

073/2018

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

Total No. of Questions: 100

Maximum : 100 Marks

Time : 75 Minutes

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz. A, B, C & D.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator IMMEDIATELY.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is un-numbered, please get it replaced by new question booklet with same alpha code.
6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the question booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball-Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

073/2018-A



073/2018

Maximum : 100 Marks

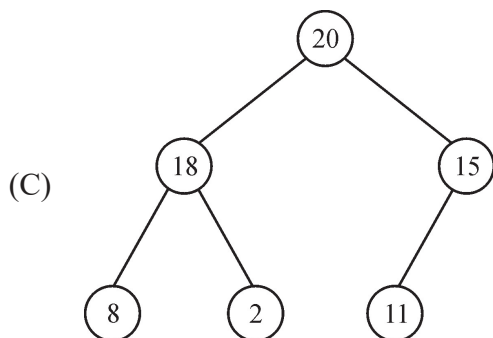
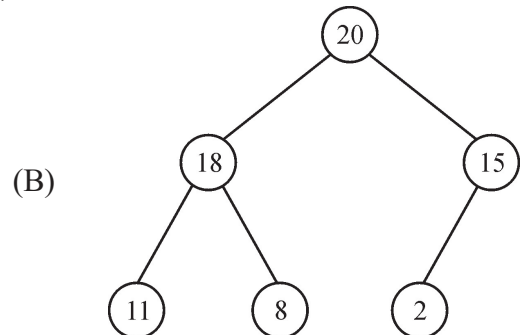
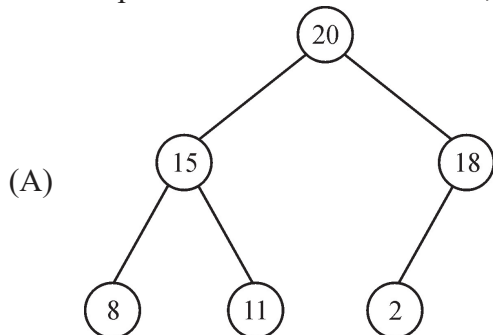
Time : 1 hour and 15 minutes

1. Who comments the famous Temple Entry Proclamation as 'a miracle of modern times' ?
(A) K. Kelappan (B) Gandhiji
(C) A. K. Gopalan (D) Sri. Chitira Tirunal
2. The first Malayalam journal Rajya Samacharam was published in the year
(A) 1844 (B) 1874
(C) 1814 (D) 1847
3. Who is often described as the national poet of Kerala ?
(A) G. Sankara Kuruppu (B) Kumaran Asan
(C) Ulloor (D) Vallathol
4. Who was the editor of the newspaper Mitavadi ?
(A) C. Krishnan (B) K.P. Kesava Menon
(C) C.V. Kunhiraman (D) Maulavi Sahib
5. Atma Vidya Sangham was founded by
(A) Sahodharan Ayyappan (B) Swami Vagbhatananda
(C) Ayyankali (D) K.P. Karuppan
6. Who is the newly appointed Controller and Auditor General of India ?
(A) Shasi Kant Sharma (B) Rajnish Kumar
(C) Hari Om Singh (D) Rajiv Mehrishi
7. Which state government has launched the 'Solar Briefcase' to provide electricity in remote areas ?
(A) Rajasthan (B) Jharkhand
(C) Uttarakhand (D) Tamil Nadu
8. Who is the recipient of Mathruboomi Literacy award 2017 ?
(A) Punathil Kunjabdulla (B) M.K. Sanu
(C) M. Leelavati (D) C. Radhakrishnan
9. Who is the author of the book *India after Gandhi* ?
(A) Gurucharan Das (B) Ramachandra Guha
(C) Jawaharlal Nehru (D) Shashi Tharoor
10. Who inaugurated the Kudumbasree Project of the Government of Kerala in the year 1998 ?
(A) E.K. Nayanar (B) K.R. Narayanan
(C) A.B. Vajpayee (D) Sankar Dayal Sharma

11. Which Amendment Act is known as Mini Constitution ?
(A) 73rd (B) 44th
(C) 42nd (D) 86th
12. Which among the following right cannot be suspended during the time of National Emergency ?
(A) Right to Religion
(B) Right to Life
(C) Right to Constitutional Remedies
(D) Cultural and Educational Rights
13. Which Article of the Indian Constitution empowers the Minorities to establish and administer Educational Institutions according to their own choice ?
(A) Article 30 (B) Article 29
(C) Article 32 (D) Article 21
14. The power of the Supreme Court of India to decide disputes between the centre and the states falls under its
(A) Advisory Jurisdiction (B) Appellate Jurisdiction
(C) Original Jurisdiction (D) Constitutional jurisdiction
15. The resolution for removing the Vice President of India can be moved in the
(A) Lok Sabha alone (B) Either House of Parliament
(C) Joint Sitting of Parliament (D) Rajya Sabha alone
16. What is the time limit to get information under RTI Act 2005 ?
(A) 30 Days (B) 45 Days
(C) 60 Days (D) 15 Days
17. In which year the Protection of Women from Domestic Violence Act was passed in India ?
(A) 1950 (B) 1993
(C) 2005 (D) 1989
18. Indira Awaas Yojana (IAY) is a major programme for
(A) Laying roads in rural areas
(B) Self employment scheme
(C) Construction of houses to the poor
(D) Construction of slum dwelling units
19. The Environment (Protection) Bill was passed by the Parliament of India in
(A) 1986 (B) 1984
(C) 1993 (D) 1990
20. In India child labour is defined as working child in the age group of _____ years and below.
(A) 10 (B) 18
(C) 13 (D) 14

21. "Teaching method which plays learners in active learning situation are more likely to be effective than those which do not" – this statement was given by
 (A) Stephen. M. Corey (B) Sympson
 (C) Morrison (D) Miller
22. The ultimate aim of a diagnostic test is
 (A) Remedial teaching (B) Assessment of weakness in learning
 (C) To measure pupil's achievement (D) To grade the pupil
23. Which of the following mean "being able to look at our own professional behaviour and practice with the intention of improving and developing" ?
 (A) Mentoring (B) Professional development
 (C) Reflective practice (D) Team teaching
24. In a classroom, a teacher observed that many of the students did not have structured computer programming notes. To equip the teacher for addressing this issue, which one of the following will you suggest as the best one ?
 (A) Micro teaching (B) Case study
 (C) Action Research (D) Workshop
25. Which of the following free educational software is generally used as an interactive learning suit to the student ?
 (A) Adobe Premiere (B) PhET
 (C) Libre Office Impress (D) Gimp
26. Name of the research that the investigators attempts to trace on effect which has already occurred to its possible causes :
 (A) Historical Research (B) Action Research
 (C) Fundamental Research (D) Expost-facto Research
27. Which of the following criteria is least suitable for a good research problem ?
 (A) Interesting (B) Memorable
 (C) Innovative (D) Relevant
28. The method of research which is free from sampling, control and validity of inference
 (A) Survey method (B) Historical method
 (C) Criterion-Reference method (D) Experimental method
29. The abbreviation used in thesis writing when two or more successive footnotes refer to the same work with specific page number :
 (A) et.al (B) vide
 (C) N.B (D) ibid
30. Which of the following is not related to a seminar ?
 (A) Interactive process of thinking (B) Discussion with panel members
 (C) Nurturing of the higher cognition (D) Indepth presentation of the concept paper

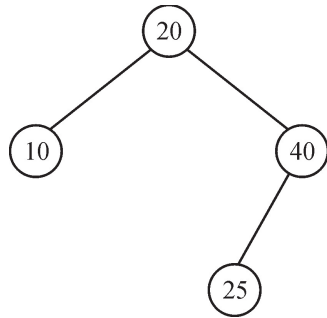
31. In a circular linked list the external pointer to the last node helps to :
- (A) Delete an item from the front
 - (B) Add an item to the last position
 - (C) Delete an item from the first position
 - (D) All of the above
32. Of the following which is not an advantage in using a linked list data structure than a linear array ?
- (A) No space wastage
 - (B) Insertion and deletion without shifting
 - (C) A particular element can be accessed directly
 - (D) Nodes can be allocated dynamically
33. Prefix form of the expression $(a+b)/c*d*e$ is
- (A) $+/**edca$
 - (B) $**/+abcde$
 - (C) $+/ed*c*ba$
 - (D) $/+ab*c*de$
34. The possible operations in a dequeue are :
- (A) Insertion and deletion at front
 - (B) Insertion at rear and deletion at front
 - (C) Insertion and deletion at rear
 - (D) Insertion and deletion at rear and front
35. The initial heap created for the numbers 15,11,2,18,8,20 is



(D) None of the above

36. Which sorting algorithm has an average time complexity of $O(n \log n)$?
- (A) Bubble sort
 - (B) Insertion sort
 - (C) Heap sort
 - (D) Selection sort

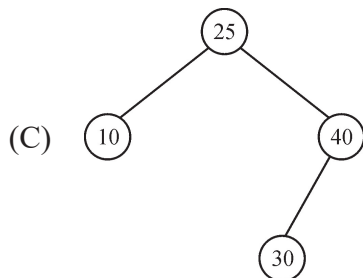
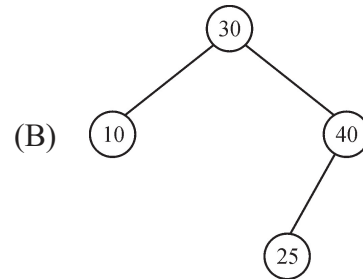
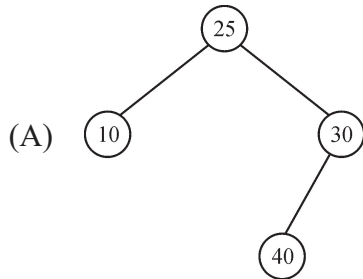
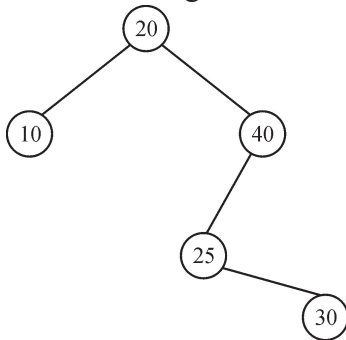
37. Which rotation is to be performed for balancing when 30 is to be added to the AVL tree below :



- (A) RR rotation
(C) LL rotation

- (B) RL rotation
(D) LR rotation

38. The obtained after deleting 20 from the binary search tree below is



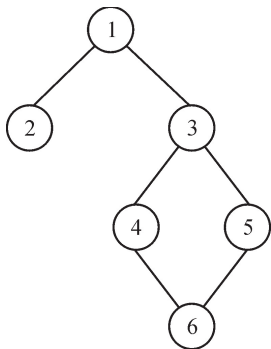
(D) None of the above

39. In a 5-way B-tree maximum and minimum number of key values in a node are

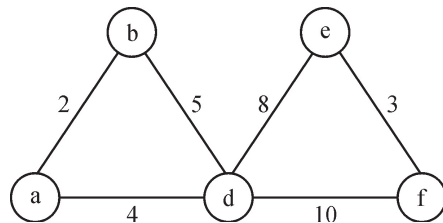
- (A) 2 and 4
(C) 3 and 4

- (B) 3 and 5
(D) 2 and 5

40. The average number of comparisons in selection sort and insertion sort are respectively
 (A) $n(n-1)/2$ and $n(n-1)/4$ (B) $n(n-1)/4$ and $n(n-1)/2$
 (C) $n(n-1)/2$ and $n(n-1)/2$ (D) $n(n-1)/4$ and $n(n-1)/4$
41. The time complexity of merging two sorted arrays of size m and n is :
 (A) $O(mn)$ (B) $O(m+n)$
 (C) $O(m^n)$ (D) None of the above
42. The use of threaded binary tree helps to :
 (A) Reduce the space occupied by nodes
 (B) Traversals can be done without stack space
 (C) Less number of pointers are required
 (D) None of the above
43. The depth first and breadth first traversals of the tree below produces



- (A) 5, 3, 6, 1, 4, 2 and 5, 3, 1, 2, 4, 6 (B) 5, 3, 4, 6, 1, 2 and 5, 3, 1, 2, 4, 6
 (C) 1, 2, 3, 4, 5, 6 and 1, 2, 3, 4, 6, 5 (D) 5, 6, 4, 3, 1, 2 and 5, 3, 6, 4, 2, 1
44. The order of visiting the edges using Prim's algorithm for minimum cost spanning tree starting from node "e" are



- (A) ef, de, bd, ad (B) ef, de, ad, ab
 (C) ab, ef, ad, de (D) None of these

45. Dijkstra's algorithm finds :
- (A) Minimum cost spanning tree
 - (B) Shortest path from one node to all other nodes
 - (C) Shortest path between all pair of nodes
 - (D) None of the above
46. In a noiseless channel with a bandwidth of 4000 Hz transmitting signal with 2 signal levels, what is the theoretical maximum bitrate achieved ?
- (A) 10000 bps
 - (B) 6000 bps
 - (C) 8000 bps
 - (D) 4000 bps
47. In the fibre optic cables, what makes the ray to undergo reflection ?
- (A) Angle of Incidence < Critical Angle
 - (B) Angle of Incidence = Critical Angle
 - (C) Angle of Incidence > Critical Angle
 - (D) Angle of Incidence <= Critical Angle
48. The layer in which datagram switching is normally done ?
- (A) Network Layer
 - (B) Transport Layer
 - (C) Ethernet Layer
 - (D) Physical Layer
49. The Hamming Distance D between the two code words (10101011 and 11010101) is
- (A) 4
 - (B) 5
 - (C) 6
 - (D) 8
50. Bridge is a connecting device which operates in the following layers :
- (A) Physical layer and Data Link layer
 - (B) Data link layer and Network layer
 - (C) Network layer and Physical layer
 - (D) Data link layer and Transport layer
51. The multiplexing technique used for digital signals is
- (A) Frequency Division Multiplexing
 - (B) Wave Division Multiplexing
 - (C) Carrier Division Multiple Access
 - (D) Time Division Multiplexing
52. Five channels each with 110 kHz bandwidth are to be multiplexed together. In order to prevent interference there is a guard band of 20 kHz between the channels. The minimum bandwidth of the link is atleast
- (A) 640 kHz
 - (B) 650 kHz
 - (C) 630 kHz
 - (D) 550 kHz

53. The address space of Ipv4 is
 (A) 2 power 128 (B) 2 power 16
 (C) 2 power 48 (D) 2 power 32
54. MTU (Maximum Transfer Unit) in bytes for Ethernet is
 (A) 576 (B) 1500
 (C) 296 (D) 4352
55. Which header field in Ipv6 addressing takeover the function of Ipv4 Service Type field ?
 (A) Header checksum (B) Hop limit
 (C) Priority and flow label (D) Encrypted Security Payload
56. ARP reply is
 (A) Broadcast (B) Multicast
 (C) Unicast (D) Anycast
57. Two node / Three node instability is a problem that happens in
 (A) Distance Vector Routing (B) Link State Routing
 (C) Path Vector Routing (D) Shortest Path Routing
58. Which among the following is false ?
 (A) SCTP is a reliable protocol
 (B) SCTP is a byte oriented protocol
 (C) SCTP combines the best features of TCP and UDP
 (D) SCTP is a message oriented protocol
59. A situation where two or more threads access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access takes place is called :
 (A) aging (B) race condition
 (C) data consistency (D) starvation
60. Bit used for trapping Illegal addresses is :
 (A) access (B) protection
 (C) error (D) valid - invalid
61. The offset of the logical address must be :
 (A) greater than the segment number (B) between 0 and segment limit
 (C) between 1 and the segment number (D) greater than segment limit
62. If the resources are always preempted from the same process, _____ can occur.
 (A) starvation (B) deadlock
 (C) system crash (D) aging
63. External fragmentation will not occur when
 (A) best fit is used (B) worst fit is used
 (C) first fit is used (D) it will always occur

64. Object modules generated by assembler that contains unresolved external references are resolved by
- (A) Operating System (B) Loader
(C) Linker (D) Compiler
65. Special software that is used to create a job queue is called
- (A) Loader (B) Spooler
(C) Linker (D) Linkage editor
66. Which of the following permanent database that has an entry for each terminal symbol ?
- (A) Literal table (B) Identifier table
(C) Terminal table (D) Stack
67. A relationship between processes such that each has some part (critical section) which must not be executed while the critical section of another is being executed, is known as
- (A) Semaphore (B) Mutual exclusion
(C) Message passing (D) Multiprocessing
68. How many state can a process be in ?
- (A) 3 (B) 4
(C) 5 (D) 2
69. Which of the following is the simplest way of deadlock recovery ?
- (A) Pre-empt resource (B) Lock one of the processes
(C) Roll back (D) Kill one of the processes
70. The directory structure used in Unix file system is called
- (A) Directed acyclic graph (B) Hierarchical directory
(C) Tree structured directory (D) None of the above
71. The degree of multiprogramming is controlled by
- (A) CPU scheduler (B) Job scheduler
(C) Medium term scheduler (D) Kernel
72. The protocol which writes the information directly into main memory is
- (A) Write through (B) Write back
(C) Write first (D) None of the mentioned
73. Which register in the processor is single directional ?
- (A) Temp (B) MDR
(C) PC (D) MAR
74. Highly encoded schemes that use compact codes to specify a small number of functions in each micro instruction is
- (A) Horizontal organisation (B) Vertical organisation
(C) Diagonal organisation (D) None of the above

75. The extra time needed to bring the data into memory in case of a miss is called
 (A) Delay (B) Propagation time
 (C) Miss penalty (D) None of the above
76. A RAM chip has a capacity of 1024 words of 8 bits each ($1\text{ K} \times 8$). The number of 2×4 decoders with enable line needed to construct a $16\text{ K} \times 16$ RAM from $1\text{ K} \times 8$ RAM is
 (A) 4 (B) 7
 (C) 6 (D) 5
77. The number of clauses formed from the logical expression
 (a AND b) OR (c AND d)
 (A) 4 (B) 3
 (C) 2 (D) 1
78. Best first search algorithm is
 (A) Depth first approach
 (B) Combination of depth first and breadth first
 (C) Breadth first
 (D) None of the above
79. "A book consist of chapters and a book is a type of publication". In object oriented analysis, this can be described in a class model using which of the following ?
 (A) Association and realization (B) Aggregation and generalisation
 (C) Generalisation and aggregation (D) None of the above
80. In spiral model, for risk analysis, we use
 (A) Prototyping (B) Waterfall model
 (C) Agile model (D) None of the above
81. An automated query response system using AI techniques is to be developed, where the technology and domain knowledge is new, which life cycle model is most suited ?
 (A) Waterfall (B) Iterative waterfall
 (C) Prototyping (D) Spiral
82. If ($a \geq 200$) and ($a \leq 400$)
 C=true;
 Else
 C=false;
 Which white box testing strategy can ensure maximum correctness for the above code fragment ?
 (A) Statement coverage criteria (B) Path coverage criteria
 (C) Branch coverage criteria (D) None of the above

83. One of the most important structured analysis and design tool is
 (A) DFD (B) Deployment diagram
 (C) Use-case diagram (D) None of the above
84. Which of the following is a black-box testing strategy ?
 (A) Path testing (B) Equivalence class partitioning
 (C) Branch testing (D) None of the above
85. The UML behavioural modelling consists of which all diagrams ?
 (A) Class and object diagrams (B) Component and deployment diagrams
 (C) Activity and interaction diagrams (D) None of the above
86. Which of the following concurrency control protocols ensure both conflict serializability and freedom from deadlock ?
 1. 2-phase locking
 2. Time-stamp ordering
 (A) 1 only (B) 2 only
 (C) Neither 1 nor 2 (D) Both 1 and 2
87. Which one of the following statements is false ?
 (A) Any relation with two attributes is in BCNF.
 (B) A prime attribute can be transitively dependent on a key in a 3NF relation.
 (C) A prime attribute can be transitively dependent on a key in a BCNF relation.
 (D) Any relation with two attributes is in BCNF.
88. Consider a relational schema $R=(A,B,C,D,E,H)$ on which the following functional dependencies hold : $\{A \rightarrow B, BC \rightarrow D, E \rightarrow C, D \rightarrow A\}$. What are the candidate keys of R ?
 (A) AE, BE, DE (B) AEH, BEH, DEH
 (C) AEH, BEH, BCH (D) AE, BE
89. Given relations $r(w, x)$ and $s(y, z)$ the result of select distinct w, x from r, s is guaranteed to be same as r, provided
 (A) r and s have no duplicates
 (B) s has no duplicates and r is non-empty
 (C) r and s have the same number of tuples
 (D) r has no duplicates and s is non-empty
90. Which one of the following statements about normal forms is false ?
 (A) BCNF is stricter than 3 NF.
 (B) Lossless, dependency preserving decomposition into 3NF is always possible.
 (C) Lossless, dependency preserving decomposition into BCNF is always possible.
 (D) Any relation with two attributes is in BCNF.
91. Let E1 and E2 be two entities in an ER diagram with simple single valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model ?
 (A) 2 (B) 3
 (C) 4 (D) 5

92. Consider the following relational schemas :
- Suppliers (sid:integer, sname:string, city:string, street:string)
 Parts(pid:integer, pname:string, color:string)
 Catalog(sid:integer, pid:integer, cost:real)
- Consider the following relational query on the above database :
- SELECT S.sname FROM Suppliers S WHERE S.sid NOT IN (SELECT C.sid FROM Catalog C WHERE C.pid NOT IN(SELECT P.pid FROM Parts P WHERE P.color <> 'blue')).
- Assume that relations corresponding to the above schema are not empty. Which one of the following is the correct interpretation of the above query ?
- (A) Find the names of all suppliers who have supplied a non-blue part.
 (B) Find the names of all suppliers who have not supplied a non-blue part.
 (C) Find the names of all suppliers who have supplied only blue parts
 (D) Find the names of all suppliers who have not supplied only blue parts.
93. What is the output of this program ?
- ```
#include <iostream>
using namespace std;
int main()
{
 int arr[] = {4, 5, 6, 7};
 int *p = (arr + 1);
 cout <<*p;
 return 0;
}
```
- (A) 4 (B) 5  
 (C) 6 (D) 7
94. What is the result of the following piece of code:
- ```
public class Person{
    public void talk(){
        System.out.print("I am a Person");
    }
}
public class Student extends Person{
    public void talk(){
        System.out.print("I am a Student");
    }
}
public class Test {
    public static void main(String args[]){
        Person p = new Student();
        p.talk();
    }
}
```
- (A) I am a Person (B) I am a student
 (C) I am a Person I am a Student (D) I am a Student I am a Person

95. Which of the following is true ?
1. A class can extend more than one class.
 2. A class can extend only one class but many interfaces.
 3. An interface can extend many interfaces.
 4. An interface can implement many interfaces.
 5. A class can extend one class and implement many interfaces.
- (A) 1 and 2 (B) 2 and 4
(C) 3 and 5 (D) 3 and 4
96. Suppose a class has public visibility. In this class we define a protected method. Which of the following statements is correct ?
- (A) This method is only accessible from inside the class itself and from inside all subclasses.
 - (B) In a class, you cannot declare methods with a lower visibility than the visibility of the class in which it is defined.
 - (C) From within protected methods you do not have access to public methods.
 - (D) This method is accessible from within the class itself and from within all classes defined in the same package as the class itself.
97. Java virtual machine is
- (A) Compiler (B) Assembler
(C) Interpreter (D) None of the above
98. In 8086 microprocessor the following has the highest priority among all type interrupts :
- (A) Single Step (B) DIV 0
(C) TYPE 255 (D) OVER FLOW
99. The size of each segment in 8086 is :
- (A) 64 kb (B) 24 kb
(C) 50 kb (D) 16 kb
100. Which interrupt is not level sensitive in 8085 ?
- (A) RST6.5 is a raising edge-triggering interrupt.
 - (B) RST7.5 is a raising edge-triggering interrupt.
 - (C) (A) & (B)
 - (D) None of the above

SPACE FOR ROUGH WORK