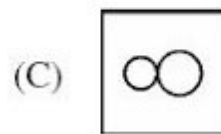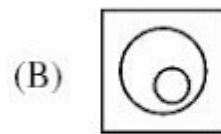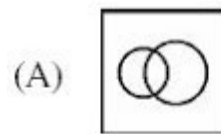1. "$x1$ is a clone of x" means $x1$ is identical to x in terms of the physical attributes namely, height, weight and complexion. Given, height, weight and complexion only form a complete set of attributes for an entity, cloning is an equivalence relation. What is your impression about this statement ?

(A) The statement is true

(B) The statement is false

(C) The truth value of the statement cannot be computed

(D) None of these

2. 'R is a robot of M' means R can perform some of the tasks that otherwise M would do and R is unable to do anything else. Which of the following is the most appropriate representation to model this situation ?

(A)

(B)

(C)

(D)   None of these

3. "My Lafter Machin (MLM) recognizes the following strings :

(i) a

(ii) aba

(iii) abaabaaba

(iv) abaabaabaabaabaabaabaabaaba

Using this as an information, how would you compare the following regular expressions ?

(i) (aba)3x

(ii) a.(baa)3x–1. ba

(iii) ab.(aab).3x–1.a

(A) (ii) and (iii) are same, (i) is different.

(B) (ii) and (iii) are not same.

(C) (i), (ii) and (iii) are different.

(D) (i), (ii) and (iii) are same.

4. S1 : I teach algorithms and maths.

    S2 : My professor teaches maths,electronics and computer science.

    S3 : I have a student of maths.

    S4 : Algorithm is a part of computer science.

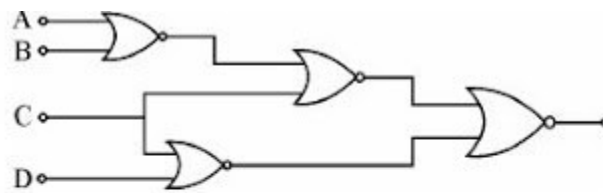   S5 : Maths students know computer science.

What would be the chromatic number of a graph, vertices of which are the actors/entities that are involved in the sentences S1 to S5 and edges-to represent the associations/relationships amongst the entities/actors as expressed in the sentences S1 to S5 above ?

(A) 2

(B) 3

(C) 4

(D) None of these

5. Four your ATM debit card, you have a 4-decimal-digit personal secret code. In the absence of any clue, a

brute-force attack takes time-'t' to crack the code on an ATM terminal. Therefore 't' is the secure-time for a customer to report in case the card is misplaced. Your Bank has decided to facilitate an increased secure-time. Out of the following, which option should provide the largest rise in the value of 't' ?

(A) Instead of 4-decimal-digits, maintain the personal secretcode in 4-hexadecimal-digits.

(B) Instead of 4-decimal digits, maintain a 5-decimal-digit personal secret code.

(C) Reduce the processing speed of the ATM terminals to the half of their current speed.

(D) None of the above provides any improvement

6. The logic expression for the output of the circuit shown in the figure is

(A) $\bar{A}\bar{C} + \bar{B}\bar{C} + CD$

(B) $A\bar{C} + B\bar{C} + \bar{C}D$

(C) $ABC + \bar{C}\bar{D}$

(D) $\bar{A}\bar{B} + \bar{B}\bar{C} + \bar{C}\bar{D}$

Ans: C

7. Advantage of synchronous sequential circuits over asynchronous ones is

(A) faster operation
(B) ease of avoiding problems due to hazard
(C) lower hardware requirement
(D) better noise immunity

8. What is the transitive voltage for the voltage input of a CMOS operating from 10V supply ?

(A) 1V   (B) 2V   (C) 5V   (D) 10 V

9. What is decimal equivalent of BCD 11011.1100 ?

(A) 22.0   (B) 22.2   (C) 20.2   (D) 21.2

10. The function represented by the kmap given below is

(A) A · B

(B) AB + BC + CA

(C) $\overline{B \oplus C}$

(D) A · B · C

Note: All the options are wrong.   correct answer is C'

11. The statement print f (" % d", 10 ? 0 ? 5 : 1 : 12); will print
(A) 10 (B) 0 (C) 12 (D) 1

12. What will be the output of the following c-code ?
void main ( )
{
char *P = "ayqm" ;
char c;
c = ++*p ;
printf ("%c", c);
}
(A) a (B) c (C) b (D) q

13. Member of a class specified as _____ are accessible only to method of the class.
(A) private (B) public (C) protected (D) derive

14. Match the following :
(a) Garbage collection in   1. Java
(b) Nameless object   2. generic programming
(c) Template support   3. defines a class
(d) A forward reference   4. member function
(e) Derived class inherits from base class 5. within a statement
Codes :

```
      (a) (b) (c) (d) (e)
(A) 1   5   4   2   3
(B) 1   5   2   3   4
(C) 5   1   2   3   4
(D) 5   4   3   1   2
```

15. The data type created by the data abstraction process is called

(A) class

(B) structure

(C) abstract data type

(D) user defined data type

16. An entity instance is a single occurrence of an _____.

(A) entity type

(B) relationship type

(C) entity and relationship type

(D) None of these

17. Generalization is _____ process.

(A) top–down

(B) bottom up

(C) both (A) & (B)

(D) None of these

18. Match the following :

I.   2 NF   (a) transitive dependencies eliminated

II. 3 NF   (b) multivalued attribute removed

III. 4 NF   (c) contain no partial functional dependencies

IV. 5 NF   (d) contains no join dependency

Codes :

```
     I   II  III  IV
(A) (a) (c) (b) (d)
(B) (d) (a) (b) (c)
(C) (c) (d) (a) (b)
(D) (d) (b) (a) (c)
```

19. Which data management language component enabled the DBA todefine the schema components

?
(A) DML
(B) Sub-schema DLL
(C) Schema DLL
(D) All of these

20. The PROJECT Command will create new table that has
(A) more fields than the original table
(B) more rows than original table
(C) both (A) & (B)
(D) none of these

21. If we have six stack operations–pushing and popping each of A, B and C–such that push (A) must occur
before push (B) which must occur before push (C), then A, C, B is a possible order for the pop operations,
since this could be our sequence : push (A), pop (A), push (B), push (C), pop (C), pop (B). Which one of
the following orders could not be the order the pop operations are run, if we are to satisfy the requirements
described above ?
(A) ABC (B) CBA (C) BAC (D) CAB

22. What is the most appropriate data structure to implement a priority queue ?
(A) Heap (B) Circular array (C) Linked list (D) Binary tree

23. In a complete binary tree of n nodes, how far are the two most distant nodes ? Assume each edge in the
path counts as 1
(A) About log2n
(B) About 2 log2n
(C) About n log2n
(D) About 2n

24. A chained hash table has an array size of 100. What is the maximum number of entries that can be placed in the table ?
(A) 100

(B) 200

(C) 10000

(D) There is no upper limit

25. In a B tree of order 5, the following keys are inserted as follows :7, 8, 1, 4, 13, 20, 2, 6 and 5

How many elements are present in the root of the tree ?

(A) 1   (B) 2   (C) 3   (D) 4

26. The _____ field is the SNMP PDV reports an error in a response message.

(A) error index

(B) error status

(C) set request

(D) agent index

27. What does the URL need to access documents ?

I. Path name

II. Host name

III. DNS

IV. Retrieval method

V. Server port number

(A) I, II, III   (B) I, III, V   (C) I, II, IV   (D) III, IV, V

28. End-to-End connectivity is provided from Last-to-Last in

(A) Network layer

(B) Session layer

(C) Transport layer

(D) Data link layer

29. What services does the internet layer provide ?

1. Quality of service

2. Routing

3. Addressing

4. Connection oriented delivery

5. Framing bits

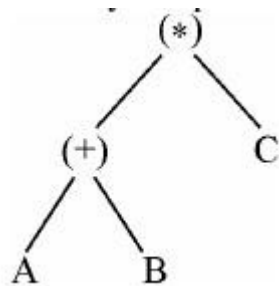(A) 1, 2, 3   (B) 2, 3, 4   (C) 1, 3, 4, 5   (D) 2, 3, 4, 5

30. What is the maximum operating rate of a wireless LAN using infrared communication ?

(A) 1 mbps   (B) 2 mbps (C) 5 mbps   (D) 11mbps

31. In an absolute loading scheme, which loader function is accomplished by a loader ?

(A) Re-allocation

(B) Allocation

(C) Linking

(D) Loading

32. Which of the following expression is represented by the parse tree ?

(A) (A + B) * C   (B) A + * BC   (C) A + B * C   (D) A * C + B

33. Consider the following left associative operators in decreasing order of precedence :

     – subtraction (highest precedence)

    * multiplication

    $ exponentiation (lowestprecedence)

   What is the result of the following expression ?

       3 – 2 * 4 $ | * 2**3

   (A) – 61   (B) 64 (C) 512   (D) 4096

34. Which of the following is the most general phase structured grammar ?

(A) Regular

(B) Context-sensitive

(C) Context free

(D) None of the above

35. Which of the following is used for grouping of characters into tokens (in a computer) ?

(A) A parser

(B) Code optimizer

(C) Code generator

(D) Scanner

36. Match the following :

(a) Disk scheduling   1. Round-robin

(b) Batch processing   2. SCAN

(c) Time sharing   3. LIFO

(d) Interrupt processing   4. FIFO

Codes :

    (a) (b) (c) (d)

(A) 3   4   2   1

(B) 4   3   2   1

(C) 2   4   1   3

(D) 1   4   3   2

37. _____ synchronizes critical resources to prevent dead lock.

(A) P-operator   (B) V-operator (C) Semaphore   (D) Swapping

38. _____ is one of pre-emptive scheduling algorithm.

(A) RR (B) SSN (C) SSF (D) Priority based

39. In order to allow only one process to enter its critical section, binary semaphore are initialized to

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

40. Remote Computing Service involves the use of time sharing and _____.

(A) multi-processing

(B) interactive processing

(C) batch processing

(D) real-time processing

41. Software engineering primarily aims on

(A) reliable software

(B) cost effective software

(C) reliable and cost effective software

(D) none of the above

42. Top-down design does not require

(A) step-wise refinement

(B) loop invariants

(C) flow charting

(D) modularity

43. Which model is simplest model in Software Development ?

(A) Waterfall model

(B) Prototyping

(C) Iterative

(D) None of these

44. Design phase will usually be

(A) top-down

(B) bottom-up

(C) random

(D) centre fringing

45. Applications-software

(A) is used to control the operating system

(B) includes programs designed to help programmers

(C) performs a specific task for computer users

(D) all of the above

46. The cost of the network is usually determined by

(A) time complexity

(B) switching complexity

(C) circuit complexity

(D) none of these

47. A leased special high-speed connection from the local telephone carrier for business users that transmits at 1.544 mbps is known as _____ carrier.

(A) T1   (B) T2 (C) T3   (D) T4

48. CDMA Cell uses _____ carriers of 1.25 MHz.

(A) 9   (B) 18 (C) 22   (D) 64

49. At any given time Parallel Virtual Machine (PVM) has _____ send buffer and _____ receive buffer.

(A) one-one   (B) one-two (C) two-two   (D) two-one

50. Data Mining uses _____, _____ and _____ to build effective predictive model.

(i) Data set

(ii) Information set

(iii) Input set

(iv) Process set

(v) Output set

(vi) Test set

(A) (i), (ii) and (iv)

(B) (ii), (iv) and (v)

(C) (i), (v) and (vi)

(D) (ii), (iii) and (v)