

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: I.M.Sc.
BRANCH: CHEMISTRY

SEMESTER : I
SESSION : MO/2022

SUBJECT: PH109 PHYSICS-I

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Develop an expression for the energy density of the electric field.	[5]	1,2 6
Q.1(b)	What is the relationship between E and V, develop it.	[5]	1,2 1,6
Q.2(a)	Illustrate the Biot-Savart Law and Ampere Circuit Law.	[5]	1,2 2
Q.2(b)	What do you understand by Poynting Vector?	[5]	1,2 1
Q.3(a)	Write a short note on binding energy, binding energy curve and mass defect.	[5]	3 1
Q.3(b)	What are the similarities in between the liquid drop and nucleus.	[5]	3 1
Q.4(a)	Illustrate the principle of superposition? The ratio of intensities of two waves is 9:1. They are producing interference. Find the ratio of maximum and minimum intensities.	[5]	4 2
Q.4(b)	Illustrate the Malus Law. Two polarizer are oriented with their principal planes making an angle of 60° . What is the percentage of incident unpolarized light which passes through the system?	[5]	4 2
Q.5(a)	What is length contraction? Derive the expression for it.	[5]	5 1
Q.5(b)	Determine the relativistic time, if proper time is 7 years and the velocity of the object is $0.55c$.	[5]	5 5

::::::17/03/2023::::::M