22CHU411N/ 22BCU415N / 22BCU415

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Fourth Semester)

Common to Branches - **CHEMISTRY & BIOCHEMISTRY**

PHYSICS-II

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The polarization is possible in _____ wave a) transverse b) longitudinal c) water d) mechanical	K1	CO1
	2	Diffraction occurs when a wave encounters a) A boundary and changes direction b) A medium and changes speed c) An obstacle and bends around it d) A reflective surface and changes phase	K2	CO1
2	3	The magnetic quantum number (m) corresponds to a) The orientation of the electron's spin b) The shape of the electron's orbital c) The principal energy level of the electron d) The orientation of the electron's orbital in space	K1	CO2
	4	The angular momentum quantum number (l)specifies a) The energy level of the electron b) The shape of the electron's orbital c) The spin of the electron d) The mass of the electron	K2	CO2
3	5	Elements whose atomic number is greater than 82 are called as a) positive nuclei b) stable nuclei c) unstable nuclei d) negative nuclei	K1	CO3
	6	What is the Gamma-ray photon has a) No mass and an electric charge of +1 b) No mass and an electric charge of -1 c) No mass and no electric charge d) No mass and electric charge is +2	K2	CO3
4	7	According to Einstein's Special Theory of Relativity, laws of physics can be formulated based on a) Inertial Frame of Reference b) Non-Inertial Frame of Reference c) Both Inertial and Non-Inertial Frame of Reference d) Quantum State	K1	CO4
	8	The physical quantity wave functions in Schrödinger's equation represent? a) Particle's momentum b) Particle's energy c) Particle's position d) Probability amplitude	K2	CO4

Cont...

5	9	The optical properties of liquid crystals depend on the direction of a) Light b) Solid c) Air d) Water	K1	CO5
	10	The colour of emitted light from LED depends on a) due to its construction and physical dimension b) Number of available carriers c) Type of semiconductor material used d) Number of recombinations taking place	K2	CO5

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Examine on the process of colours of thin films with a neat sketch.	K4	CO1
		(OR)		
	11.b.	Compare the working process between Fresnel and Fraunhoffer diffraction?		
2	12.a.	Apply the principle behind spatial quantization and explain the spin of an electron.	K3	CO2
		(OR)		
	12.b.	Utilize the quantum numbers to explain.		
3	13.a.	Explain the concept behind Ionisation chamber and its working.	K4	CO3
		(OR)		
	13.b.	Determine the semi-empirical mass formula.		
4	14.a.	Evaluate on Time Dilation and length contraction.	K5	CO4
		(OR)		
	14.b.	Derive mass energy equivalence equation.		
5	15.a.	Estimate the behavior of a *pn* junction, under forward and reverse biasing.	K6	CO5
		(OR)		
	15.b.	Construct basic gates with discrete components and explain the working.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Infer on the principle involved in air wedge along with its concept.	K4	CO1
2	17	Interpret the importance of Stern and Gerlach experiment.	K5	CO2
3	18	Examine on the construction and working of GM counter. Explain the action of self quenching	K4	CO3
4	19	Assess the importance of Schrodinger's time dependent wave equation in one Dimension.	K5	CO4
5	20	Construct an NAND gate as universal gate with truth table and necessary figures.	K6	CO5

Z-Z-Z END