PUNJAB STATE COOPERATIVE MILK PRODUCER'S FEDERATION LIMITED

POST: Dy. Manager (System MIS)

QUESTION BOOKLET AND ANSWER KEY

SERIES (A)

FOR RECRUITMENT TEST HELD ON 11-10-2026

(MORNING)

1. ਹੇਠ ਲਿਖਿਆਂ ਵਿੱਚੋਂ ਸ਼ੁੱਧ ਸ਼ਬਦ ਚੁਣੋਂ:
   A) ਬਿੱਦਿਆ B) ਵਿੱਦਿਆ C) ਵਿਦੀਆ D) ਵਿੱਦੀਆ
2. ਹੇਠ ਲਿਖਿਆਂ ਵਿੱਚੋਂ 'ਸੰਬੰਧਕ' ਚੁਣੋਂ:
   A) ਨੇ, ਨੂੰ, ਨਾਲ B) ਅਤੇ, ਅਸੀਂ, ਤੁਸੀਂ
   C) ਤੁਹਾਡਾ, ਤੁਹਾਨੂੰ, ਉਸਨੂੰ D) ਜਿੱਥੇ, ਕਿੱਥੇ ਉੱਥੇ
3. ਵਿਸ਼ੇਸ਼ਣ ਕਿੱਨੇ ਪ੍ਰਕਾਰ ਦੇ ਹੁੰਦੇ ਹਨ:
   A) ਦਸ B) ਅੱਠ C) ਪੰਜ D) ਸੱਤ
4. ਹੇਠ ਲਿਖਿਆਂ ਵਿੱਚੋਂ ਕਾਲ-ਵਾਚਕ ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ ਚੁਣੋਂ:
   A) ਉਹ, ਉੱਥੇ, ਕਿੱਥੇ B) ਵਿਚਕਾਰ, ਹੇਠਾਂ, ਉਤਾਂਹ
   C) ਪਰਾਂ, ਉਰਾਂ, ਅੱਗੇ D) ਸਵੇਰੇ, ਪਰਸੋਂ, ਦੁਪਹਿਰੇ
5. ਜਿਸ ਥਾਂ' ਤੇ ਬੈਠ ਕੇ ਲੋਕ ਮੌਤ ਦਾ ਸੋਕ ਮਨਾਉਣ, ਨੂੰ ਕਿਹਾ ਜਾਂਦਾ ਹੈ:
   A) ਸੱਥਰ B) ਬੰਜਰ C) ਕੀਰਨੇ D) ਸੱਥ
6. 'ਉਸਤਤ' ਦਾ ਵਿਰੋਧੀ ਸ਼ਬਦ ਚੁਣੋਂ:
   A) ਸਿਫ਼ਤ B) ਪ੍ਰਸ਼ੰਸਾ C) ਨਫ਼ਰਤ D) ਨਿੰਦਿਆ
7. ਜਿਹੜੇ ਇੱਕੋ ਸਮੇਂ ਹੋਣ, ਨੂੰ ਕਿਹਾ ਜਾਂਦਾ ਹੈ:
   A) ਇਤਿਹਾਸਕ B) ਵਰਤਮਾਨ C) ਸਮਕਾਲੀ D) ਪ੍ਰਤਿਕਾਲੀ
8. 'ਸੋਹਿਲੇ ਸੁਣਾਉਂਣਾ' ਮੁਹਾਵਰੇ ਦਾ ਅਰਥ ਹੈ:
   A) ਗੱਲਾਂ ਕਰਨੀਆਂ B) ਗਾਲ੍ਹੀਆਂ ਦੇਣਾ C) ਸਿਫਤਾਂ ਕਰਨੀਆਂ D) ਚੁਗਲੀਆਂ ਕਰਨੀਆਂ
9. 'ਕੋਹ ਨਾ ਚੱਲੀ, ਬਾਬਾ ਤਿਹਾਦੀ' ਅਖਾਣ ਦਾ ਅਰਥ ਹੈ:
   A) ਦੇਰ ਕਰਨੀ B) ਕਾਹਲੀ ਕਰਨੀ
   C) ਜ਼ਰਾ ਜਿਹਾ ਕੰਮ ਕਰਕੇ ਥੱਕ ਜਾਣਾ D) ਖੁਸ਼ੀ ਵਿੱਚ ਝੂਮਣਾ
10. ਇੱਕ ਕਰੇਲਾ ----- ਮੁਹਾਵਰਾ ਪੂਰਾ ਕਰੋ:
   A) ਦੂਜਾ ਕੱਦੂ B) ਦੂਜਾ ਨਿੰਮ ਚੜ੍ਹਿਆ C) ਇੱਕ ਆਲੂ D) ਦੂਜਾ ਕੇਲਾ

Directions (Q.No. 11–12) Mark the correct synonym of the given word.

11. *Cantankerous*
   A) Irascible B) Crying C) Collective D) Articulate
12. *Grotto*
   A) Grotesque B) Criticism C) Bold D) Cave

Directions (Q.No. 13–14) Mark the correct antonym of the given word.

13. *Obfuscate*
   A) Complicate B) Eclipse C) Clarify D) Dark
14. *Adventitious*
   A) Defiant B) Planned C) Ruthless D) Shrill

Directions (Q.No. 15–16) Mark the correct preposition to be filled in the gap.

15. He should not be covetous _____others' riches.
   A) on B) at C) of D) for
16. Kohli's performance is not consistent _____his talent.
   A) with B) to C) for D) at

Directions (Q.No. 17–18) Mark the correct meaning of the given idioms/phrases.

17. *to draw in one's horns*
   A) to waste energy B) to become less assertive
   C) to show one's aggressiveness D) to hurt oneself

18. *to be a bolt from the blue.*
A) to take revenge B) to hurt with grief
C) to loose one's temper D) to be a sudden calamity

Directions (Q.No. 19–20) Choose the word that can be substituted for the given sentence/phrase.

19. *Fear of the closed eyes*
A) Claustrophobia B) Aquaphobia C) Kleptomania D) Botanophobia

20. *One who is new to a profession*
A) Nuance B) Pun C) Tyro D) Virtuoso

21. Which Constitutional Amendment added "animal husbandry, dairying, and poultry" to the list of local government responsibilities?
A) The 53rd Constitutional Amendment Act
B) The 63rd Constitutional Amendment Act
C) The 73rd Constitutional Amendment Act
D) The 83rd Constitutional Amendment Act

22. Which eligibility period requires films to be certified by the CBFC to qualify for the 73rd National Film Awards?
A) Between April 1, 2023, and March 31, 2024
B) Between January 1, 2024, and December 31, 2024
C) Between April 1, 2024, and March 31, 2025
D) Between January 1, 2025, and December 31, 2025

23. Which archaeological site of the Indus Valley Civilization was the first Harappan site to be excavated in independent India?
A) Dholavira B) Rakhigarhi C) Ropar D) Sanghol

24. When was the Punjab Public Service Commission re-established after the partition?
A) February, 1948, at Shimla B) February, 1950, at Shimla
C) February, 1948, at Solan D) February, 1950, at Solan

25. Who won Nobel Prize in Chemistry for his work in `sugar nucleotides; and their fundamental role in the metabolism of galactose, the primary sugar found in milk?
A) Artturi Ilmari Virtanen B) Emil Fischer
C) Luis Federico Leloir D) Otto Meyerhof

26. Starting with the earliest, arrange (x) BIMSTEC, (y) BRICS, and (z) SCO in the correct chronological order.
A) (x), (y), (z) B) (z), (x), (y) C) (y), (x), (z) D) (x), (z), (y)

27. Starting with the earliest, arrange (x).DigiLocker App, (y).DigiYatra App, and (z).MyGov.in the correct chronological order?
A) (x), (y), (z) B) (z), (x), (y) C) (y), (z), (x) D) (x), (z), (y)

28. **Match List I (Exercise) with List II (Country)**
List I : (x)-Exercise Pitch Black 2026, (y) - Exercise Udara Shakti 2026
List II: (i)- Australia, (ii) – Malaysia, (iii) -Singapore, (iv)- Vietnam
A) (x) -(i), (y)-(ii) B) (x) -(i), (y)-(iv) C) (x) -(iii), (y)-(ii) D) (x) -(iii), (y)-(iv)

29. **Match List I (Person) with List II (Organisation)**
List I: (x)-Ashok Kumar Lahiri, (y) - K. Rajaraman, (z) - Sanjay Malhotra
List II: (i)- International Financial Services Centres Authority, (ii)- NITI Aayog, (iii) -RBI
A) (x)- (i), (y)-(ii), (z)- (iii) B) (x) -(ii), (y)-(i), (z)- (iii)
C) (x) -(ii), (y)-(iii), (z)- (i) D) (x) -(i), (y)-(iii), (z)- (ii)

30. Starting with the earliest, arrange (x) Anandpur Sahib (y) Goindwal Sahib and (z) Paonta Sahib, in the correct chronological order of their founding.
A) (x), (y), (z) B) (x), (z), (y) C) (y), (z), (x) D) (y), (x), (z)

31. A mixture has milk and water in the ratio 4 : 1. When 50% of the mixture is taken out and replaced by 24 L of water then the ratio of milk to water in the mixture become 1 : 1. Find initial quantity of mixture:
A) 80 L B) 45 L C) 70 L D) 60 L

32. The traffic lights at the three different crossings turn red after every 30 sec., 45 sec and 60 sec., respectively. If they all turn red together at 8.30 am, at what time will they turn red together again?
A) 8.33 am B) 8.38 am C) 8.35 am D) 8.34 am

33. Two numbers are named as Number A and Number B. The sum of Number A, its square and its cube is 399. The sum of Number B, its square and its cube is 819. What would be the square of the number obtained by adding Number A and Number B?
A) 256 B) 289 C) 225 D) 324

34. Select the set in which the numbers are related in the same way as are the numbers of the following set:
(3, 14, 1) (4, 36, 2)
A) (8, 12, 2) B) (5, 81, 4) C) (7, 40, 3) D) (8, 260, 2)

35. In a certain code language, 'car have wheels' is written as " @ mu #", 'wheels are red' is written as "su bc mu", 'I have red car' is written as "7 @ su #". Which among the following is the code for 'wheels car' in that language.
A) #@ B) mu Su C) Su # D) mu #

36. Pointing towards a photo, Mahesh said, "She is the daughter of the only son of my grandfather". How is the girl in the photo related to Mahesh?**)**
A) Sister B) Daughter C) Mother's sister D) Mother

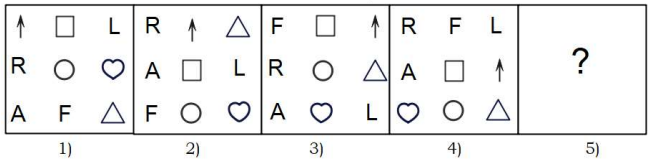
37. In a row of 21 children facing North, Nitin is third to the right of Sita who is ninth from the right end of the row. What is Nitin's position from the left end?
A) 16^{th} B) 15^{th} C) 12^{th} D) 6^{th}

38. Eight persons A, B, C, D, E, F, G and H are buying some products one after another but not necessarily in the same order. At most two persons are buying products before F. Only one person is buying between D and F. C is buying just before H. One person is buying between C and D. A is buying just before E. B is buying before G and after E. If all the persons are arranged in alphabetical order from left to right starting from A, then find how many persons remains at the same position (excluding A)?
A) One B) None C) Two D) Four

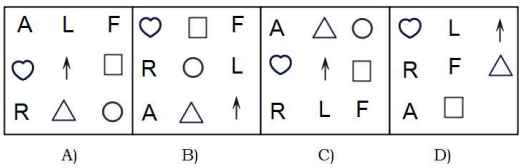
39. A cube of side 125 cm is painted red on all the faces and then cut into smaller cubes of sides 25 cm each. Find the number of smaller cubes having at least two faces painted:
A) 52 B) 44 C) 36 D) 48

40. In this question given below which one from the four answer figures should come at the place of '?' to complete the series logically

Problem Figures



Answer Figures



41. A virus type that is capable of shifting from one computer to another without user interaction is known as a

A) Worm B) Trojan C) Logic bomb D) Boot sector

42. Given the following email fields, which of the email addresses 'suman' is able to see when she receives the message?

To… ram@test.com
Cc… raj@test.com; ravi@test.com
Bcc… suman@test.com; rama@test.com

A) ram@test.com
B) ram@test.com; raj@test.com; ravi@test.com
C) ram@test.com; rama@test.com
D) ram@test.com; rama@test.com; raj@test.com; ravi@test.com

43. Which of the following keywords must be used to define a constant in Java?

A) const B) final C) public D) static

44. Which of the following is the most plausible series of phases for a modern compiler?

A) scanning, parsing, intermediate code generation, semantic analysis, machine-independen code improvement, target code generation, machine-specific code improvement
B) scanning, parsing, semantic analysis, intermediate code generation, machine-independent code improvement, target code generation, machine-specific code improvement
C) scanning, parsing, semantic analysis, intermediate code generation, machine-independent code improvement, machine-specific code improvement, target code generation
D) scanning, parsing, semantic analysis, machine-independent code improvement, intermediate code generation, target code generation, machine-specific code improvement

45. Consider the following statements:

I. SQL is divided into two main categories; Data Definition Language (DDL) and Data Manipulation Language (DML)
II. Data Definition Language (DDL) is used to insert, select, update and delete records in the database.
III. CREATE TABLE is an example of Data Manipulation Language (DML).

Which of the above statements is/are correct?

A) I only B) II only C) I and III only D) All of I, II and III

46. A named anchor in HTML is a

A) Specific location within a web page that you can link to.
B) URL from where one can begin using web search engines
C) Mechanism by which an image can be fixed to a point on the web page
D) Tag with descriptive text that pops up when the mouse hovers over a link

47. Consider the following C-program fragment:

```
x=0; y=1; z=1;
while (Y <= N)
{       x = x + 1;
        y = y + z + 2;
        z = z + 2;
}
```

Which of the following holds on termination of the above program fragment?

A) $(x+1)^2 = N$ B) $x = \sqrt{N}$

C) $x^2 \le N < (x+1)^2$ D) $x^2 < N \le (x+1)^2$

48. The objective of _____ is to derive the design or specification of a system from its source code, while the objective of _____ is to produce a new, more maintainable system.
A) Reverse Engineering, Software Re-Engineering
B) Software Verification, Software Validation
C) Software Engineering, Requirement Engineering
D) Software Measurement, Software Verification

49. In the context of multimedia, MIDI is an acronym that stands for:
A) Musical Instruction and Digitized Instruments.
B) Musical Instrument Digital Interface.
C) Music and Instruments Digitized Instantly.
D) Musical Interface Digitally Integrated.

50. ChatGPT is an AI chatbot developed by OpenAI and launched in November 2022. What does ChatGPT stand for?
A) Chat Global Pre-trained Transmission Technology
B) Chat General Pre-trained Technology
C) Chat Generalized Pre-trained Technique
D) Chat Generative Pre-Trained Transformer

51. *A palindrome is a string whose reversal is identical to the original string*. How many bit strings of length n are palindromes? (Let n be an odd integer).

A) 2^n B) $2^{\frac{n+1}{2}}$ C) $\frac{n_c n+1}{2}$ D) n^2

52. Delivery and storage of electronic mail messages to a server is achieved using _____.
A) Post Office Protocol (POP) B) Internet Mail Access Protocol (IMAP)
C) Simple Mail Transfer Protocol (SMTP) D) Hypertext Transfer Protocol (HTTP)

53. The purpose of two-phase locking within database transactions is:
A) To make the results of all transactions correspond to a serial execution of all the transactions
B) To ensure that, after a crash, each transaction has either happened in its entirety or not at all
C) To allow a group of machines to all agree to perform, or not perform, their respective pieces of a distributed transaction
D) To avoid deadlocks

54. What is a benefit of Cloud computing for IT staff?
A) higher payment of IT staff involved in Cloud computing
B) less interruption of work caused by users asking for support
C) less knowledge needed: Cloud computing does not require special skills
D) lower stress levels: less worry about normal daily activities like making back-ups

55. What is a Virtual Private Network (VPN)?
A) A secure connection for remote access to a local area network
B) A secure private cloud for a single user
C) A virtual network device for private purposes
D) An operating system for private network systems

56. Why did virtualization boost the emergence of Cloud computing?
A) A virtual machine is more secure than a physical machine.
B) Virtualization made it easier and cheaper to share resources between users.
C) Virtual machines have greater performance than their physical counterparts.
D) Virtualization leads to better network utilization.

57. The kind of computing where computers become so small and so omnipresent that they fade into the background is known as: (Wireless Sensor Networks are the basis for this type of computing)
A) Soft computing B) Pervasive computing
C) Hard computing D) Grid computing

58. Suppose you run a *O(log N)* algorithm with an input size of 1000 and the algorithm requires 110 operations. When you double the input size to 2000, the algorithm now requires 120 operations. What is your best guess for the number of operations required when you again double the input size to 4000?
A) 130 B) 140 C) 150 D) 160

59. The distributed system is a collection of _____(X)_____ and Communication is achieved in distributed system by _____(Y)_____, where (X) and (Y) are:
A) Loosely coupled hardware on tightly coupled software and disk sharing, respectively
B) Tightly coupled hardware on loosely coupled software and shared memory location, respectively
C) Tightly coupled software on loosely coupled hardware and message passing, respectively
D) Loosely coupled software on tightly coupled hardware and file sharing, respectively

60. Read the following descriptions about X, Y and Z:
X: It does something harmful to the computer system, but is disguised as something useful. Usually it does not make copies of them.
Y: It is a computer program that propagates itself across computers, creating copies of itself in each computer and infecting the entire network.
Z: It is a computer program designed to replicate itself by infecting other files or system areas which need a host program to spread to another computer.

Identify X, Y, Z.

A) X: Virus, Y: Worm, Z: Trojan horse.
B) X: Trojan horse, Y: Virus, Z: Worm.
C) X: Worm, Y: Trojan horse Z: Virus.
D) X: Trojan horse, Y: Worm, Z: Virus.

61. A Relational DBMS reduces data redundancy and inconsistency by:
A) Enforcing referential integrity.
B) Minimizing isolated files with repeated data.
C) Utilizing a data dictionary and drawing a data flow diagram.
D) Uncoupling program and data.

62. *Rotational delay is the time to spin the disk to the correct sector and is measured in RPM (Rotations Per Minute*). If a disk is rotating at a rate of 6000 RPM, what is the <u>average</u> rotational delay in milliseconds?
A) 4 milliseconds B) 5 milliseconds C) 8 milliseconds D) 10 milliseconds

63. Which of these are the five generic software engineering framework activities?
A) Communication, Planning, Modeling, Construction, Deployment
B) Communication, Risk management, Measurement, Production, Reviewing
C) Analysis, Designing, Programming, Debugging, Maintenance
D) Analysis, Planning, Designing, Programming, Testing

64. A fully connected network topology is a network topology in which there is a direct link between all pairs of nodes. Given a fully connected network with n nodes, express the number of direct links as a function of n.
A) $\frac{n(n+1)}{2}$ B) $\frac{(n+1)}{2}$ C) $\frac{n}{2}$ D) $\frac{n(n-1)}{2}$

65. In computer networking, what percentage of the *IPv4* IP address space do all *class C* addresses consume?
A) 25% B) 12.5% C) 50% D) 37.5%

66. Which of the following transmission media is used in Bluetooth Technology?
A) Radio Links B) Microwave Links
C) VSAT Communication D) Fiber-optic

67. From what has the term '*Wi-Max'* been derived?
A) Worldwide Interoperability for Microwave Access
B) Worldwide Interconnection for Microwave Access
C) Worldwide Interchangeability for Microwave Access
D) Worldwide Interconnection for Multiple Access

68. The first instruction of bootstrap loader program of an operating system is stored in:
A) RAM B) Hard Disk C) Cache Memory D) BIOS

69. A Data Warehouse is always _____(X)_____ and Data Mining can be used as a __(Y)___ Tool, where (X) and (Y) are:
A) Object oriented and Software, respectively
B) Subject oriented and Research, respectively
C) Compiler oriented and Hardware, respectively
D) Network oriented and Process, respectively

70. Consider a database table X with attributes P and Q. Which of the following SQL queries is illegal?
A) select P, Q, count(*) from X group by P, Q; B) select P, count(*) from X group by P;
C) select P, count(*) from X; D) select P from X;

71. If standard SQL implementations restrict the size strictly based on the unique non-null domain values of Q, then how many tuples at most can the following table 'EXAM' contain?

```
create table EXAM (
P  integer,
Q  integer,
primary key (P),
unique (Q),
check (P >= 1 and <=10),
check (Q >=1 and <=5)
);
```

A) 50 B) 15 C) 5 D) 10

72. A process executes the code

```
fork();
fork();
fork();
fork();
```

The total number of child processes created is:
A) 8 B) 7 C) 15 D) 16

73. Identity the correct order of the following operations in their order of occurrence, when an interrupt occurs.
a) Interrupt service routine executed
b) The registers are restored by popping their values off of the stack
c) The processor identifies the source of the interrupt
d) The program counter and other registers' values are pushed onto the stack
e) The address of the interrupt service routine is placed in the program counter
A) c d e a b B) c d a b e C) e d c b a D) b d a e c

74. Which of the following statements is always TRUE?
A) A compiled program uses more memory than an interpreted program
B) A compiler converts a program to lower level language for execution
C) A compiler for a high-level language takes less memory than its interpreter
D) Compiled programs take more time to execute than interpreted programs

75. Match the programming styles in Group 1 with their characteristics in Group 2.

Group 1 (Programming Style)	**Group 2 (Characteristics)**
P. Functional	1. Command-based, procedural
Q. Logic	2. Imperative, abstract data types
R. Object-oriented	3. Side-effect free, declarative, expression evaluation
S. Imperative	4. Declarative, clausal representation, theorem proving

A) P-2, Q-3, R-4, S-1 B) P-4, Q-3, R-2, S-1
C) P-3, Q-4, R-1, S-2 D) P-3, Q-4, R-2, S-1

76. Which tool below combines (static) library routines and incomplete object codes into an executable machine language program?
A) Assembler B) Compiler C) Linker D) Interpreter

77. Which of the following techniques is used by most programming languages to intercept events that disrupt the normal flow of a program's execution?
A) Code security B) Flow control C) Exception handling D) Syntax Error detection

78. System programs such as compilers are designed so that they are:
A) Recursive B) Re-enterable C) Non-reusable D) Serially usable

79. Consider the following grammar:

$S ::= XY$

$X ::= x$

$X ::= YxY$

$Y ::= yyX$

Which of the following is FALSE?
A) The length of every string produced by the grammar is even
B) No string produced by the grammar has three consecutive x's
C) No string produced by the grammar has four consecutive y's
D) Every string produced by the grammar has at least as many y's as x's

80. Consider the following definition of a recursive function in C:

```
int strange(int list[], int first, int last)
{
if(first == last) return list[first];
else
    return list[first] + strange(list, first + 1, last);
}
```

Given the declaration: *int beta[10] = {2, 5, 8, 9, 13, 15, 18, 20, 23, 25}*;
What is the value returned by *strange(beta, 4, 7)?*
A) 27 B) 33 C) 55 D) 66

81. Consider the following C-program fragment involving integers *M*, *k* and *n*:

```
int M, k, n;
scanf("%d", &n);
M=1; k=0;
while(k < n)
{
M=3*M;
k=k+1;
}
```

Which of the following is a loop invariant, that is, true at the beginning of each execution of the loop and at the completion of the loop?

A) $M = 2k + 1$ B) $M = (2k + 1) \times 3^k$ C) $M = 3^k$ D) $M = 3^{k+1}$

82. Consider the following C-code:

```
#include < stdio.h >
main()
{
  float sum = 0.0, j = 1.0, i = 2.0;
  while (i / j > 0.001)
  {
    j = j + j;
    sum = sum + i / j;
    printf ("%f" \n", sum);
  }
}
```

When this code is executed, which of the following integer best approximates the last number that is printed?

A) 3 B) 2 C) 1 D) 0

83. Consider the following three arithmetic expressions:
(i) $(14)_A/(2)_A = (5)_A$; (ii) $(54)_B/(4)_B = (13)_B$; (iii) $(24)_C+(17)_C = (40)_C$

If the arithmetic operations in these expressions are correct, then the base of the numbers in each case will be:

A) A=6; B=8; C=11 B) A=5; B=8; C=11
C) A=6; B=7; C=11 D) A=6; B=8; C=10

84. The degree of a vertex in a graph is the number of edges incident (connected) on it. Which of the following is true for every graph G?

A) There are even number of vertices of even degree
B) There are odd number of vertices of even degree
C) There are even number of vertices of odd degree
D) There are odd number of vertices of odd degree

85. The employee information in a company is stored in the relation:

Employee (name, sex, salary, deptName)

Consider the following SQL query:

select deptName from Employee where sex = 'M' group by deptName
having avg(salary) > (select avg (salary) from Employee)

It returns the names of the department in which:

A) The average salary is more than the average salary in the company
B) The average salary of male employees is more than the average salary of all male employees in the company
C) The average salary of male employees is more than the average salary of employees in the same department.
D) The average salary of male employees is more than the average salary of employees in the company

86. For the quick sort algorithm, what is the time complexity of the best and worst case?

A) best case: $O(n)$ worst case: $O(n^2)$
B) best case: $O(n)$ worst case: $O(n \log n)$
C) best case: $O(n \log n)$ worst case: $O(n \log n)$
D) best case: $O(n \log n)$ worst case: $O(n^2)$

87. The number of times the statement "$x = x + 1$" is executed in the following program fragment using Θ notation in terms of n is:

```
j = n;
while( j ≥ 1)
{
  for(i = 1; i ≤ j; ++ i)
     x = x + 1;
  j = j / 2;
}
```

A) $\Theta(n)$ B) $\Theta(\log n)$ C) $\Theta(n^2)$ D) $\Theta(n \log n)$

88. A program has five virtual pages, numbered from 0 to 4. If the pages are referenced in the order 012301401234, with three page frames, then the total number of page faults with FIFO will be equal to:

A) 0 B) 4 C) 6 D) 9

89. Five processes A, B, C, D and E arrive in this order at the same time with the following CPU burst and priority values. A smaller value means a higher priority.

	CPU Burst	Priority
A	7	3
B	2	5
C	3	1
D	6	4
E	4	2

If the CPU scheduling policy is Round Robin (time quantum = 2), then the average waiting time will be (Ignore context switching overhead):

A) 10 B) 11 C) 12 D) 15

90. Encryption and decryption are the functions of the _____ layer of OSI model.
A) Transport B) Session C) Router D) Presentation

91. The *ping of death* is:
A) An ICMP echo request flood that disables a host
B) An ICMP echo reply flood that disables a host
C) An extremely large ICMP echo request message that disables a host
D) A probing of a network using ping that finds a critical weakness in the security of the network

92. If requirements are frequently changing, which software model is best suited?
A) Water Fall Model B) Spiral Model
C) Prototype Model D) Capability Maturity Model

93. Modularity and concept of abstraction enables the software engineer to:
A) Re-use the software components B) Increase Interdependencies among the modules
C) Increase highest possible coupling D) Lower the cohesion

94. In the context of computer networking, a _____ is a packet sent by a node to the source to inform it of congestion.
A) Backpressure B) choke packet C) implicit signaling D) explicit signaling

95. Communication between a computer and a keyboard involves _____ transmission.
A) Simplex B) Half-duplex C) Full-duplex D) Automatic

96. In databases, referential integrity dictates that:
A) the value of a primary key must appear in a foreign key of the related table.
B) the value of a foreign key must appear in a primary key of the related table.
C) the value of a primary key cannot appear in a foreign key of the related table.
D) the value of a foreign key cannot appear in a primary key of the related table.

97. Which of the following HTML code will affect the vertical alignment of the table content?
A) <td style= “vertical-align: middle”>Text goes here.</td>
B) <td valign= “center”>Text goes here.</td>
C) <td style= “text-align: center”>Text goes here.</td>
D) <td align= “middle”>Text goes here.</td>

98. Which of the following features is supported in the relational database model?
A) Complex data types B) Multi-valued attributes
C) Associations with multiplicities D) Generalization relationships

99. What term is used to describe a function that calls itself in a programming language and what is the value returned by the function call F(2)?

```
int F(int n) {

        if (n = = 4) return 2;
else        return 2*F(n+1);
}
```

A) Iterative and 2 B) Recursive and 4
C) Recursive and 8 D) Iterative and 16

100. _____ refers to the technology in which some space in hard disk is used as an extension of main memory.
A) Cache memory B) Paging C) Virtual memory D) Associative memory

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Answer key Code : (13) DY. MANAGER (System MIS) 11-10-26 (M)

Q.No.	Ans	Q.No.	Ans	Q.No.	Ans	Q.No.	Ans
1	**B**	26	**D**	51	**B**	76	**C**
2	**A**	27	**B**	52	**C**	77	**C**
3	**C**	28	**A**	53	**A**	78	**B**
4	**D**	29	**B**	54	**D**	79	**C**
5	**A**	30	**D**	55	**A**	80	**D**
6	**D**	31	**A**	56	**B**	81	**C**
7	**C**	32	**A**	57	**B**	82	**B**
8	**B**	33	**A**	58	**A**	83	**A**
9	**C**	34	**D**	59	**C**	84	**C**
10	**B**	35	**D**	60	**D**	85	**D**
11	**A**	36	**A**	61	**B**	86	**D**
12	**D**	37	**A**	62	**B**	87	**A**
13	**C**	38	**A**	63	**A**	88	**D**
14	**B**	39	**B**	64	**D**	89	**B**
15	**C**	40	**B**	65	**B**	90	**D**
16	**A**	41	**A**	66	**A**	91	**C**
17	**B**	42	**B**	67	**A**	92	**C**
18	**D**	43	**B**	68	**D**	93	**A**
19	**A**	44	**B**	69	**B**	94	**B**
20	**C**	45	**A**	70	**C**	95	**A**
21	**C**	46	**A**	71	**C**	96	**B**
22	**D**	47	**C**	72	**C**	97	**A**
23	**C**	48	**A**	73	**A**	98	**C**
24	**A**	49	**B**	74	**B**	99	**C**
25	**C**	50	**D**	75	**D**	100	**C**