PART - A

GENERIC AREA

Choose the most appropriate option.

(Q. No. 1 to 42)

1. A is the father of B and C is the son of D. E is the brother of A. B is the sister of C. How is D related to E ?

   (A) Daughter

   (B) Brother

   (C) Brother in Law

   (D) Sister in Law

2. Pointing towards a picture, Ramesh said, "That picture is of sister of grandson of father of my maternal uncle". How is that lady in the picture related to Ramesh ?

   (A) Mother's sister

   (B) Cousin (maternal brother)

   (C) Cousin (maternal sister)

   (D) Father's sister

3. Refer the statement and solve the question according to the conclusions.

   Statement :

   Some Pigeons are Bird;

   Some Birds are Alive

   Conclusion :

   (I) Some Pigeons are Alive

   (II) Some Birds are Pigeons

   (A) Only (I) follows

   (B) Only (II) follows

   (C) Both (I) & (II) follows

   (D) None follows

4. If 'CONTEMPORARY' is coded as NOCTEMROPARY then 'BODARDSITAND' is the code of which letter ?

   (A) DOBARDTISAND

   (B) BODDRASITDNA
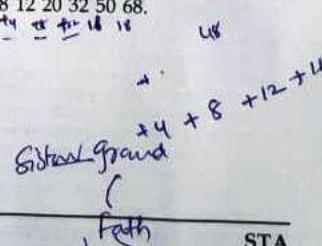
   (C) DOBDRATISDNA

   (D) DOBARDSITAND

5. Find the number which does not fit into the series 8 12 20 32 50 68.

   (A) 20

   (B) 32

   (C) 68

   (D) 50

B/Page 2

SPACE FOR ROUGH WORK

STA

Directions - Question number 6 to 10 are based on following information :

There are twelve persons named O, P, Q, R, S, T, U, V, W, X, Y and Z who live in a multi-storey apartment. The apartment has three floors and each floor has four rooms. These 12 persons who live in a set of 12 Rooms can be represented by a Matrix of 3 rows and 4 columns.

- Q lives immediate left below diagonally of a person who lives immediate left below diagonally of T.

- S lives immediate left above diagonally of a person who lives immediate left above diagonally of Z.

- X lives immediate right above diagonally of a person who lives immediate right below diagonally of O.

- P lives immediate right above diagonally of a person who lives immediate right above diagonally of Y.

- T lives immediate left above diagonally of a person who lives third to the right of V.

- Q lives immediate left of a person who lives two rooms below W in the same column.

- R lives to the immediate right of a person who lives immediate right above diagonally of Q. Z is living to the immediate left of U who receives ₹ 46000 as salary.

- The person who live on one of the floors (left to right) receive salary in the same order ₹ 50000, ₹ 48000, ₹ 47000 and ₹ 46000.

- The person who live on one of the floors (right to left) receive salary in the same order ₹ 45000, ₹ 38000, ₹ 35000 and ₹ 40000.

- The person who live on one of the floors (left to right) receive salary in the same order ₹ 37000, ₹ 42000, ₹ 36000 and ₹ 43000.

6. What is the aggregate salary of people living at the right end of the apartment ?
   (A) ₹ 137000
   (B) ₹ 134000
   (C) ₹ 125000
   (D) ₹ 131000

7. What is the salary received by a person who lives second to the right of S ?
   (A) ₹ 35000
   (B) ₹ 45000
   (C) ₹ 37000
   (D) ₹ 38000

8. What is the sum of salaries of Y and P ?
   (A) ₹ 90000
   (B) ₹ 99000
   (C) ₹ 93000
   (D) ₹ 89000

9. Who among the following lives third to the left of U ?
   (A) O
   (B) Q
   (C) T
   (D) S

10. What is the sum of the salaries received by the persons living on the top floor of the apartment ?
    (A) ₹ 158000
    (B) ₹ 193000
    (C) ₹ 157000
    (D) ₹ 161000

SPACE FOR ROUGH WORK

STA

Directions for question number 11 and 12 :
Study the following information carefully and answer the question :
Group of girls' gossip with each other. All are sitting surrounding a round table. The name of the girls are Shiksha, Radha, Chinu, Snigdha and Rani. It is not necessary that they are sitting in the order of the name as mentioned here. Radha is second to the right of Shiksha. Shiksha doesn't sit with Chinu. Rani is second to the right of Radha. Radha sits near Snigdha.

11. If Radha and Snigdha change their places then who will be second to the left of Rani ?
    (A) Radha
    (B) Snigdha
    (C) Shiksha
    (D) None of the options

12. Who sits to the left of Shiksha ?
    (A) Rani
    (B) Radha
    (C) Chinu
    (D) Snigdha

Directions for question number 13 to 15 :
Relationship between different elements is provided in the statements. The statements are followed by conclusions. Study the conclusions based on the given statement and choose the correct answer.

13. $T >= U = V <= W < X; V >= Y$
    Conclusions :
    (I) $Y <= T$
    (II) $U >= X$

    (A) if only conclusion (I) follows
    (B) if only conclusion (II) follows
    (C) if neither (I) nor (II) conclusion follows
    (D) if both (I) and (II) conclusions follow

14. $P <= Q <= R > S; T >= R; S >= U$
    Conclusions :
    (I) $T > S$
    (II) $U < R$

    (A) if only conclusion (I) follows
    (B) if only conclusion (II) follows
    (C) if neither (I) nor (II) conclusion follows
    (D) if both (I) and (II) conclusions follow

15. $A <= B < C >= D; C <= E <= F$
    Conclusions :
    (I) $F >= D$
    (II) $A > E$

    (A) if only conclusion (I) follows
    (B) if only conclusion (II) follows
    (C) if neither (I) nor (II) conclusion follows
    (D) if both (I) and (II) conclusions follow

16. Five people are standing in a row. Aman is standing next to Karan but not adjacent to Tanuj. Radhika is standing next to Priyanka who is standing on the extreme left and Tanuj is not standing next to Radhika. Who are Standing adjacent to Aman ?
    (A) Radhika and Karan
    (B) Karan and Tanuj
    (C) Karan and Priyanka
    (D) Radhika and Tanuj

SPACE FOR ROUGH WORK

17. Complete the following series.
4, 27, 256, 3125, ____

(A) 46656
(B) 6250
(C) 800000
(D) 1024

18. A businessman purchases an item at a certain price and marks its price up by 30%. He sells the item at a certain discount on markup price and makes a net profit of 4% on the whole transaction. Find the discount given by businessman on markup price.

(A) 10
(B) 15
(C) 26
(D) 20

19. Ramesh's father is a paediatrician. Ram's father is a trader. Krishan's father is a school teacher. Krishan falls ill. Where should his father take him ?

(A) to home
(B) to school
(C) to Ramesh's father
(D) to Ram's father

20. What is the total number of ways to reach A to B in the network given ?

(A) 12
(B) 16
(C) 20
(D) 22

21. Find the missing number.

(A) 14
(B) 10
(C) 9
(D) 3

22. If 5% income of P is equal to 15% income of Q and 10% income of Q is equal to 20% income of R. If income of R is ₹ 2000, then what are the incomes of P and Q respectively ?

(A) ₹ 4000 and ₹ 8000
(B) ₹ 12000 and ₹ 4000
(C) ₹ 15000 and ₹ 5000
(D) ₹ 18000 and ₹ 6000

Directions for question number 23 to 26 :

Answer the questions on the basis of the data given below :

O is X's father
Y is Z's mother
P is O's mother
X is Z's sister

23. If P has a daughter Q, then how is Q related to Z ?

(A) Aunt
(B) Mother
(C) Sister
(D) Daughter

SPACE FOR ROUGH WORK

B/Page 5

24. How is Y related to O ?

(A) Wife

(B) Sister

(C) Mother

(D) Daughter

25. How is O related to Z ?

(A) Brother

(B) Cousin

(C) Father

(D) Uncle

26. How is P related to X ?

(A) Mother

(B) Grandmother

(C) Sister

(D) Daughter

27. 14, 28, 20, 40, 32, 64, _____

(A) 52

(B) 56

(C) 96

(D) 128

28. 5 16 49 104 181 _____

(A) 271

(B) 298

(C) 280

(D) 281

B/Page 6

29. In a certain code, 'CONSIDER' is written as RMNBSFEJ, how is 'MONOPOLY' written in that code ?

(A) LNMNZMPQ

(B) NMNLZMPQ

(C) POPNXKNO

(D) NMNLXKNO

Directions for question number 30 to 32 :

Two statements followed by four conclusions numbered from (I) to (IV) are given. You have to take the two statements to be true even if these seem to be at variance from the commonly known facts. Read all the conclusions and decide which of the given conclusions logically follow from the two given statements disregarding commonly known facts.

30. All Shoes are Socks

Some Socks are Gloves

Conclusions :

(I) Some Shoes are Gloves

(II) Some Socks are Shoes

(III) All Gloves are Shoes

(IV) No Shoes are Gloves

(A) Only (I) follows

(B) Only (II) follows

(C) Only (III) follows

(D) Only (IV) follows

31. All Sentences are Words

All Words are Alphabets

Conclusions :

(I) All words are sentences

(II) All sentences are alphabets

(III) All alphabets are words

(IV) Some alphabets are words

(A) Only (I) and (III) follows

(B) Only (II), (III) and (IV) follows

(C) Only (II) and (IV) follows

(D) All follows

SPACE FOR ROUGH WORK

STA

32. All Boys are Girls

No Girl is a Man

Conclusions :

(I) No Boy is a Man

(II) Some Boys are Man

(III) All Girls are Boys

(IV) Some Man are Boys

(A) Only (III) follows

(B) Only (I) follows

(C) All follows

(D) None follows

33. A Class has 100 students with roll number from 101 to 200. All the even numbered students study Physics, whose roll number are divisible by 5 study Chemistry & students with roll numbers divisible by 7 study Biology. How many students do not study any of the given subject Physics, Chemistry or Biology ?

(A) 35

(B) 45

(C) 51

(D) 62

34. Choose the alternative to decide whether the data given in the statements is/are sufficient to answer the question based on the following information.

Five persons A, B, C, D and E are sitting in a row. Who is sitting in the middle ?

Statements :

(I) E is to the left of B.

(II) B is in-between C and E.

(III) D is in-between E and A.

Choose which of the following will be sufficient to find out who is sitting in the middle ?

(A) Only (I) and (II)

(B) Only (II) and (III)

(C) Only (I) and (III)

(D) All (I), (II) and (III)

35. Ram can do a piece of work in 5 days, and Sham can do the same in 10 days. With the help of Karan, they finished the work in 2 days. How many days would it take Karan to do the work ?

(A) 5 days

(B) 10 days

(C) 15 days

(D) 20 days

36. Considering 5 as the 1st element in the sequence 5, 11, 23, 47. What is the 6th element in the sequence ?

(A) 191

(B) 172

(C) 342

(D) 106

SPACE FOR ROUGH WORK

STA

37. ₹ 1000 doubled in 10 years when compounded annually. How many more years will it take to get another ₹ 2000 compound interest ?

(A) 5 years

(B) 10 years

(C) 3 years

(D) 4 years

Directions for question number 38 to 42 :

Answer the questions on the basis of the following information provided :

The students of a school participates in various sports activities, the distribution of the same is given below :

Football	-	17%
Handball	-	26%
Badminton	-	16%
Table Tennis	-	22%
Basketball	-	19%

Total number of students in the school are 800.

38. What is the respective ratio between the total number of students taking part in Badminton and Table Tennis together and those participating in Basketball and Football together ?

(A) 11 : 13

(B) 18 : 19

(C) 19 : 18

(D) 29 : 28

39. What is the number of girls who take part in handball, if the ratio of boys to girls is 3 : 10 respectively ?

(A) 48

(B) 80

(C) 78

(D) 160

40. The number of students taking part in Basketball is approximately what percent more than those taking part in Football ?

(A) 10.84%

(B) 9.92%

(C) 9.32%

(D) None of the options

41. If out of the number of students in Basketball, 69 are girls, what is the difference between the number of boys and girls taking part in Basketball ?

(A) 17

(B) 23

(C) 86

(D) 14

42. What is the approximate average of number of participants in Handball, Badminton and Basketball ?

(A) 162

(B) 163

(C) 104

(D) 169

PART - B

TECHNICAL AREA

Choose the most appropriate option.

(Q. No. 43 to 120)

43. What is the time complexity of the following recursive function ?

```
int ComputFun (int n)
{
 if(n <= 2)
  return1;
 else
 return (ComputFun (floor( sqrt (n))) + n);
}
```

(A) $\Theta(n)$

(B) $\Theta(log n)$

(C) $\Theta(n log n)$

(D) $\Theta(log log n)$

44. The static keyword word is used in public static void main() declaration in Java :

(A) To enable the JVM to make call to the main(), as class has not been instantiated.

(B) To enable the JVM to make call to the main(), as class has not been inherited.

(C) To enable the JVM to make call to the main(), as class has not been loaded.

(D) To enable the JVM to make call to the main(), as class has not been finalized.

45. A Software Requirements Specification (SRS) document should avoid discussing which one of the following ?

(A) User interface issues

(B) Non-functional requirements

(C) Design solutions

(D) Interfaces with third party software

46. Changes are made to the system to reduce the future system failure chances is called _____ .

(A) Preventive Maintenance

(B) Adaptive Maintenance

(C) Corrective Maintenance

(D) Perfective Maintenance

47. Which among the following types of Server filters Website Traffic ?

(A) POP Server

(B) Database Server

(C) Proxy Server

(D) Mail Server

48. In the context of modular software design, which one of the following combinations is desirable ?

(A) High cohesion and high coupling

(B) High cohesion and low coupling

(C) Low cohesion and high coupling

(D) Low cohesion and low coupling

SPACE FOR ROUGH WORK

STA

49. How many AND, OR and XOR gates are required for implementation of full adder ?

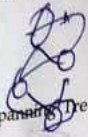(A) 1, 2, 2

(B) 2, 2, 1

(C) 3, 2, 2

(D) 3, 0, 1

50. Which of the following algorithms can be used to most efficiently find whether a cycle is present in a given graph ?

(A) Prim's Minimum Spanning Tree Algorithm

(B) Breadth First Search

(C) Depth First Search

(D) Kruskal's Minimum Spanning Tree Algorithm

51. Consider an array of positive integers between 123456 to 876543, which sorting algorithm can be used to sort these number in linear time ?

(A) Impossible to sort in linear time

(B) Radix Sort

(C) Insertion Sort

(D) Bubble Sort

52. In the Model-View-Controller (MVC) architecture, the model defines the _____.

(A) Data-access layer

(B) Presentation layer

(C) Business-logic layer

(D) Interface layer

53. The default character encoding in HTML is _____.

(A) UTF-16

(B) UTF-32

(C) UTF-8

(D) ISO-8859-1

54. In Java, for ensuring the persistence property, the class must implements :

(A) Serializable Interface

(B) Utilization Interface

(C) Threadable Interface

(D) Recognizable Interface

55. In the given Program :

```
class Dialog1
{
    public static void main(String args[])
    {
        Frame f1=new Frame("INDIA");
        f1.setSize(300,300);
        f1.setVisible(true);
        FileDialog d=new FileDialog(f1,"MyDialog");
        d.setVisible(true);
        String fname=d.getDirectory()+d.getFile();
        System.out.println("The Selection is"+fname);
    }
}
```

To make the Frame visible, which of the following statements are true ?

(A) f1.setClear(true);

(B) f1.setVisible(true);

(C) f1.setlook(true);

(D) f1.setclean(true);

56. The router table contains addresses belonging to _____ protocol(s).

(A) a single

(B) two

(C) multiple

(D) none of the options

57. Which of the following scenarios may lead to an irrecoverable error in a database system ?

(A) A transaction writes a data item after it is read by an uncommitted transaction

(B) A transaction reads a data item after it is read by an uncommitted transaction.

(C) A transaction reads a data item after it is written by a committed transaction.

(D) A transaction reads a data item after it is written by an uncommitted transaction.

58. A stack can be implemented using queue, but then we need to use atleast :

(A) 3 queues

(B) 2 queues

(C) only one queue is sufficient

(D) none of the options

59. A minimal super key (i.e, one of the super keys for which no proper subset is a super key) is called :

(A) Super Key

(B) Candidate Key

(C) Primary Key

(D) Both Candidate and Primary Key

60. During exception handling, which of the following statements hold true ?

(A) Single try can have multiple associated catch with it

(B) A Single Catch can have multiple try associated with it

(C) Finally block execute only when the class is inherited

(D) For a given exception, multiple catch can execute

61. Which of the following problem is not NP complete but undecidable ?

(A) Partition Problem

(B) Halting Problem

(C) Hamiltonian Circuit

(D) Bin Packing

62. Which of the following is not a part of the Test Implementation and Execution Phase ?

(A) Creating test suites from the test cases

(B) Executing test cases either manually or by using test execution tools

(C) Comparing actual results

(D) Designing the Tests

63. Consider the following C program segment.

```
while (first <= last)
{
    if (array [middle] < search)
        first = middle +1;
    else if (array [middle] == search)
        found = True;
    else last = middle - 1;
    middle = (first + last)/2;
}
if (first < last) not Present = True;
```

The cyclomatic complexity of the program segment is _____.

(A) 3

(B) 4

(C) 5

(D) 6

SPACE FOR ROUGH WORK

STA

64. Let R and S be two relations with the following schema

R (P, Q, R1, R2, R3)

S (P, Q, S1, S2)

Where {P, Q} is the key for both schemas. Which of the following queries are equivalent ?

(I) $\Pi_P (R \bowtie S)$

(II) $\Pi_P (R) \bowtie \Pi_P (S)$

(III) $\Pi_P (\Pi_{P, Q} (R) \cap \Pi_{P, Q} (S))$

(IV) $\Pi_P (\Pi_{P, Q} (R) - (\Pi_{P, Q} (R) - \Pi_{P, Q} (S)))$

(A) Only (I) and (II)

(B) Only (I) and (III)

(C) Only (I), (II) and (III)

(D) Only (I), (III) and (IV)

65. Anomalies are avoided by splitting the offending relation into multiple relations, is also known as _____.

(A) Accupressure

(B) Decomposition

(C) Precomposition

(D) Both decomposition & precomposition

66. Which one of the following statements is FALSE ?

(A) Context-free grammar can be used to specify both lexical and syntax rules.

(B) Type checking is done before parsing.

(C) High level language programs can be translated to different Intermediate Representations.

(D) Arguments to a function can be passed using the program stack.

67. Encoders are made by three _____ gates.

(A) AND

(B) OR

(C) NAND

(D) XOR

68. _____ CSS property allow to wrap a block of text around an image.

(A) wrap

(B) push

(C) float

(D) align

69. What does <main> include ?

(A) Header

(B) Sidebar

(C) Article

(D) Footer

70. Let R = (A, B, C, D, E) having following FDs. F = {A→BC, CD→E, B→D, E→A}
Which of the following is not a Candidate key ?

(A) A

(B) B

(C) E

(D) BC

71. In Java, the Dynamic Array are known as :

(A) Vectors

(B) Cycle

(C) Remote

(D) Kubernotos

SPACE FOR ROUGH WORK

72. In ICMP, in case of time exceeded error, when the datagram visits a router, the value of time to live field is _____.

(A) Remains constant

(B) Decremented by 2

(C) Incremented by 1

(D) Decremented by 1

73. A 26-bit address bus has maximum accessible memory capacity of _____.

(A) 64 MB

(B) 16 MB

(C) 1 GB

(D) 4 GB

74. Software consists of _____.

(A) Set of instructions + operating procedures

(B) Programs + documentation + operating procedures

(C) Programs + hardware manuals

(D) Set of programs

75. To guarantee correction of upto 5 errors in all cases, the minimum Hamming distance in a block code must be _____.

(A) 11

(B) 6

(C) 5

(D) 2

76. Which of the following is not true for tree and graph ?

(A) A tree is a graph

(B) A graph is a tree

(C) Tree can have a cycle

(D) Tree is a DAG

77. (<ALL) comparison operator means :

(A) more than the maximum value in the subquery

(B) less than the minimum value in the subquery

(C) is equivalent to IN

(D) none of the options

78. Shift reduce parsing can also be called as :

(A) Reverse of the Right Most Derivation

(B) Right Most Derivation

(C) Left Most Derivation

(D) None of the options

79. Which of the following construct is no supported by Java Server Pages ?

(A) JSP Directives

(B) JSP Scriptlets

(C) JSP Actions

(D) JSP Reaction

SPACE FOR ROUGH WORK

80. The number of tokens in the following C/C++ statement is :

printf("i = %d, &i = %xx", i&i);

(A) 9

(B) 6

(C) 10

(D) 12

81. In CRC calculation if divisor is 1011, and dataword is 1001 what will be the CRC ?

(A) 111

(B) 101

(C) 110

(D) 100

82. Find the mode of the following data :

Age	0-6	6-12	12-18	18-24	24-30	30-36	36-42
Frequency	6	11	25	35	18	12	6

(A) 20.22

(B) 19.47

(C) 21.12

(D) 20.14

B/Page 14

83. Some code optimizations are carried out on the intermediate code because :

(A) they enhance the portability of the compiler to other target processors

(B) program analysis is more accurate on intermediate code than on machine code

(C) the information from data flow analysis cannot otherwise be used for optimization

(D) the information from the front end cannot otherwise be used for optimization

84. A program P reads in 500 integers in the range [0..100] representing the scores of 500 students. It then prints the frequency of each score above 50. What would be the best way for P to store the frequencies ?

(A) An array of 50 numbers

(B) An array of 100 numbers

(C) An array of 500 numbers

(D) A dynamically allocated array of 550 numbers

85. Which of the following are two main types of overloading in Java ?

(A) Overloading and linking

(B) Overriding and linking

(C) Reusability and data-hiding

(D) Overloading and Overriding

SPACE FOR ROUGH WORK

STA

86. A recursive problem like tower of hanoi can be rewritten without recursion using :

    (A) stack ✓

    (B) priority queue

    (C) graph

    (D) cycles

87. SRD stands for _____.

    (A) Software Requirements Definition

    (B) Structured Requirements Definition

    (C) Software Requirements Diagram

    (D) Structured Requirements Diagram

88. Black Box Software Testing method focuses on the :

    (A) Boundary condition of the software

    (B) Control structure of the software

    (C) Testing of User Interface only

    (D) Cyclomatic Complexity

89. The LL(1) and LR(0) techniques are _____.

    (A) Both same in power

    (B) Both simulate reverse of right most derivation

    (C) Both simulate reverse of left most derivation

    (D) Incomparable

90. You have a network ID of 192.168.10.0 and require at least 25 host IDs for each subnet, with the largest amount of subnets available. Which subnet mask should you assign ?

    (A) 255.255.255.192

    (B) 255.255.255.224

    (C) 255.255.255.240

    (D) 255.255.255.248

91. With the following syntax

    INSERT INTO table [(column [, column...])]

    VALUES (value [, value...]);

    you can :

    (A) Insert one row at a time.

    (B) Insert multiple rows at a time.

    (C) Insert one column at a time.

    (D) Insert multiple columns at a time.

92. Which flip-flop is used to make all types of shift registers ?

    (A) JK flip-flop

    (B) D flip-flop

    (C) T flip-flop

    (D) All the options

93. Domain constraints, functional dependency and referential integrity are special forms of _____.

    (A) Foreign key

    (B) Primary key

    (C) Assertion

    (D) Referential constraint

SPACE FOR ROUGH WORK

STA

94. Peephole optimization is a :

(A) Loop optimization

(B) Local optimization

(C) Constant folding

(D) Data flow analysis

95. A bag contains 10 white balls and 5 blue balls. A ball is drawn from the bag and its color is noted. This ball is put back in the bag along with 3 more balls of the same color. A ball is drawn again from the bag at random. The probability that the first ball drawn is blue, given that the second ball drawn is blue, is :

(A) 1/3

(B) 3/4

(C) 8/9

(D) 4/9

96. If we don't want to allow a floating div to the left side of an element, _____ CSS property will we use.

(A) margin

(B) clear

(C) float

(D) padding

97. Which of the following Interface is not supported by JDBC for connecting to Database in Java Programming language ?

(A) Statement Interface

(B) Prepared Statement Interface

(C) Callable Statement Interface

(D) Database Interface

98. When we perform in order traversal on a binary tree, we get the ascending order array. The tree is :

(A) Heap tree

(B) Almost complete binary tree

(C) Binary search tree

(D) Cannot be determined

99. Why does congestion occur ?

(A) Because the routers and switches have tables

(B) Because the routers and switches have queues

(C) Because the routers and switches have cross-points

(D) None of the options

100. Adding the style attributes in HTML elements, is known to be _____.

(A) Internal

(B) Inline

(C) Outline

(D) External

101. Assembly line scheduling and Longest Common Subsequence problems are an example of _____.

(A) Dynamic Programming

(B) Greedy Algorithms

(C) Greedy Algorithms and Dynamic Programming respectively

(D) Dynamic Programming and Branch and Bound respectively

SPACE FOR ROUGH WORK

102. Term in the MVC architecture that receives events is called _____.

(A) Receiver

(B) Controller

(C) Transmitter

(D) Modulator

103. What is meant by the following relational algebra statement : STUDENT × COURSE ?

(A) Compute the natural join between the STUDENT and COURSE relations

(B) Compute the left outer join between the STUDENT and COURSE relations

(C) Compute the cartesian product between the STUDENT and COURSE relations

(D) Compute the outer join between the STUDENT and COURSE relations

104. Which of the following is a correct time complexity to solve the 0/1 knapsack problem where n and w represents the number of items and capacity of knapsack respectively ?

(A) $O(n)$

(B) $O(w)$

(C) $O(nw)$

(D) $O(n+w)$

105. In an undirected graph, if we add the degrees of all vertices, it is :

(A) odd

(B) even

(C) cannot be determined

(D) always $n+1$, where n is number of nodes
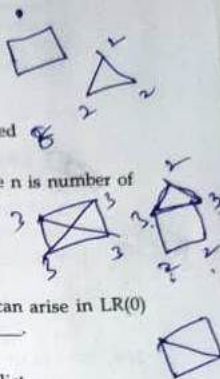
106. Type of conflicts that can arise in LR(0) techniques are _____.

(A) Shift-reduce conflict

(B) Shift-Shift conflict

(C) Both "Shift-reduce conflict" & "Shift-Shift conflict"

(D) None of the options

107. When retrieving data in a particular table in PostgreSQL, we use the _____ statement.

(A) \dt

(B) ORDER BY

(C) SELECT FROM

(D) \i

108. A computer has a single cache (off-chip) with a 3 ns hit time and a 95% hit rate. Main memory has a 50 ns access time. If we add an on-chip cache with a 0.6 ns hit time and a 98% hit rate, the computer's effective access time :

(A) 2.8 ns

(B) 5.5 ns

(C) 0.7 ns

(D) None of the options

109. Which of the following is correct recurrence for worst case of QuickSort ?

(A) $T(n) = T(n-4) + T(n-2) + O(1)$

(B) $T(n) = T(n-1) + T(0) + O(n)$

(C) $T(n) = 2T(n/2) + O(n)$

(D) $T(n) = 4T(n/2) + O(n)$

110. In case of the dynamic programming approach the value of an optimal solution is computed in :

(A) Top down fashion

(B) Bottom up fashion

(C) Left to Right fashion

(D) Right to Left fashion

111. What is the output of following program ?

```
abstract class Sum
{
    public abstract int sumOfTwo(int n1, int n2);
    public abstract int sumOfThree(int n1, int n2, int n3);

    public void disp(){
        System.out.println("Method of class Sum");
    }
}
class DemoAbstract1 extends Sum
{
    public int sumOfTwo(int num1, int num2)
    {
        return num1+num2;
    }
    public int sumOfThree(int num1, int num2, int num3)
    {
        return num1+num2+num3;
    }
    public static void main(String args[ ]){
        Sum obj = new DemoAbstract1( );
        System.out.println(obj.sumOfTwo(3, 7));
        System.out.println(obj.sumOfThree(4, 3, 19));
        obj.disp( );
    }
}
```

(A) 10
26
Method of class Sum

(B) 26
10
Method of class Sum

(C) Method of class Sum
26
10

(D) Error

112. Given $r_{12} = 0.6$, $r_{13} = 0.5$ and $r_{23} = 0.8$, the value of $r_{12.3}$ is :

(A) 0.47

(B) 0.40

(C) 0.74

(D) 0.64

B/Page 18

SPACE FOR ROUGH WORK

STA

113. What is the product of following matrix using Strassen's matrix multiplication algorithm ?

$$A = \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix}_{2\times2} \quad B = \begin{bmatrix} 8 & 4 \\ 6 & 2 \end{bmatrix}$$

(A) $C_{11} = 80; C_{12} = 07; C_{21} = 15; C_{22} = 34$

(B) $C_{11} = 82; C_{12} = 26; C_{21} = 10; C_{22} = 34$

(C) $C_{11} = 15; C_{12} = 07; C_{21} = 80; C_{22} = 34$

(D) $C_{11} = 26; C_{12} = 10; C_{21} = 82; C_{22} = 34$

114. Finding the location of the element with a given value is :

(A) Traversal

(B) Search

(C) Sort

(D) None of the options

115. The given array is arr = {1, 2, 4, 3}. Bubble sort is used to sort the array elements. How many passes will be done to sort the array ?

(A) 4

(B) 2

(C) 1

(D) 3

116. A digital signature is required :

(A) for non-repudiation of communication by a sender

(B) for all e-mail sending

(C) for all DHCP server

(D) for FTP transactions

117. Priority queue is implemented by :

(A) Doubly link list

(B) Graph

(C) Heap

(D) Stack

118. In the following addressing mode, which of them performs better for accessing array ?

(A) Register addressing mode

(B) Direct addressing mode

(C) Displacement addressing mode

(D) Index addressing mode

119. Assume that the SLR parser for a grammar G has n1 states and the LALR parser for G has n2 states. The relationship between n1 and n2 is :

(A) n1 is necessarily less than n2

(B) n1 is necessarily equal to n2

(C) n1 is necessarily greater than n2

(D) none of the options

120. The _____ field in IPv4 datagram is not related to fragmentation.

(A) Flag

(B) Offset

(C) TOS

(D) Identifier

- o O o -

SPACE FOR ROUGH WORK

ST