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**Reg. No. : .....**

**Name : .....**

**Sixth Semester B.Sc. Degree Examination, April 2018**
**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

SECTION – A

Answer **all** questions, **each** carries **1** mark.

1. Define a byte.
2. Why two state operations are used in digital electronics ?
3. What is a timing diagram ?
4. Give the main feature of an iterative method.
5. What are the basic parts of main () function section ?
6. What are the two distinct ways to perform file operations in C ?
7. What is recursion ?
8. How does a DVD differ from a CD ?
9. What is the basic concept employed in RK methods ?
10. Write down the Langrange's interpolation formula. **(10×1=10 Marks)**

SECTION – B

Answer **any eight**, **each** carries **2** marks.

11. What are trigraph characters ? How are they useful ?
12. Explain the features of getchar and putchar functions.

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13. Explain the statement printf("%s %d %f", item, partno, cost);

14. Distinguish between static and dynamic arrays.

15. Distinguish between EPROM and EEPROM.

16. Explain the differences between Simpson's 1/3 rule and Simpson's 3/8 rule.

17. Illustrate the concept of Euler's method graphically.

18. Write the algorithm for polynomial regression.

19. Convert the binary 110.11 to decimal and Hexadecimal.

20. Give the Boolean expression and symbolic representation for the De Morgan's theorems.

21. How can you connect NAND gate to get an OR gate ?

22. Analyse the features of binary coded decimal using an example. **(8×2=16 Marks)**

## SECTION – C

Answer **any six**; **each** carries **4** marks.

23. Compare cache and virtual memories.

24. Write a programme to find the average of a set of N numbers.

25. Write programme to find out the solution of a quadratic equation.

26. Write a switch statement that will examine the value of an integer variable called flag and print one of the following messages, depending on the value assigned to flag.

    a) COLD, if the flag has a value of 1.

    b) HOT, if the flag has a value of 2.

    c) LUKE WARM, if the flag has a value of 3.

    d) OUT OF RANGE, if the flag has any other value.

27. Explain Trapezoidal rule using the integral $I = \int_1^2 (x^3 + 1)\, dx$.

28. Determine the square root of 2.5 using linear interpolation of the following data. Compare with actual result and comment on it.

| X | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| F(x) | 1 | 1.4142 | 1.7321 | 2 | 2.2361 |

29. Explain the working of a full adder.

30. Subtract the decimal number 125 from 200 using 2's complement binary operation. Express the numbers in hexadecimal.

31. Chart on a truth table and map $C = \bar{A}\,\bar{B} + A\,\bar{B}$. **(6×4=24 Marks)**

## SECTION – D

Answer **any two**, **each** carries **15** marks.

32. Discuss about the various decision making statements in C.

33. Discuss about the various input and output units of a computer.

34. Explain Newton Raphson method and its limitations. Give its algorithm. Illustrate for $x^3 - x - 1 = 0$.

35. What is flip flop ? Explain the working of SR, JK and Master Slave flip flops.

**(2×15=30 Marks)**