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**B.A./B.Sc. (Part-III) Examination, 2023**

**MATHEMATICS**

**Fourth (D) Paper**

**(Principles of Computer Science)**

*Time : Three Hours ] [ Maximum Marks : 75*

**Note :** Attempt all sections as per instructions.

**Section-A**

**(Very Short Answer Type Questions)**

**Note :** Attempt all parts of this question.

$1\frac{1}{2} \times 10 = 15$

1. (a) What do you mean by Hardware and Software?
- (b) What is the difference between SRAM and DRAM?
- (c) What is the difference between ROM and RAM.
- (d) Define the term array with an example.
- (e) What is declarative computing?

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- (f) What is advantage of Assembly Language over Machine Language.
- (g) State characteristics of secondary memory.
- (h) Convert the following:
  - (i)  $(423)_{10} = ( )_{16}$
  - (ii)  $(C6B)_{16} = ( )_2$
- (i) What is the role of ALU?
- (j) What is network protocol?

**Section-B**

**(Short Answer Type Questions)**

- Note :** Attempt all questions.  $8 \times 5 = 40$
2. How is the efficiency and correctness of an algorithm tested.

**OR**

Explain the algorithm of product of two digits of a number.

3. What is the difference between the file processing system and database management system.

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**OR**

Why input and output devices are necessary for a computer system.

4. Differentiate between top down approach and bottom up approach in programming.

**OR**

Differentiate between high level language and low level language.

5. List the layers in the TCP/IP model and give a brief explanation of each.

**OR**

What is an operating system? What is the relationship between operating system and computer hardware.

6. What is software life cycle? Explain all phases.

**OR**

What is linear array? Explain how 2D array are represented in memory?

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**Section-C**

**(Long Answer Type Questions)**

**Note :** Attempt any **two** questions.  $10 \times 2 = 20$

7. Describe basic computer architecture in detail.
8. Explain the components of traditional programming, parallel computing and declarative computing.
9. What is stack? Write the steps involved in the insertion and deletion of an element in the stack.
10. Explain the system architecture of an operating system.
11. What are project estimation techniques? Explain the various project-estimation techniques briefly.

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**P.T.O.**