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Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, March 2020

First Degree Programme Under CBCSS

PHYSICS

Core Course XII

PY 1644 – DIGITAL ELECTRONICS AND COMPUTER SCIENCE

(2014 Admission Onwards)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** the questions. Answer should not exceed **two** sentences. **Each** question carries **1** mark.

1. What is the base of the numbers in the following operation to be correct: 54/4=13? Find decimal equivalent.

2. $(551)_{10}$ = X2, X = _____.

3. For OR gate all inputs must be high to get a _____ output.

4. Which memory must be refreshed many times per second?

5. What is the permanent memory built into your computer called?

6. What is a pointer?

7. What are main characteristics of C language?

P.T.O.

8 What is a token?

9 Differentiate algebraic and transcendental equations.

10 Define extrapolation.

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Answer should not exceed one small paragraph. **Each** question carries **2** marks.

11 How to convert the integer part of the decimal number to binary?

12 Convert $(11101.11011)_2$ to an equivalent decimal number.

13. Draw the symbol and truth table for Ex-OR gate.

14. Simplify the expression using Boolean laws : (A + B)(A + C) = A + BC.

15. Define magnetic tape.

16. What is an ALU?

17. What are the types of constants in C?

18. What is the use of GOTO statement?

19. Explain the syntax for "for loop".

20. Find the positive real root of the equation $x \log_{10} x = 1.2$ using bisection method.

21. Find the square root of eight using Newton Raphson method .

22. Explain Trapezoidal rule for numerical integration

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. **Each** question carries **4** marks.

23. Perform the subtraction with the following binary numbers using 2's complement.. Check the answer by straight subtraction.

24. Give an account of BCD codes. State the merits.

25. Bring out the working of 4-bit binary adder subtractor.

26. Explain magnetic hard disks and optical disks.

27. Write a C program to find the sum of two numbers.

28. Discuss on pointer arithmetic in C.

29. What are the difference between strings and character arrays?

30. Using the principle of least squares fit an exponential curve of the form $y = ae^{bx}$ to the data.

x	1	2	3	4
y	7	11	17	27

31. Using the second order R-K method find the values of y when x = 0.1 for $\frac{dy}{dx} = x + y$. Given y = 1 when x = 0

(6 × 4 = 24 Marks)

PART – D

Answer any **two** questions. **Each** question carries **15** marks.

32. Describe the operation of a SR flip-flop with the help of a schematic diagram and truth table.

33. Describe different types of RAM and ROM.

34. Discuss branching statements in C language with example.

35. (a) Explain Euler's method for the numerical solution of ordinary differential equations.

(b) Given $\frac{dx}{dt} = 1 - y$ with the initial condition y(0) = 0. Find y approximately at x = 0.1, 0.2 and 0.3.

(2 × 15 = 30 Marks)
