Total No. of Printed Pages: 3

SUBJECT CODE NO: - Y-2022 FACULTY OF SCIENCE AND TECHNOLOGY

B.Sc. S.Y (Sem-III)

Examination March / April - 2023 Physics -VIII Modern and Nuclear Physics

[Time:	: 1:30	0 Hours] [Max. Mark	s: 50
-		Please check whether you have got the right question paper.	Ş
N. B		 Attempt all questions. Use of logarithmic table and electronic Pocket calculator is allowed. 	
Q1	a)	Explain Lenard's method to determine elm of photoelectrons.	10
	b)	Explain in detail Bragg's X-ray Spectrometer.	10
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	a)	Explain in detail binding energy of the nucleus.	10
	b)	Write the construction and operation of ionisation chamber.	10
		The service of the se	
Q2	a)	Explain in short types of photocell.	05
	b)	Using Bragg's spectrometer the glancing angle of first order spectrum is 6 ⁰ . Find	05
		the wavelength of X-ray if inter-planer distance is 2.8 x 10 ⁻¹⁰ m.	
	c)	Explain shell model of nucleus.	05
	d)	In a cyclotron, the frequency of an electron orbit is 7.6 MHz. Calculate the value	05
		of the magnetic induction applied.	
		OR FOR	
	a)	What will be the maximum velocity of photoelectrons if anode potential is 1KV.	05
	b)	Write a short note on X-ray Spectra.	05
	c)	Masses of the following isotopes are given. Calculate the BE of a neutron in the	05
		3Li ⁷ nucleus.	
		Given $_3\text{Li}^7 = 7.016004 \text{ amu}$	
		3Li ⁶ 6.015125 amu	
		And on ¹ 1.008665 amu	
5	d)	Write short note on Betatron	
			05

The momentum of a ph () h/\times b) hk The photoelectric effect () Photons () Electromagnetic way () Which of the following () Wood, Paper () Glass, Water () Cathode b) Roto () Cathode b) Roto	c) h \(\gamma/c\) deproves that light becomes that light becomes a deprove and becomes the deprove and	wave eve material (s	POLYNO IN	
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The most intense in x-ra			25	
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$)k\alpha$ b) $k\beta$ c) $L\alpha$	d) None of th	ese		
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Unit of X-ray intensity	is The second second			
) Coulomb b) Cando	ela c) Roentgen	d) Lux		
		67		
he process by which a	heavy nucleus is	splitted into ty	wo light nucle	ei is Kn
s S				
) Nuclear splitting	.C			
) Nuclear fusion	d) chain reaction	on		
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- 9) Nucleons are held together by.......
 a) Magnetic force b) Electrostatic force
 c) Nuclear force d) Gravitational force
 10) A cyclotron can accelerate _____
 a) β particles b) α particles
 - c) High-velocity X-rays d) None of these