



## UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.

(For those admitted in June 2021 and later)

## PROGRAMME AND BRANCH: B.Sc., CHEMISTRY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
VI	PART - III	ELECTIVE GENERIC	U21PH4A4	ALLIED PHYSICS - II
Date & Session: 14.11.2024/AN		Time : 3 hours		Maximum: 75 Marks
Course Outcome	Bloom's K-level	Q. No.	<b>SECTION - A (10 X 1 = 10 Marks)</b> Answer <u>ALL</u> Questions.	
CO1	K1	1.	The Charge of an electron is. a) $9 \times 10^9$ b) $9 \times 10^{-9}$ c) $1.6 \times 10^{-19}$ d) $1.6 \times 10^{19}$	
CO1	K2	2.	Kirchoff's second law is the consequence of conservation of. a) Current                      b) potential                      c) energy                      d) resistance	
CO2	K1	3.	The mutual inductance of two coils depends upon. a) medium between coils                      b) separation between coils c) both on (a) and (b)                      d) None of these	
CO2	K2	4.	Susceptibility is positive for. a) Anti ferromagnetic material                      b) ferromagnetic material c) diamagnetic material                      d) non-magnetic material	
CO3	K1	5.	The diode which operates in the reverse breakdown region with a sharp breakdown voltage is called. a) Junction diode                      b) LED                      c) Zener                      d) Photo diode	
CO3	K2	6.	The Boolean expression $Y = \overline{A + B}$ is an output representation of which logic function? a) AND                      b) OR                      c) NAND                      d) NOR	
CO4	K1	7.	The nucleus radius is order of. a) $10^{-15}$ m                      b) $10^{-6}$ m                      c) $10^{-10}$ m                      d) $10^{-12}$ m	
CO4	K2	8.	The mean life is ( $\bar{T}$ ). a) $\bar{T} = \lambda$ b) $\bar{T} = n \lambda$ c) $\bar{T} = -\lambda t$ d) $\bar{T} = 1/\lambda$	
CO5	K1	9.	Which of the following depends on the observer's frame of reference? a) the mass of proton                      b) the length meter a scale c) the half life of muon                      d) All of these	
CO5	K2	10.	When the speed of a moving body is doubled. a) its acceleration doubled                      b) its momentum doubled c) its kinetic energy doubled                      d) its potential energy doubled	
Course Outcome	Bloom's K-level	Q. No.	<b>SECTION - B (5 X 5 = 25 Marks)</b> Answer <u>ALL</u> Questions choosing either (a) or (b)	
CO1	K3	11a.	Define current density. Derive an expression for the current density of a conductor in terms of the drift speed of electrons. <b>(OR)</b>	
CO1	K3	11b.	State Kirchoff's Current law and voltage law.	

CO2	K3	12a.	Write Faraday's laws of electromagnetic induction. <b>(OR)</b>
CO2	K3	12b.	Derive an expression for the co-efficient of coupling between the coils.
CO3	K4	13a.	Write about Zener diode and explain its V-I Characteristics. <b>(OR)</b>
CO3	K4	13b.	State and Prove Demorgan's theorem.
CO4	K4	14a.	Explain i) Nuclear size ii) Nuclear mass and iii) Nuclear density <b>(OR)</b>
CO4	K4	14b.	Define half-life? Deduce the expression for half-life period $T_{1/2}$ of radioactive substance.
CO5	K5	15a.	What are the postulates of special theory of relativity? <b>(OR)</b>
CO5	K5	15b.	A particle is travelling through Earth's atmosphere at a speed of $0.750c$ . To an earthbound observer, the distance it travels is 2.50km. How far does the particle travel as viewed from the particle's reference frame?

Course Outcome	Bloom's K-level	Q. No.	<p style="text-align: center;"><b>SECTION – C (5 X 8 = 40 Marks)</b>  <b>Answer <u>ALL</u> Questions choosing either (a) or (b)</b></p>
CO1	K3	16a.	Discuss the conversion of galvanometer into an ammeter and a voltmeter. <b>(OR)</b>
CO1	K3	16b.	Discuss about sensitivity of a Wheat stone's bridge.
CO2	K4	17a.	Compare the important properties of dia, para and ferro magnetic materials. <b>(OR)</b>
CO2	K4	17b.	Determination of self-inductance of a coil by Rayleigh's method.
CO3	K4	18a.	Explain the characteristics of a Transistor in Common Emitter (CE) mode. <b>(OR)</b>
CO3	K4	18b.	Explain the operation of AND, OR and NOT gates with suitable diagram.
CO4	K5	19a.	Define Binding energy of nucleus? Interpret the stability of nucleus in terms of Binding energy curve. <b>(OR)</b>
CO4	K5	19b.	State Soddy Fajan's displacement law of radioactivity. Deduce the expression $N = N_0 e^{-\lambda t}$ , for the law of radioactive decay.
CO5	K5	20a.	Discus length contraction in detail. <b>(OR)</b>
CO5	K5	20b.	Obtain Einstein mass-energy relation.