

QP Code: D143640		Total Pages: 1	Name:
		Register No.	
FOURTH SEMESTER (CUFYUGP) DEGREE EXAMINATION, APRIL 2026			
APPLIED PHYSICS/ PHYSICS			
APH4CJ205/PHY4CJ205 Modern Physics			
2024 Admission onwards			
Maximum Time :2 Hours			Maximum Marks :70
Section A			
All Questions can be answered. Each Question carries 3 marks (Ceiling : 24 Marks)			
1	Give the postulates of special theory of relativity		
2	What are meant by proper length and relativistic length? How are they related?		
3	What is space – time diagram? What is its significance		
4	How did Einstein explain photoelectric effect?		
5	Give three experimental evidences for de Broglie waves.		
6	Give the postulates of Rutherford atom model.		
7	What is Correspondence principle? What is its significance?		
8	Differentiate between group velocity and phase velocity.		
9	How fast must an object move before its length appears to be contracted to one-half its proper length?		
10	Give the conservation laws in relativistic decays and collisions.		
Section B			
All Questions can be answered. Each Question carries 6 marks (Ceiling : 36 Marks)			
11	What is relativistic Doppler effect? Find the expression for relativistic Doppler shift.		
12	The total energy of an electron in the hydrogen atom is – 1.51 eV. What is the value of its angular momentum?		
13	What is meant by twin paradox? How can it be solved?		
14	In Young's double slit experiment, derive the expression for the distance to the nth maximum from the center of the screen.		
15	The work function for tungsten metal is 4.52eV. (a) What is the cut off wavelength for tungsten? (b) What is the maximum KE of the electron when radiation of wavelength 198nm is used? (c) What is the stopping potential in this case?		
16	What is meant by the distance of closest approach of a projectile to the nucleus? Derive the expression for the same.		
17	Explain the spectral series of Hydrogen atom.		
18	Briefly explain the Franck – Hertz experiment. What is its significance?		
Section C			
Answer any ONE. Each Question carries 10 marks (1x10=10 Marks)			
19	Explain the Michelson- Morely experiment? What was its significance?		
20	Explain the relativistic interpretation to the Compton effect with its significance		