Outline for Final Part (Only for Teacher)
Autumn-22

- N.B.: Dear Sir
- Assalamowalikum
- Please try to complete this outline for this semester or give your valuable suggestion in this regards as early as possible.

	Structure of matter	Marks
1.	Definition: Crystalline and non-crystalline solid, single crystal and polycrystalline solids, lattice, basis, lattice point, Crystal, unit cell.	1 per definition
2.	Crystal systems and their classification	3
3.	Coordination number (Nacl and CsCl)	3+3
4.	Packing fraction (definition + SC, BCC, FCC calculation)	1+3+3+3
5.	Crystal planes (ex: 111…etc and directions, Miller indices,	Ex: 101-marks 1
6.	Relation between inter-planar spacing & Miller indices. (Expression)	5
7.	All expression related math	
	Defects & Bond in Solid	
1.	Crystal defects (Definition+ classification+ some concept of different types of crystal defects)	1+2+……5/6
2.	Crystal bonding (Definition+ classification+ some concept of different types of crystal bonding)	1+2+……4/5
3.	calculation of cohesive and bonding energy	5
4.	Distinction between metal, insulator and semiconductor in terms of energy band.	6
5.	All expression related math	
	Relativity	
1.	Inertial frame , Non Inertial frame	2
2.	Postulates of special theory of relativity	2
3.	Lorentz transformation (Only Equation)	2
4.	Variation of Mass with Velocity expression	6/7
5.	Time dilation (Full expression)	5
6.	Length contraction	3
7.	Mass-energy Relation	7
8.	All expression related math	
	Modern Physics	
1.	Bohr's atomic model _Postulates	3
2.	Radius and total energy of Hydrogen atom	3+3
3.	Atomic nucleus and properties (Nuclear Mass, Nuclear Size, Nuclear density, Nuclear charge)	4
4.	Definition of : Mass defect, Binding energy, Binding energy per nucleon Also, Calculate the following properties of ${}^{A}_{z}X$ particle...ex: ${}_{6}C^{12}$: or any i. Nuclear Mass ii. Nuclear Size iii. Nuclear Density iv. Nuclear Charge v. Nuclear Mass defect vi. Nuclear Binding Energy vii. Nuclear Binding Energy per nucleon.	7
5.	Photo-electric effect + Einstein Photo-electric effect equation	5/6
6.	Compton Effect ..only concept	2

7.	De-Broglie waves…. Only concept	2
8.	X-ray. Properties of X-ray, uses of X-ray, Bragg;s law and its expression	1+2+2+4
9.	atomic spectra and Zeeman effect……. Only concept	2+2
10.	All expression related math	
	Radioactivity	
1.	Definition, Radioactive elements , properties of radioactive radiation	1+2+3
2.	Disintegration law + expression of Disintegration law	2+5/6
3.	Half life + expression of half life	1+4
4.	Mean life + expression of mean life	1+5
5.	alpha decay, beta decay, gamma decay	2+2+2
6.	nuclear fission & fusion	2+2
7.	Nuclear cross section	2
8.	All expression related math	