2020

COMPUTER SCIENCE

[GENERAL]

Paper : I

[OLD SYLLABUS]

Full Marks : 100   Time : 3 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

1. Answer any **six** questions: 1×6=6

    i)   What is latency time?

    ii)   What is Parallel Port?

    iii) Name the components of CPU.

    iv)   Write the full name of ASCII.

    v)   What is RISC computing?

    vi)   What is PCI slot?

    vii) Explain BIOS.

    viii) What are the different DRAM types?

[Turn over]

GROUP - B

2. Answer any **eleven** questions: 2×11=22

    i)   What is the MAC format?

    ii)   What is CRC? In which layer of OSI, CRC works?

    iii)   What are the responsibilities of Transport Layer?

    iv)   Explain Flynn's classification of computers.

    v)   What is pipelining?

    vi)   What is Virtual memory?

    vii)   What is time complexity of Binary Search?

    viii) Explain Context Switching.

    ix)   How is an Array different from Linked List?

    x)   What are the differences between process and thread?

    xi)   Which data structures are used for BFS and DFS of a graph?

    xii)   What is a Linked List and what are its types?

    xiii) What are linear and non-linear data Structures?

    xiv)   Write the difference between interpreter and compiler.

    xv)   Explain SATA and how it is different from IDE.

GROUP - C

3. Answer any **seven** questions: 6×7=42

   i) Design an inverter using XOR gate.— Differentiate multiplexer and demultiplexer.

   ii) Explain Layers of TCP/IP model.

   iii) What are the differences between TCP and UDP?

   iv) What is direct memory access (DMA)? Why are the read and write control lines in a DMA controller bi directional?

   v) Explain the importance of different addressing modes in computer architecture with suitable example.

   vi) What are write back and write through caches?

   vii) What is cache coherency and how is it eliminated?

   viii) What is a process and process table? Explain different states of process.

   ix) What are infix, prefix, postfix notations, explain with expression A*(B+C)/D.

   x) Explain Merge sort with example.

GROUP - D

4. Answer any **three** questions. 10×3=30

   i) Write short notes (any **two**): 5+5

      a) Von Neumann Architecture

      b) Floating point representation

      c) Interrupt

      d) Printer

   ii) A computer has 16 register an ALU with 32 operations and a shifter with eight operations all Connected to a common bus system, (i) Formulate a control word for a micro operation, (ii) Specify the number of bits in each field of the control word and give a general encoding scheme.

   iii) Write an assembly language programming in 8085 microprocessor to find the smallest from a list of numbers.

   iv) Given an array of 6 elements: 15, 19, 10, 7, 17, 16, sort it in ascending order using heap sort. Represent all the steps graphically.

   v) Draw the logic circuit of the simplified form of the expression $f = abc + a\bar{b}c + ab\bar{c}$ by using K-map.

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