

Allied Physics II
II Semester -B.Sc. Chemistry

Part A

1. Write about Photo electric effect
2. Write Einstein's photoelectric equation
3. State the working principle of photoelectric cells
4. What are matter waves?
5. Write the equation for De Broglie wavelength
6. Mention the properties of nuclear forces
7. What is binding energy?
8. How will you account for mass defect?
9. Give the working principle of cyclotron
10. Give the working principle of betatron
11. What are nuclear fission and fusion reactions?
12. What are elementary particles?
13. Give the principle of laser emission
14. What do you mean by population inversion?
15. What are metastable states and give their importance?
16. Mention the conditions for laser action
17. What is Raman effect?
18. Write about stokes and anti-stokes lines
19. How a Zener diode differs from a P-N junction diode?
20. How LED works in forward bias?
21. Give the working principle of LCD
22. How RADAR detects objects?
23. Give few applications of RADAR
24. What is a FET?
25. Mention few applications of SCR
26. What is UJT?
27. How will you convert a binary number to decimal one?
28. Write about decimal number to binary conversion
29. What are universal logic gate and why they called so?
30. State Demorgan's theorem
31. What is Boolean algebra in digital electronics?
32. What do you mean by logic gates?

Part B

1. Derive Einstein's photoelectric equation and how will you verify the same using Millikan's experiment?
2. Describe GP Thomson experiment with neat sketch
3. Discuss the nuclear structure by liquid drop model
4. Explain with neat sketch, the principle and working of Cyclotron

5. Describe the principle and working of Betatron with neat sketch
6. Write an essay about elementary particles
7. Explain with neat sketch, the principle and working of Nd-YAG laser
8. Explain with neat sketch, the principle and working of He-Ne laser
9. Discuss the applications of laser
10. Discuss the volt ampere characteristics of P-N junction diode
11. Discuss the volt ampere characteristics of Zener diode
12. Explain the V-I characteristics of FET with neat sketch
13. Brief about V-I characteristics UJT
14. Explain with neat sketch the volt ampere characteristics of SCR
15. Explain with neat sketch the working principles of LED and LCD
16. Explain with examples, the binary addition and subtraction
17. Discuss the function of half adder and full adder with circuit sketch

Allied Physics I
I Semester - B.Sc Chemistry

Part A

1. Define Simple Harmonic Motion
2. What is centre of suspension in a pendulum
3. Define moment of inertia
4. What do you mean by radius of gyration
5. State parallel axes theorem
6. State perpendicular axes theorem
7. Write the law of gravitation
8. What are Kepler laws?
9. What are orbital velocity and escape velocity?
10. List out various types of moduli
11. What is Poisson's ratio?
12. Define bending moment of a beam
13. Write the laws of transverse vibrations of a string
14. What are Ultrasonic waves?
15. Write about Piezo electric effect
16. What are chromatic and spherical aberrations?
17. What is a grating?
18. Define resolving power of a grating
19. What is double refraction
20. Distinguish between intrinsic and extrinsic semiconductors
21. What is a photodiode
22. What is a LED?

Part B

1. Derive the time period of oscillation of a compound pendulum and how will you account for interchangeability of centre of oscillation and suspension in compound pendulum
2. Derive the expression for Moment of Inertia of a uniform rod with neat sketch
3. Derive the expression for Moment of Inertia of a uniform disc with neat sketch
4. Derive the expression for Moment of Inertia of a circular ring with neat sketch
5. Derive the expression for Moment of Inertia of solid sphere with neat sketch
6. Derive an expression for angular momentum of a body rolling down on inclined plane
7. Discuss Kepler's laws and arrive at the relation between G and g
8. Derive the expression for cantilever depression and use it to find young's modulus using non uniform method of bending
9. Explain with neat sketch the Melde's string experiment
10. Describe with neat sketch the principle and working of Piezoelectric oscillator
11. Explain with neat sketch the determination of ultrasonic velocity using acoustical grating
12. Write an essay about defects of images
13. Describe an experiment to determine refractive index of a prism using spectrometer
14. Explain with neat sketch the determination of refractive index of a liquid using newton's ring experiment
15. Derive an expression for resolving power of a plane transmission grating
16. Discuss the forward and reverse bias characteristics of a P-N junction diode
17. Explain with neat sketch the operation of full wave rectifier
18. Briefly write about the functions of Zener diode , tunnel diode and photodiode
19. Explain the characteristics of a transistor in CE and CB modes
20. Explain the working principle of LED with neat sketch