimum electric field required is \_\_\_\_\_.

**Ans.**  $10^8 \text{ Vm}^{-1}$

**Ques 22.** Consider a refracting telescope whose objective has a focal length of 1m and the eyepiece a focal length of 1cm, then the magnifying power of this telescope will be \_\_\_\_\_.

**Ans.** 100

**Ques 23.** The refractive index of glass is 1.6 and the speed of light in glass will be speed of light in vacuum is  $3.0 \times 10^8 \text{ ms}^{-1}$ .

**Ans.**  $1.88 \times 10^8 \text{ m/s}$

**Ques 24.** Js is the unit of \_\_\_\_\_ physical quantity.

**Ans.** Angular Momentum

**Ques 25.** In Young's double-slit experiment, the slits are separated by 0.28 mm, and the screen is placed 1.4 m away. The distance between the central bright fringe and the fourth bright fringe is measured to be 12 cm. Then the wavelength of light used in the experiment is \_\_\_\_\_.

**Ans.** 600 nm

**Ques 26.** If the primary coil of a transformer has 100 turns and the secondary has 200 turns. Then for an input of 220 V at 10 A, find the output current, in the step-up transformer.

**Ans.** 0.5 A

**Ques 27.** A radius of spherical charged shell is 10 cm and electric potential on its surface is 100 V, then the potential at 2 cm from the centre of the shell will be \_\_\_\_\_.

**Ans.** 0 V

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## GUJCET Chemistry Questions

**Ques 1. Reaction  $2A \rightarrow B + 3C$  is zero order reaction. What will be the rate of production for "C"?**

**Ans.**  $10.5 \times 10^{-4} \text{ mol L}^{-1} \text{ S}^{-1}$

**Ques 2. Which one of the following is amphoteric oxide?**

**Ans.**  $\text{Cr}_2\text{O}_3$

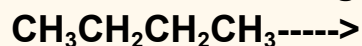
**Ques 3. Which of the following ion show the highest spin-only magnetic moment value?**

**Ans.**  $\text{Mn}^{2+}$

**Ques 4. Name the member of the lanthanide series which is well known to exhibit a +4 oxidation state.**

**Ans.** Cerium

**Ques 5. Which reagent will be used for the following reaction?**



**Ans.**  $\text{Cl}_2 / \text{UV Light}$

**Ques 6.** In the complex  $K[Cr(H_2O)_2(C_2O_4)_2]$ , Central metal ion is \_\_\_\_\_ and \_\_\_\_\_.

**Ans.** +3, 6

**Ques 7.**  $KMnO_4$  acts as an oxidising agent in an acidic medium in an acidic solution is \_\_\_\_\_.

**Ans.** 2/5

**Ques 8.** Hybridizations is  $[Ni(CO)_4]$  and  $[Ni(CN)_4]^{-3}$  are respectively.

**Ans.**  $sp^3$  and  $dsp^2$

**Ques 9.** Which one of the correct formula for coordination compound tris [ethan -1,2-diamine] cobal (III) suplate

**Ans.**  $[Co(en)_3]_2(SO_4)_3$

**Ques 10.** Identify the optically active compound from the following

**Ans.**  $[Co(en)_3]Cl_3$

**Ques 11.** 'R'+ $CH_3-CO-CH_3$ -----> Schiff's base what is 'R' in this reaction?

**Ans.**  $CH_3-NH_2$



**Ques 12. Which of the following carboxylic acid has least pKa value among all?**

**Ans.** HCOOH

**Ques 13. Which is the correct order of the basic strength of given aminos?**

**Ans.**  $(\text{C}_2\text{H}_5)_2\text{NH} > \text{C}_2\text{H}_5\text{NH}_2 > \text{NH}_3 > \text{C}_6\text{H}_5\text{NH}_2$

**Ques 14. Which diazonium salt is water insoluble and stable at room temperature?**

**Ans.**  $\text{C}_6\text{H}_5\text{N}_2\text{BF}_4$

**Ques 15. Lactose is compound of which units?**

**Ans.** B-D-Galactose and B-D-Glucose