

Sikkim Public Service Commission
Main Written Examination for the Post of Sub Inspector under Police Department
PAPER - II BCA

Time allowed: 3.00 Hrs

Maximum Marks: 250

INSTRUCTION TO CANDIDATES

Read the instructions carefully before answering the questions: -

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. Use only Black Ball Point Pen to fill the OMR Sheet.
3. Do not write anything else on the OMR Answer Sheet except the required information.
4. This Test Booklet contains 50 questions in MCQ Mode in Part I to be marked in OMR Sheet. Part II and Part III are Subjective Questions which have to be written on separate answer sheet provided to you.
5. Before you proceed to mark in the Answer Sheet (OMR), you have to fill in some particulars in the Answer Sheet (OMR) as per given instructions.
6. After you have completed filling in all your responses on the Answer Sheet (OMR) and the examination has concluded, you should hand over the Answer Sheet (OMR) and separate answer sheet to the Invigilator only. You are permitted to take with you the Test Booklet.

7. Marking Scheme

THERE WILL BE NEGATIVE MARKING FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS

- i. There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.
- ii. If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.
- iii. If a question is left blank. i.e., no answer is given by the candidate; there will be no penalty for that question.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

PART - I

Choose the correct answer for the following questions:

(3x50=150)

1) In which year India's IT Act came into existence?

- A. 2000
- B. 2001
- C. 2002
- D. 2003

2) PARAM is an example of:

- A. Super Computer
- B. Personal Computer
- C. Micro Computer
- D. Laptop

3) VOIP stands for.....

- A. Viruses over IP
- B. Video over IP
- C. Virtual over IP
- D. Voice over IP

4) Who is the father of Computer?

- A. Allen Turing
- B. Charles Babbage
- C. Simur Cray
- D. Augusta Adaming

5) ACPU contains

- A. A card reader and a printing device
- B. An analytical engine and a control unit
- C. A control unit and an arithmetic logic unit
- D. An arithmetic logic unit and a card reader

6) The first computer was programmed using

- A. Assembly language
- B. Source code
- C. Machine Language
- D. Object Code

7) What type of resource is most likely to be a shared common resource in a computer network?

- A. Keyboards
- B. Speakers
- C. Floppy disk drives
- D. Printers

8) What is a light pen?

- A. A Mechanical Input device
- B. Electronic input device
- C. Optical Input Device
- D. Optical Output Device

9) Which is the Act which provides legal framework for e-Governance in India?

- A. Indian Penal Code
- B. IT Act – 2000
- C. IT (Amendment) Act 2008
- D. None of the above

10) Which of the following is not done by cyber criminals?

- A. Unauthorized account access
- B. Mass attack using Trojans as botnets
- C. Email spoofing and spamming
- D. Report vulnerability in any system

11) A Boolean function may be transformed into

- A. Logical Diagram
- B. Logical Graph
- C. Matix
- D. Circuit

12) In the Boolean algebra, a variable has _____ different state(s)/value(s)

- A. One
- B. Two
- C. Three
- D. Four

13) Truth table is used to express

- A. Boolean expression
- B. Boolean map
- C. Boolean matrix
- D. Boolean addition

14) EBCDIC is abbreviated as

- A. Extended Bit Coded Decimal Interchange Code
- B. Extended Binary Coded Dectation Interchange Code
- C. Extended Binary Color Decimal Interchange Code
- D. Extended Binary Coded Decimal Interchange Code

15) What will be the output of the following JavaScript code?

```
var a = 10;
do{
  a -= 1;
  console.log(a);
} while ( a<5);
```

- A. 11121314
- B. 12345
- C. 1112
- D. 11

16) JavaScript is a _____ language.

- A. Object-Based
- B. Object-Oriented
- C. High-level
- D. Server Based

17) What will be the output of the following JavaScript code?

```
var grade='E';  
var result;  
switch(grade)  
{  
  case 'A':  
    result+="10";  
  case 'B':  
    result+=" 9";  
  case 'C':  
    result+=" 8";  
  default:  
    result+=" 0";  
} document.write(result);
```

- A. 10
- B. 0
- C. 18
- D. 17

18) Derivative of $e^{(2x+3)}$ is

- A. e^{2x+3}
- B. e^{2x}
- C. $2e^{2x+3}$
- D. $2e^{2x}$

19) Laplace transform of function $f(t)=\cos^2(wt)$ is

- A. $s/2(s^2+4w;^2)$
- B. $1+s/2(s^2+4w;^2)$
- C. $2+s/2(s^2+4w;^2)$
- D. $1/2+s/2(s^2+4w;^2)$

20) Integral curves for a differential equation that governs a system are referred to as

- A. Streamlines
- B. electrical lines
- C. trajectories
- D. field lines

21) A digital signature needs a

- A. Private-key system
- B. Shared-key system
- C. Public-key system
- D. Protected-key system

22) What is cipher-block chaining?

- A. Data is logically 'ANDed' with previous block
- B. Data is logically 'ORed' with previous block
- C. Data is logically 'XORed' with previous block
- D. Data is logically 'NORed' with previous block

- 23) A malicious code hidden inside a seemingly harmless piece of code.
- A. Trojan Horse
 - B. Bomb
 - C. Virus
 - D. Worm
- 24) A technique in which a program attacks a network by exploiting IP broadcast addressing operations.
- A. Denial of service
 - B. Smurfing
 - C. Ping storm
 - D. E-mail bombing
- 25) The attack that focuses on capturing small packets from the network transmitted by other computers and reading the data content in search of any type of information is
- A. Phishing
 - B. Honey Trap
 - C. Hacking
 - D. Eavesdropping
- 26) _____ receive the signal and noise at their input separate out the signal from noise and regenerate the signal which is free from noise.
- A. Repeaters
 - B. Amplifiers
 - C. Routers
 - D. Switches
- 27) If all devices are connected to a central hub, then topology is called
- A. Bus Topology
 - B. Ring Topology
 - C. Star Topology
 - D. Tree Topology
- 28) The name of the protocol which provides virtual terminal in TCP/IP model is.
- A. Telnet
 - B. SMTP
 - C. HTTP
 - D. HTTPS
- 29) The _____ layer provides the end-to-end data transfer by delivering data from an application to its remote peer.
- A. Application
 - B. Transport
 - C. Internetwork
 - D. Network interface
- 30) The _____ layer ensures interoperability between communicating devices through transformation of data into a mutually agreed upon format
- A. Transport
 - B. Network
 - C. Data link
 - D. Presentation

- 31) When a primary key is defined in the table, DBMS automatically creates a _____ on a primary key column.
- A. Unique index
 - B. Sequence
 - C. Trigger
 - D. Synonym
- 32) In the relational model, cardinality is termed as:
- A. A number of tables
 - B. A number of constraints
 - C. A number of tuples
 - D. A number of attributes
- 33) An entity set that does not have sufficient attributes to form a primary key is
- A. simple entity set
 - B. weak entity set
 - C. strong entity set
 - D. primary entity set
- 34) Which of the following enables us to view data from a table based on a specific criterion
- A. Form
 - B. Macro
 - C. Report
 - D. Query
- 35) The DBMS language component which can be embedded in a program is
- A. The data definition language (DDL)
 - B. The data manipulation language (DML)
 - C. The database administrator (DBA)
 - D. A query language
- 36) Which one of the following statements is false?
- A. Data elements in the database can be modified by changing the data dictionary
 - B. The data dictionary is normally maintained by the database administrator
 - C. A data dictionary is a tool used exclusively by the database administrator
 - D. The data dictionary contains the name and description of each data element
- 37) A threaded binary tree is a binary tree in which every node that does not have right child has a thread to its
- A. Pre-order successor
 - B. In-order successor
 - C. In-order predecessor
 - D. Post-order successor
- 38) The radix sort does not work correctly if each individual digit is sorted using
- A. Insertion sort
 - B. Counting sort
 - C. Selection sort
 - D. Bubble sort

39) Which of the following operations is performed more efficiently by doubly linked list than by singly linked list?

- A. Deleting a node whose location is given
- B. Searching of an unsorted list for a given item
- C. Inverting a node after the node with given location
- D. Traversing a list to process each node

40) Consider the following definition in C programming language

```
struct node
{
    int data;
    struct node * next;
}
typedef struct node NODE;
NODE *ptr;
```

Which of the following code is used to create new node?

- A. ptr=(NODE*)malloc(sizeof(NODE));
- B. ptr=(NODE*)malloc(NODE);
- C. ptr=(NODE*)malloc(sizeof(NODE*));
- D. ptr=(NODE)malloc(sizeof(NODE));

41) A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a ?

- A. Linked list
- B. Stack
- C. Queue
- D. Tree

42) Which of the following statement(s) about stack data structure is/are NOT correct?

- A. Stack data structure can be implemented using linked list
- B. New node can only be added at the top of the stack
- C. The last node at the bottom of the stack has a NULL link
- D. Stack is the FIFO data structure

43) Which of the following describes E-Commerce

- A. Doing Business Electronically
- B. Doing Business traditionally
- C. Doing Business with clients offline
- D. Sale and Purchase of Goods

44) What is full form of UPI

- A. United Payments Interface
- B. Unitary Payments Interface
- C. Unified Payments Interface
- D. Unidentified Payment Interface

45) Government of India announced a UPI based app called BHIM. What does it stand for?

- A. Bharat Intersection for Money
- B. Bharat Interface for Money
- C. Bharat Ideas for Monetization
- D. Bharat Interface for Monetization

46) In Object Oriented programming Encapsulation is

- A. Data removing
- B. Data hiding
- C. Date Classes
- D. Defining classes

47) Which of the following remarks about the differences between constructors and destructors are correct?

- A. Constructors can take arguments but destructors cannot.
- B. Constructors can be overloaded but destructors cannot be overloaded.
- C. Destructors can take arguments but constructors cannot.
- D. Both (a) and (b)

48) In order to restrict a variable of a class from inheriting to subclass, how variable should be declared in Java?

- A. Protected
- B. Private
- C. Public
- D. Static

49) Which of the following is true statement about Exception handling in Java?

- A. A finally block is executed before the catch block but after the try block.
- B. A finally block is executed, only after the catch block is executed.
- C. A finally block is executed whether an exception is thrown or not.
- D. A finally block is executed, only if an exception occurs.

50) Which among the following best describes concept of polymorphism in object oriented programming?

- A. It is the ability for a message/data to be processed in more than one form
- B. It is the ability for a message/data to be processed in only 1 form
- C. It is the ability for many messages/data to be processed in one way
- D. It is the ability for undefined message/data to be processed in at least one way

PART – II

Attempt ANY TWO questions from the following:

(25X 2=50)

- 1) What is E-commerce? How it is different from traditional model of Commerce? Describe different available models of E-commerce? Describe in detail different kinds of electronic payment methods available?
- 2) What do you mean by protocol ? Explain role of each layer in OSI model? How it is different from TCP/IP model? Explain the use of Routers, Switches, Bluetooth and VSAT in networking?
- 3) What do you mean by Linear Data Structure? Describe concept of Queues and Linked List? Explain 3 sorting and 3 searching techniques with suitable example?
- 4) Explain Relational Database Model in detail along with its storage organization for relations? Explain ER modelling concept? Define the concept of distributed database?
- 5) What is Exception Handling? Write a program in Java to describe the concept of Exception Handling? What is Inheritance, Explain types of Inheritance available in Java?

PART – III

Attempt ANY FIVE questions from the following:

(10x5=50)

- 1) Describe various types of thread attacks through internet on computer system. Describe threat protection mechanism.
- 2) Explain the following
 - a) Pointer in C language
 - b) Arrays in C language
- 3)
 - i) What do you mean by frames in HTML? How they are used in designing forms?
 - ii) Explain different types of list available in HTML?
 - iii) What are different Mouse events available in JavaScript?
- 4) What are logic gates? Describe different types of logical Gates available with their symbols, logic and truth tables?
- 5) What do you mean by Trees in Data Structure? Describe different types of Tree structure available in data structures?
- 6) Define the concept of polymorphism by giving suitable examples?
- 7) What do you mean by Structure Query Language? Explain DDL, DML and DCL commands by giving three examples of each category?
- 8) What do you mean by Memory? Describe different types of memory, giving suitable examples? How data is stored on Hard Disc Drive, explain its structure?