Register Number:……………..

KUMARAGURU
college of technology
character is life

B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

First Semester

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

U18PHT2203: Advanced Physics

COURSE OUTCOMES

CO1: Impart Knowledge on the concepts of electrodynamics for various conditions and its applications

CO2: Understand the behavior of magneto statics conditions, materials and its applications

CO3: Study the importance of various operators and its application in quantum computing

CO4: Infer the nuclear reactions and its impact in energy models for data processing, Explore the types of high energy particles and its characteristic effects

CO5: Understand the various materials aspects for identify modelling using various tools

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Compare Poisson and Laplace equations.	CO1	[K_2]
2.	Define Electric Polarization.	CO1	[K_1]
3.	Define Magnetic Permeability.	CO2	[K_1]
4.	List out the various types of magnetic materials.	CO2	[K_1]
5.	Outline on the physical meaning of a commutator in quantum mechanics.	CO3	[K_2]
6.	Summarize the importance of operators in quantum mechanics.	CO3	[K_2]
7.	Define Mass Defect.	CO4	[K_1]
8.	List out the three primary Quark types.	CO4	[K_1]
9.	Define Bravais lattice.	CO5	[K_1]
10.	Illustrate plane of symmetry.	CO5	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Discuss Maxwell's Equations.	(8)	CO1	[K_6]
	b)	Discuss the properties and characteristics of dielectric materials.	(8)	CO1	[K_6]
12.	a)	Compare the properties of Dia, Para and Ferro magnetic materials.	(8)	CO2	[K_5]

	b)	Compare the Hard and Soft magnetic materials.	(8)	CO2	[K$_5$]
13.	a)	Discuss the Angular Momentum-Spin-Orbit coupling.	(8)	CO3	[K$_5$]
	b)	Discuss the Simon's search algorithm.	(8)	CO3	[K$_5$]
14.	a)	Explain in detail about the Linear accelerator.	(8)	CO4	[K$_2$]
	b)	Determine the binding energy per nucleon for an alpha particle whose mass defect is calculated as 0.0292 a.m.u.	(8)	CO4	[K$_5$]
15.	a)	Illustrate seven crystal systems.	(8)	CO5	[K$_2$]
	b)	Explain in detail about the bonding and chemical interaction.	(8)	CO5	[K$_2$]
16.	a)	Discuss the Hysteresis curve.	(8)	CO2	[K$_5$]
	b)	Discuss the MRI Imaging.	(8)	CO2	[K$_5$]

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