LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

THIRD SEMESTER – APRIL 2018

PH 3202- PHYSICS FOR CHEMISTRY - II

Date: 04-05-2018   Dept. No.   Max. : 100 Marks
Time: 01:00-04:00

PART A

Answer **ALL** the questions $(10 \times 2 = 20)$

1. Convert the binary number $(101101)_2$ into a decimal number.
2. Draw the circuit symbol and truth table of (i) NAND gate and (ii) XOR gate.
3. State Pauli's exclusion principle.
4. Write any two industrial applications of X - rays.
5. Write about mass, half-life and spin of neutron.
6. What is nuclear fission?
7. Discuss briefly the effects of temperature and pressure on the velocity of sound.
8. What is piezo-electric effect?
9. State Heisenberg's uncertainty principle.
10. What are matter waves?

PART B

Answer any **FOUR** questions $(4 \times 7.5 = 30)$

11. Solve the given Boolean expression using K - map.
    $Y = \sum(A,B,C,D) = (1,3,4,5,9,11,12,13,14)$
12. With a neat diagram, explain how X - rays are produced.
13. Draw the B.E/A versus A curve and write its significance.
14. What are ultrasonic waves? How are they detected? Mention few applications of ultrasonic waves.
15. Describe Davisson and Germer experiment.
16. Write a note on photoelectric cells.

PART C

Answer any **FOUR** questions $(4 \times 12.5 = 50)$

17. With a neat circuit diagram, explain the working of a JK flip -flop.
18. Describe Millikan's experiment and establish Einstein's photoelectric equation.
19. (i) Explain liquid drop model of nucleus. (ii) Discuss briefly about elementary particles.
20. Derive an expression for velocity of a transverse wave along a stretched string.
21. Derive expressions for binding energy of the hydrogen atom and radius of the Bohr's orbit.
22. With neat circuit diagrams, explain the working of half and full binary adders.

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