



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – NOVEMBER 2011

PH 3202/3102 - PHYSICS FOR CHEMISTRY - II

Date : 11-11-2011
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

PART – A

Answer **ALL** the questions

(10 X 2 = 20)

1. Construct a NOR gate using only NAND gates.
2. Find the complement of $A+BC$ using De Morgan's theorem.
3. Differentiate between isobars and isotones.
4. Define binding energy.
5. What are photoelectric cells?
6. Mention any two applications of X-rays.
7. What is noise? Mention any two ways of reducing it.
8. What is Piezo electric effect?
9. State any two reasons for the failure of classical mechanics.
10. State Planck's hypothesis

PART – B

Answer any **FOUR** questions

(4 X 7.5 =30)

11. Write down the Schrodinger wave equation. State the physical significance and admissibility conditions on wave functions.
12. (i) Explain mass defect.
(ii) Calculate the binding energy per nucleon of a ${}_{6}\text{C}^{12}$ nucleus. Atomic mass of ${}_{6}\text{C}^{12}$ =12 amu, mass of proton =1.007825 amu and mass of neutron =1.008665 amu.
13. Describe Millikan's experiment to verify Photo-electric effect.
14. Explain the working of a half adder and a full adder.
15. Briefly discuss any three applications of ultrasonics.

PART – C

Answer any **FOUR** questions

(4 X 12.5 =50)

16. With neat diagram and truth table explain the working of a shift right shift register and a shift left shift register.
17. (i) State the assumptions of Bohr's atom model
(ii) Derive the expression for the total energy of the electron in an orbit and hence explain Bohr's interpretation of the hydrogen spectra
(iii) Explain the spectral series of hydrogen atom.
18. (i) Describe the liquid drop model of nuclear structure in detail.
(ii) Explain nuclear fission with a suitable example.
19. Derive an expression for the velocity of transverse vibrations in a stretched string.
20. Explain the black body radiation spectra using the Plank's quantum theory.