C.U.SHAH UNIVERSITY Winter Examination-2018

Subject Name: Modern Physics

	Subject	Code: 4SC03PHE1	Branch: B.Sc. (All)		
	Semester	r: 3 Date: 12/12/2018	8 Time: 02:30 To 05:30	Marks: 70	
	Instructio (1) U (2) I (3) I (4) A	ons: Use of Programmable calculator instructions written on main ans Draw neat diagrams and figures Assume suitable data if needed.	r & any other electronic instrumers swer book are strictly to be obeye (if necessary) at right places.	nt is prohibited. d.	
Q-1		Attempt the following quest	ions:		(14)
Atte	a) b) c) d) e) f) g) h) i) j) k) l) m) n) empt any f	Define: Fluorescence What is Stark effect? State: Liouville's theorem. Give Bragg's condition for X- What do you mean by Micros What is the significance of qu State one application of cantil Give the relation between vise State any one postulate of the What is Auger Effect? How is turbulent flow different How is Normal Zeeman effect Show pictorially the concept of Differentiate inertial and non Eour questions from Q-2 to Q-	-ray diffraction scopic state? antum numbers for the case of ele- levers cosity and temperature. special theory of relativity nt from streamline flow? et different from Anomalous Zeem of absorption and emission in atom - inertial frame -8	ectrons? an effect? ns.	
Q-2	a)	Attempt all questions Explain in detail how Michels	son and Morley try to prove the ex	xistence of aether	(14) 07
Q-3	b) a) b)	Give an account on Gibb's Pa Attempt all questions Enumerate on cantilever, its ty Discuss the importance of mic	uradox. ypes and working with suitable fig cro canonical ensemble in statistic	gure and equations.	07 (14) 07 07
Q-4	a)	Attempt all questions Explain how L-S coupling hel	lps to conceptualize total angular	momenta in many	(14) 06
Q-5	b) c)	'Auger effect is due to second State and explain Stoke's law.Attempt all questions	dary electron emission'. Justify		04 04 (14)
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	a)	Explain each quantum number with their physical interpretation.	
	b)	How one can comment on the total angular momentum of many electron system using J-J coupling scheme?	07
Q-6		Attempt all questions	(14)
	a)	Explain in detail Anomalous Zeeman effect.	08
	b)	Discuss the process diffraction using X-rays making use of the Bragg's law.	06
Q-7		Attempt all questions	(14)
-	a)	Explain production of X-rays with suitable diagram.	07
	b)	Give the classical interpretation of Normal Zeeman Effect.	07
Q-8		Attempt all questions	(14)
L.	a)	Compare: Optical and X-ray spectra	04
	b)	Write a note on : Absorption spectrum	04
	c)	State how Moseley's law justified the nuclear model of atoms?	06

