D 112279 **(Pages : 2)** **Name.....**

Reg. No.....

FIRST SEMESTER (CUFYUGP) DEGREE EXAMINATION
NOVEMBER 2024

Computer Science

CSC 1CJ 101—FUNDAMENTALS OF COMPUTERS AND COMPUTATIONAL THINKING

(2024 Admission onwards)

Time : Two Hours Maximum : 70 Marks

Section A

All questions can be answered.
Each question carries 3 *marks.*
Ceiling 24 *marks.*

1. How do you convert a decimal number into its hexadecimal form ? Explain with an example.
2. Define Binary Coded Decimal and illustrate it with an example.
3. Compare single-core, dual-core, and multi-core processors in terms of functionality and performance.
4. What is the role of a capacitor in an electrical circuit for energy storage and release ?
5. What is the function of the SMPS in a computer, and how does it contribute to system operation ?
6. Describe the purpose of the BIOS/UEFI chip on a motherboard and its role in starting the computer.
7. Discuss the pros and cons of using open-source operating systems versus proprietary ones.
8. What are the steps involved in the Power-On Self-Test process during computer startup ?
9. Define pattern recognition in computational thinking and explain its significance for solving problems.
10. What are the key elements of a RAPTOR flowchart, and what are its benefits ?

Section B

All questions can be answered.
Each question carries 6 *marks.*
Ceiling 36 *marks.*

11. What is the difference between a GPU and an APU ? How do they compare to traditional CPUs in terms of use and performance ?

Turn over

12. Convert the following between number systems :

    a) Convert $(1101.101)_2$ to its decimal equivalent.

    b) Convert $(123)_{10}$ into hexadecimal form.

    c) Convert $(3E)_{16}$ into binary format.

13. What are the main functions of PCIe expansion slots and input/output ports on a motherboard ?

14. Explain the distinctions between different types of RAM, including DRAM, SRAM, and DDR SDRAM.

15. Using examples, explain the differences between system software and application software, and describe their roles in a computer system.

16. Outline the process of installing an operating system using a bootable media device.

17. Compare inductive reasoning and deductive reasoning in logical thinking, providing examples of each.

18. What is an Algorithm ? Why are algorithms important, and what makes a good algorithm ?

Section C

Answer any **one** *of the following questions.*
The question carries 10 *marks.*

19. Describe in detail the components of a motherboard, including the CPU, RAM, expansion slots, chipset, and cooling fan.

20. Discuss the different types of operating systems and explain how hardware and software, compatibility is ensured during POST and the booting process.

(1 × 10 = 10 marks)