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**FEDERAL PUBLIC SERVICE COMMISSION**  
**COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS**  
**IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2004**

**COMPUTER SCIENCE**

**TIME ALLOWED: 3 HOURS**

**MAXIMUM MARKS: 100**

**NOTE:** Attempt **FIVE** questions in all, including **QUESTION NO. 8** which is **COMPULSORY**. Select at least **ONE** question from each of the **SECTIONS-I, II, and III**. All questions carry equal marks.

**SECTION-I**

1. a) Explain the two strategic technologies to make the computer speedier; RISC and Parallel Processing. Hence also differentiate between RISC and CISC. (10)
- b) Discuss the sequential, indexed, and direct data organization. (10)
2. a) Explain, shortly, different file management systems. (10)
- b) Define and explain the Interleaved Processing Techniques. (10)
3. a) Which are different tools to handle WAN traffic? Explain them. (10)
- b) What are communication protocols? Define Full Duplex and Synchronous Transmissions. (10)

**SECTION-II**

4. a) Suppose that a non-negative weight  $w(e)$  is associated with each edge in an undirected graph  $G = (V, E)$ , give an efficient algorithm to find an acyclic subset of  $E$  of total maximum weight. (10)
- b) How can the number of strongly connected components of a graph change if a new edge is added? (10)
5. a) Differentiate between Object Oriented Programming and Procedural Programming. Also explain the concept of Abstraction in OOP. (10)
- b) Data-flow diagrams are means of documenting end-to-end data flow through a system; explain this by sketching such diagram. (10)

**SECTION-III**

6. a) What is the difference between a data entity in first normal form (1NF) and second normal form (2NF)? Give an example of an entity in 1NF and show its conversion to 2NF. (10)
- b) List and briefly describe the three table operations used to manipulate relational tables. (10)
7. a) What is Polygon Mesh Representation? Give at least two examples of polygon modeling strategies. (10)
- b) What are the tools to develop web pages in dynamic contents? (10)

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## COMPULSORY QUESTION

8. A) Write the terms, on your answer book, for whom the following abbreviations stand for;
- (i) DML
  - (ii) EDI
  - (iii) OLE
  - (iv) SDLS
  - (v) RAID
- (5)
- B) Please choose the most appropriate answer from the given set of options about all the following given statements.
- (i) When all access and processing is done in one location, a computer system is said to be
    - a) networked
    - b) distributed
    - c) centralized
    - d) linked
  - (ii) Tools to change PROM chips, called
    - a) chip kits
    - b) RAM burners
    - c) PROM burners
    - d) none of these
  - (iii) The type of modulation that changes the height of the signal is called
    - a) frequency
    - b) phase
    - c) amplitude
    - d) prophase
  - (iv) A connection for similar networks:
    - a) satellite
    - b) bridge
    - c) gateway
    - d) fax
  - (v) The technology whereby part of the program is stored on disk and is brought into memory for execution as needed is called
    - a) memory allocation
    - b) virtual storage
    - c) interrupts
    - d) prioritized memory
- (5)
- C) Write "True" or "False" in your answer book about the following statements:
- (i) Application software may be either custom or packaged.
  - (ii) RISC technology uses more instructions than traditional computers.
  - (iii) A ring network has no central host computer.
  - (iv) Satellites use line-of-sight transmission.
  - (v) Time-sharing is both event-driven and time-driven.
- (5)
- D) Write short answer to the following:
- (i) Modularity
  - (ii) Telnet
  - (iii) Cache Memory
  - (iv) Applet
  - (v) Function Overloading

(End)