



**CAPITAL UNIVERSITY OF SCIENCE & TECHNOLOGY,
ISLAMABAD**

Specimen Admission Test MS Computer Science Degree Program

(A) Computer Programming

1. Which mechanism provides the facility so that one method call can cause different actions to occur, depending on the type of the object receiving the call?
 - a. Encapsulation
 - b. Polymorphism
 - c. Inheritance
 - d. Abstraction

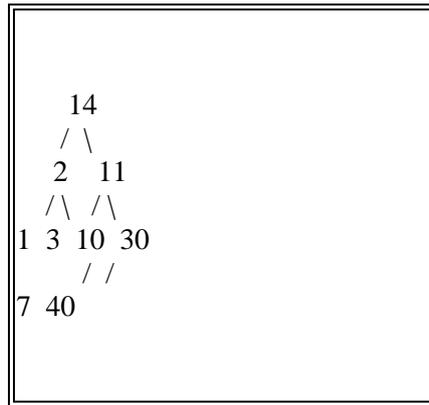
2. Which of the following access specifiers allows derived classes to access a variable, but not the other classes
 - a. private
 - b. public
 - c. protected
 - d. none of these

3. The #define directive
 - a. defines a macro
 - b. test for a macro definition
 - c. undefines a macro
 - d. tests whether a macro is not defined.

4. Which one is not an unconditional branch statement?

- a. goto
- b. for-loop
- c. break
- d. return

(B) Data Structures



5. There is a tree in the box at the top of this section. How many of the nodes have at least one sibling?

- a. 5
- b. 6
- c. 7
- d. 8
- e. 9

6. There is a tree in the box at the top of this section. What is the depth of the tree?

- a. 2
- b. 3
- c. 4
- d. 8
- e. 9

7. Consider the binary tree in the box at the top of this section. Which statement is correct?
- a. The tree is neither complete nor full.
 - b. The tree is complete but not full.
 - c. The tree is full but not complete.
 - d. The tree is both full and complete.
8. What is the minimum number of nodes in a full binary tree with depth 3?
- a. 3
 - b. 4
 - c. 8
 - d. 11
 - e. 15

(C) Algorithms

9. Iteration is always preferred over recursion
- a. True
 - b. False
10. Base Case is optional for solving recursion
- a. True
 - b. False
11. The parameters for measuring algorithm's efficiency are
- i. Time Complexity
 - ii. Space Complexity
 - iii. Processor complexity
- a. i and ii
 - b. i, ii and iii
 - c. ii and iii
 - d. i and iii

12. Which is not true of the pivot in QuickSort:

- a. Is best if it is the median value.
- b. Is not possible to select perfectly without making algorithm $O(n^2)$.
- c. Is placed in its final correct location at the end of the partition.
- d. Must be the first position in the array.

(D) Database Systems

1. What is a 'tuple'?

- a. Another name for a table in an RDBMS
- b. A row or record in a database table
- c. An attribute attached to a record
- d. Another name for the key linking different tables in a database

2. Choose the answer which best describes the term Primary Key.

- a. The Primary Key is a field that contains data that can be duplicated.
- b. The Primary Key is a field that contains data that is unique.
- c. The Primary Key is a field that is never associated with any field in other tables.
- d. The Primary Key field is a concept used only in Microsoft Access.

3. When used in a Create Table command, which of the following begins the section that establishes the Foreign Key relationship?

- a. Order By
- b. Foreign Key
- c. Constraint
- d. Primary Key

4. Select the command that will remove the 'students' table from the database.

- a. Remove students;
- b. Drop students;

- c. Alter table students Drop All;
- d. Hide students;

(E) Software Engineering

1. Which of the following is not considered a player in the software process?
 - a. Customers
 - b. Project managers
 - c. End-users
 - d. Sales people
2. Which of the following interface design principles reduce the user's memory load?
 - a. Define intuitive shortcuts
 - b. Disclose information in a progressive fashion
 - c. Establish meaningful defaults
 - d. All of the above
3. The 40-20-40 rule suggests that the least amount of development effort be spent on:
 - a. Estimation and planning
 - b. Coding
 - c. Analysis and design
 - d. Testing
4. Coupling is a measure of
 - a. Relatedness of elements within a module
 - b. Relatedness of modules of a system
 - c. Relatedness of different phases of the software development life cycle
 - d. None of these

(F) Computer Networks

1. There are three types of Hubs that exist. Which of the following options correctly describes these three?
 - a. Passive, dormant, special
 - b. Passive, Active, Turbo
 - c. Active, dormant, passive
 - d. Passive, Active, Intelligent
2. Three basic devices are used in setting up a single Network. Which of the following best describes these devices?
 - a. NIC(Ethernet), Hub, Twisted pair/Coaxial cable

- b. Disk drive, CPU, Hub
 - c. Hub, CPU, NIC(Ethernet)
 - d. Disk drive, Hub, NIC(Ethernet)
3. Which of the following network topologies among the list below is incorrect?
- a. Star
 - b. Internet
 - c. Ring
 - d. Bus
4. The network type in which all computers have equal status is called a gateway.
- a. True
 - b. False

(G) Analytical

1. If Quantity A = $4 / 100$ and Quantity B = $0.012 / 3$
- a. Quantity B is greater
 - b. Quantity A equals Quantity B
 - c. Quantity A is greater
 - d. Relationship Indeterminate
2. If 1 cm on a map corresponds to an actual distance of 40 kms. And the distance on the map between Lahore and Karachi is 37.5 cms., the actual distance between them is :
- a. 375 kms
 - b. 3750 kms
 - c. 1500 kms
 - d. 1375 kms
 - e. None of the above
3. A father is three times as old as his son. After fifteen years the father will be twice as old as his son's age at that time. Hence the father's present age is
- a. 36

- b. 42
 - c. 45
 - d. 48
 - e. None of Above
4. $(\frac{1}{4})^3 + (\frac{3}{4})^3 + 3(\frac{1}{4})(\frac{3}{4})(\frac{1}{4} + \frac{3}{4}) = ?$
- a. $\frac{1}{64}$
 - b. $\frac{27}{64}$
 - c. $\frac{49}{64}$
 - d. 0
 - e. 1

(H) English

English Comprehension

This part contains a reading passage followed by questions based on what is stated or implied in the passage. While answering the questions; take cognizance of the facts or implications in the text. You may refer back to the passage while answering. Mark your answers on the answer sheet.

PARAGRAPH BEGINS

Pakistan's current estimated population stands at 170 million. It makes Pakistan seventh most populous country of the world. At the time of independence population of the country was 32.5 million. Thus during the last fifty years the population of Pakistan has increased four times. Pakistan's current 2.61 % growth rate is among the highest rates in the world. With this very high growth rate Pakistan population is expected to reach 200 million in 2020 A.D. Population of Punjab is 55.5%, of Sindh is 23%, of Baluchistan is 4.8%, of NWFP is 13.5%, of Islamabad is 0.6%, of FATA is 2.6% of the total population. The population of Pakistan has increased from 16.576 million in 1901 to 32.5 million in 1947 and now it has jumped to 170 million. The government of Pakistan has taken several measures to offset the effect of population growth rate. Out of these projects the Population Welfare Program (PWP) is the most important.

PARAGRAPH ENDS

After reading the passage, answer the following questions:-

29. At which number does Pakistan stands with regards to its population

- a. 8th
- b. 5th
- c. 6th
- d. 7th

30. What was the population of Pakistan at the time of independence?

- a. 30.5 million
- b. 32.5 million
- c. 30 million
- d. 35 million

31. How much is the increase of population in Pakistan during last sixty one years?

- a. 2 to 3 times
- b. 3 to 4 times
- c. 4 to 5 times
- d. 5 to 6 times

32. What would be the population of Pakistan in 2020(A.D) with current growth rate?

- a. 170 million
- b. 154 million
- c. 200 million
- d. 210 million

33. Current population of Islamabad is approximately

- a. 1 million
- b. 2 million
- c. 3 million
- d. 4 million

34. What was the population of Pakistan in 1901

- a. 130.2 million
- b. 32.8 million
- c. 16.576 million
- d. 32.5 million