FEDERAL PUBLIC SERVICE COMMISSION
COMPETITIVE EXAMINATION FOR RECRUITMENT TO POSTS IN BPS-17, UNDER THE FEDERAL GOVERNMENT, 2005

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 question carry equal marks.

SECTION-I

1. a)   What is decentralized processing? Also explain distributed data processing.   (10)

    b)   How would shared memory be used to communicate data between two processes?   (10)

2. a)   Explain different methods for processing of data files.   (10)

    b)   What are network protocols? Explain any two common LAN protocols.   (10)

3. a)   Explain any three widely used media for wireless communication.   (10)

    b)   What is pipelining? Hence also explain the strategy of parallel processing.   (10)

SECTION-II

4. a)   Explain the term Information Hiding. Also dedifferentiate between Top-down Design and Bottom-up Design.   (10)

    b)   Discuss, briefly, the main characteristics of object oriented programming.   (10)

5. a)   Show that by removing at most $O(\lg n)$ edges, we can partition the vertices of any n-vertex tree into two sets A and B such that $|A| = \lfloor n / 2 \rfloor$ and $|B| = \lceil n / 2 \rceil$.   (10)

    b)   Give an efficient algorithm to determine if an undirected graph is bipartite.   (10)

SECTION-III

6. a)   Differentiate between an operational database and a warehouse. What types of applications does each serve?   (10)

    b)   What is the difference between a data entity in second normal form (2NF) and third normal form (3NF)? Give an example of an entity in 2NF and show its conversion to 3NF.   (10)

7. a)   What is Client Side Programming?   (10)

    b)   What are the tools to develop website fast and viewable?   (10)

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COMPULSORY QUESTION

8. (A) Write the terms, on your answer book, for whom the following abbreviations stand for;

   (i) DNS
   (ii) CMOS
   (iii) OSI
   (iv) CASE
   (v) DDE

   (5)

   (B) Fill in the following blanks, on your answer book, with the most suitable options for the following statements:

   (i) A data path to transfer data is called _____

   (ii) What is a combination of I-time and E-Time called? _____

   (iii) The process of applying a formula to a key is called _____

   (iv) Distortion in the received signals is called _____

   (v) DMA is a technique to transfer data between memory and _____

   (5)

   (C) Write "True" or "False" in your answer book about the following statements:

   (i) RISC technology uses fewer instructions than traditional computers.

   (ii) Direct file organization is combination of sequential and indexed file organization.

   (iii) Fax is a connection for similar networks.

   (iv) Let G = (V, E) be an undirected graph then G is a free tree.

   (v) An entity instance is a single occurrence of an entity.

   (5)

   (D) Write short answer to the following:

   (i) Prototyping
   (ii) FAT
   (iii) Virtual Memory
   (iv) Deadlock
   (v) Abstraction

   (5)

(End)