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भारत सरकार / Government of India

अंतरिक्ष विभाग / Department of Space

विक्रम साराभाई अंतरिक्ष केंद्र / VIKRAM SARABHAI SPACE CENTRE

तिरुवनंतपुरम / Thiruvananthapuram - 695 022

तकनीकी सहायक (कंप्यूटर विज्ञान इंजीनीयरी, विज्ञा.सं.301) के पद के चयन हेतु लिखित परीक्षा
WRITTEN TEST FOR SELECTION TO THE POST OF TECHNICAL ASSISTANT (COMPUTER SCIENCE, ADVT. NO. 301)
पद सं. 1370 / Post No 1370

सर्वाधिक अंक/Maximum Marks : 320

अभ्यर्थी का नाम/Name of the candidate :

तिथि/Date: 25.02.2018

समय/Time. 2 घंटे/ 2 hours

अनुक्रमांक सं/Roll no.

अभ्यर्थियों के लिए अनुदेश /Instructions to the Candidates

1. आपके द्वारा वेब आवेदन में प्रस्तुत किए गए ऑन-लाइन डेटा के आधार पर आपको लिखित परीक्षा के लिए आमंत्रित किया गया है। यदि आपने वेब में किसी सूचना की गलत प्रविष्टि की है या विज्ञापन के अनुसार अपेक्षित योग्यता नहीं रखते हैं तो आपकी अभ्यर्थिता अस्वीकृत कर दी जाएगी।
You have been called for the written test based on the online data furnished by you in the web application. **If you have wrongly entered in the web any information or you do not possess the required qualification as per our advertisement, your candidature will be rejected.**

2. प्रश्न-पत्र, 80 प्रश्नों से युक्त प्रश्न-पुस्तिका के रूप में है और परीक्षा की अवधि 02 घंटे है ।
The Question paper is in the form of Question Booklet with 80 questions and the duration of the test is 02 hours.

3. चार विकल्पों सहित वस्तुनिष्ठ प्रकार के प्रश्न होंगे जिनमें से सिर्फ एक असंदिग्ध रूप से सही होगा ।
The questions will be objective type with four options out of which only one will be unambiguously correct.

4. प्रत्येक प्रश्न केलिए 04 अंक होंगे और प्रत्येक गलत उत्तर केलिए एक अंक काटा जाएगा ।
Each question carries 04 marks and one mark will be deducted for each wrong answer.

5. प्रश्नों के उत्तर देने के लिए दूसरी प्रति सहित अलग ओएमआर उत्तर-पुस्तिका दी जाएगी।
A separate OMR answer sheet with carbon coated copy will be provided to mark the answer options.

6. आपको, उत्तर-पुस्तिका में दिए गए अनुदेशों के अनुसार, नीली/काली स्याही के बॉल पाइंट पेन से ओएमआर उत्तर-पुस्तिका में संबंधित ऑवल को अंकित कर सही उत्तर का चयन करना है।
You have to select the right answer by marking the corresponding oval on the OMR answer sheet by blue/black ball point pen.

7. एक प्रश्न के लिए अनेक उत्तर गलत माना जाएगा ।
Multiple answers for a question will be regarded as wrong answer.

8. ऊपर दाएँ कोने में मुद्रित प्रश्न-पुस्तिका श्रेणी कोड , ओएमआर उत्तर पुस्तिका पर निर्दिष्ट स्थान पर लिखना चाहिए।

Question booklet code printed on the top right corner should be written in the OMR answer sheet in the space provided.

9. प्रश्न-पुस्तिका में आपका नाम तथा अनुक्रमांक सही लिखें।

Enter your Name and Roll Number correctly in the question booklet.

10. ओएमआर उत्तर-पुस्तिका में सभी प्रविष्टियां **नीली/काली स्याही के बॉल पाइंट पेन** से ही की जानी चाहिए।

All entries in the OMR answer sheet should be with **blue/black ball point pen** only.

11. परीक्षा हॉल में निरीक्षक की उपस्थिति में ही आपको हॉल-टिकट पर हस्ताक्षर करना चाहिए।

You should sign the hall ticket only in the presence of the Invigilator in the examination hall.

12. **लिखित परीक्षा चलनेवाले हॉल के अंदर कंप्यूटर, कालकुलेटर, मोबाइल फोन तथा अन्य इलेक्ट्रॉनिक जुगतें, पाठ्य-पुस्तकें, नोट आदि लाने की अनुमति नहीं दी जाएगी।**

Computers, calculators, mobile phones and other electronic gadgets, text books, notes etc., will not be allowed inside the written test hall.

13. परीक्षा पूर्ण होने पर, ओएमआर उत्तर-पुस्तिका को ऊपर के छेदन चिह्न से फाड़ें और मूल ओएमआर उत्तर-पुस्तिका निरीक्षक को सौंपे तथा दूसरी प्रति आपके पास रखें।

On completion of the test, tear the OMR answer sheet along the perforation mark at the top and hand over the original OMR answer sheet to the invigilator and retain the duplicate copy with you.

14. प्रश्न-पुस्तिका अभ्यर्थी अपने पास रख सकते हैं।

The question booklet can be retained by the candidates.

15. परीक्षा के प्रथम घंटे के दौरान अभ्यर्थियों को परीक्षा हॉल छोड़ने की अनुमति नहीं है।

Candidates are not permitted to leave the examination hall during the first hour of the examination.

TECHNICAL ASSISTANT (COMPUTER SCIENCE) - POST NO. 1370

1. Which of the following is a Software Development Life Cycle Model

   a. Data Warehouse
   c. Waterfall Model
   b. Data Model
   d. Data Mart

2. Which of the following is <u>NOT</u> a criterion for page replacement from main memory

   a. First In First Out
   c. Last In First Out
   b. Least Recently Used
   d. None of these

3. The ASCII code for character 'A' (Capital letter *A*) is

   a. 65   b. 55   c. 88   d. 64

4. Which of the following modes of I/O operation keeps the processor most busy

   a. Programmed I/O
   c. DMA
   b. Interrupt Initiated I/O
   d. None of these

5. The performance of cache memory is measured in terms of

   a. Seek time   b. Access time   c. Hit ratio   d. Latency

6. Which prefix is used to denote a variable in PHP

   a. $ b. @   c. ~   d. #

7. The BCD equivalent for decimal 15 is

   a. 0000 1111   b. 0001 0101   c. 0011 0011   d. 0000 1101

8. Which of the following is true about CISC architecture
        I. Large code size   II. Reduced instruction set

   a. Both I and II   b. Neither I Nor II   c. only I   d. only

9. A class which cannot be inherited is called

   a. static class
   c. abstract class
   b. template class
   d. final class

10. Which of the following is <u>NOT</u> true about Cascading Style Sheets (CSS)?

    a. CSS can control the layout of multiple web pages
    b. CSS supplements style formatting in HTML page
    c. Style definitions can be saved in an external CSS file
    d. Only one CSS can be used in a HTML file

11. Which is the default port number for HTTP ?

    a. 25   b. 22   c. 80   d. 53

12. Which of the following is WRONG ?

    a. AJAX stands for Asynchronous Javascript and HTML
    b. AJAX is a client side script used to get data from server without refreshing the current page
    c. AJAX is a scripting language
    d. AJAX makes applications faster and more user friendly

13. Which of the following are un-weighted code?

    a. BCD   b. Hexadecimal   c. EBCDIC   d. Gray Code

14. In the V model of software development, Integration Test Plan is prepared during which phase of software development

    a. Coding   b. Design   c. Requirements   d. Software maintenance

15. In a positive edge triggered JK flip-flop , when J=0, K=1 and Q=0, what happens to Q when the clock input goes HIGH and What happens when the clock input goes LOW.

    a. Q becomes 0 when the clock input is HIGH , Q becomes 0 when the clock input is LOW
    b. Q is RESET to 1, when the clock input is LOW , Q is unchanged when the clock becomes HIGH
    c. Q is RESET to 1 when the clock input is HIGH, Q is unchanged when the clock becomes LOW
    d. None of the above

16. From the truth table given below write the Sum of Products (SOP) expression

Input			Output
X	Y	Z	P
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

    a. P =XYZ + XYZ +XYZ

    b. P= (X+Y+Z)(X+Y+Z)(X+Y+Z)

    c. $\overline{X}\,\overline{Y}\,Z + \overline{X}\,Y\,Z + X\,Y\,\overline{Z}$

    d. None of the above

17. The HTTP status code for requested resource not found is

    a. 400   b. 405   c. 404   d. 500

18. Which of the following is an universal gate?

   a. NAND   b. OR   c. AND   d. NOT

19. Which of the following is <u>NOT</u> used for AADHAR based authentication?

   a. Iris   b. OTP   c. Fingerprint   d. Hand written signature of the person

20. The Physical Address Space is conceptually divided into a number of fixed-size blocks, called

   a. Frames   b. Segments   c. Pages   d. None of the above

21. Which of the following statements is/are true about Ripple Counter

   1. It is an asynchronous counter
   2. Constitutes of Logic Gates and Flip-flops
   3. It is affected by propagation delay of Flip-flops
   4. Constitutes only of Flip-flops
   5. It is affected by propagation delay of Flip flops and Logic gates

   a. 1,2,5 only   b. 1,3,4 only   c. All are true   d. 2 and 5 only

22. Convert the hexadecimal number 7C59 to binary number

   a. 0111110001011001   b. 1001110010001001
   c. 1010111100011100   d. 1100100101010101

23. A given number of tasks T1 to Tn , whose duration is known, are queued in a single processor machine . Which of the following will be the best scheduling algorithm?

   a. First Come First Serve   b. Shortest Job First
   c. Round Robin scheduling   d. Priority Scheduling

24. The language used to design web pages for a website

   a. HTML   b. C++   c. FORTRAN   d. ADA

25. Which of the following is an abstract method?

   a. void abstract abc(){}   b. public static final void(){}
   c. public abstract void abc();   d. None of above

26. Which of the following statements is/are <u>**WRONG**</u> about constructor in object oriented programming?
   1. The name of the constructor is same as class name
   2. It can have a return value
   3. Constructor is the first code invoked when an object is created
   4. Constructor name need not be the same as that of class name

   a. only 2   b. only 3   c. 2 and 4   d. 2,3 and 4

27. The number of modules that call a given module is called

   a. Fan-in   b. Fan-out   c. Cardinality   d. None of these

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28. Read the following code snippet and answer

```
class Rectangle {
        private int length;
        private int breadth;
        public int area=0;
        public Rectangle() {
                this.length=0;
                this.breadth=0;
                this.area=0;
        }
        public Rectangle(int l, int b) {
                this.length = l;
                this.breadth =b;
                this.area=l*b;
        }
        public static void main(String a[]) {
                Rectangle A = new Rectangle(20,5);
                System.out.println(A.area);
        }
}
```

a. Compilation error occurs with error message area is unknown variable
b. Prints the output 100 .
c. Prints output 0
d. Runtime error

29. Which of the following is the latest version of Android Operating System ?

    a. Lollipop   b. Oreo   c. Marshmellow   d. KitKat

30. When a memory write operation updates both main memory and cache memory it is called

    a. Write- through   b. Write- back   c. Write- once   d. None of these

31. What will be printed for the following C program?

```
#include <stdio.h>
int main() {
        int a=100, b=30;
        if(a<25)
                { a=a-50;}
        else
                { b=b+50;}
        printf("a=%d,  b=%d ", a, b);
        return 0;        }
```

    a. a=100, b=80   b. a=100, b=30   c. a=50, b=30   d. a=50, b=80

32. Consider the following HTML code

    `<table>    <tr><td>Name</td></tr>    <tr><td>Class</td></tr>    </table>`

    What will it print
    a. A table with ONE row and TWO columns
    b. A table with TWO rows and FOUR columns
    c. A table with TWO rows and ONE column in each row
    d. A table with ONE row and ONE column

33. Which of the following is an open source desktop operating system?

    a. Windows Vista   b. MS-DOS   c. Windows XP   d. Ubuntu

34. The degree of intra-dependability within the elements of a software module is called

    a. Coupling   b. Concurrency   c. Cohesion   d. Modularisation

35. Closing tag is compulsory in all elements of

    a. HTML   b. XML   c. Both of the above   d. None of the above

36. What will be printed for the following C program

```
#include <stdio.h>
int main() {
 char myChar='A';
 switch(myChar) {
    case 'A': printf("Chemistry, ");
    case 'B':
    case 'C': printf("Math, ");
    case 'D':
    case 'E':
    default :printf("Physics ");
 }
            return 0;
}
```

    a. Chemistry,   b. Compiler error
    c. Chemistry, Math,   d. Chemistry, Math, Physics

37. Small fastest data holding unit in CPU

    a. Cache   b. Register   c. buffer   d. all of these

38. Who is known as 'Father of Linux' ?

    a. Linus Torvalds   b. Mark Zuckerberg
    c. Dennis M Ritchie   d. Sundar Pitchai

39. Consider the following statements and select the correct option:

    I) Last In First Out (LIFO) type of computations are efficiently supported by QUEUE
    II) First In First Out type of computations are efficiently supported by STACK

    a. Only I) is correct   b. Only II) is correct
    c. Both I) and II) are correct   d. Both I) and II) are Wrong

40. The expression   a b c + -   is written in which of the following form?

    a. Infix   b. postfix   c. prefix   d. lastfix

41. Which of the following obeys immediate addressing mode in assembly language(R1 and R2 are registers)?

    a. MOV R1,#35H   b. MOV R1,R2   c. ADD R1,[0301]   d. none of these

42. Time complexity of binary search algorithm for N elements is

    a. $O(N^2)$ b. $O(logN)$ c. $O(N^3)$ d. $O(1)$

43. Which of the following is a ransomware ?

    a. Stuxnet   b. WannaCry   c. Rabbit   d. MyDoom

44. What will be printed for the following C program

```
#include <stdio.h>
int main() {

        char myChar[7]="Hanger", *ptr;
        ptr=myChar+4;
        *ptr='a';

    printf("%s",myChar);
  return 0;
  }
```

    a. Hangear   b. Hangr   c. Hangar   d. Hanger

45. Consider the following C function, What will be the output when myFunction (5) is called?

```
int myFunction(int x)
{
  int sum=0;
  for (int i=1; i<=x; i++)
    {
    sum=sum+i;
    }
    printf("%d", sum)
}
```

    a. 14   b. 16   c. 15   d. 21

46. Following sequence of operations is performed on a stack

    PUSH(32), PUSH(4), POP,   PUSH(56), POP,POP

The sequence of values popped out is

    a. 4, 56, 32
    b. 56, 32, 4
    c. 32, 56, 4
    d. 4, 32, 56

47. Which of the following is data structure best suited for random access?

    a. Array   b. Linked List   c. Stack   d. Queue

48. XML stands for

    a. Extended Middle Language   b. Extended Medium Language
    c. Extensible Markup Language   d. Extensible Model Language

49. The maximum number of processes that can be in Ready state for a computer system with 16 CPUs is

    a. 16   b. 256   c. The value is independent of number of CPUs   d. 65536

50. Listed below are the properties of an *interface*. State which of them are true?

      I.   Interface by default is an abstract class
      II.   Interface methods can be final or static
      III.   Interface methods cannot be final or static
      IV.   The methods of an interface are by default public and abstract

     a. only I and IV   b. only II and IV   c. I , II and IV   d. I, III and IV

51. Octal representation of decimal 16 is?

     a. 20   b. 21   c. 19   d. 17

52. Which of the following data structure is the best suited to match parenthesis in evaluating an arithmetic expression?

     a. Linked List   b. List   c. Queue   d. Stack

53. Time complexity of Bubble sort for N elements is

     a. $O(N^2)$ b. $O(NlogN)$ c. $O(N^3)$ d. $O(1)$

54. In Database Management System, consider the following statements and choose the CORRECT answer

     I) The value of an attribute can be NULL
     II) Primary key helps to find out all other attributes

     a. Only I) is correct   b. Both I) and II) are correct
     c. Both I) and II) are wrong   d. Only II) is correct

55. Information from web page stored in server side is called

     a. Cookies   b. Session   c. Servlet   d. Credentials

56. A scenario in priority based scheduling where higher priority task waits for a low priority task to complete , when both of them share the same resources is called

     a. Priority ceiling   b. Priority sharing
     c. Priority Inheritance   d. Priority inversion

57. In Database Management System, consider the following table and the query :

     Table : EMPLOYEE (EmpID , EmpName, EmpCity, EmpDivision):

     Query: select EmpName from EMPLOYEE where EmpCity='Mumbai' and
          EmpDivision='Accounts'

     The above query finds:

   a. List of employee ID who are from Mumbai and Working in Accounts division
   b. List of employee name who are from Mumbai and Working in Accounts division
   c. List of employee name who are not from Mumbai and Working in Accounts division
   d. List of employee name who are from Mumbai or they are Working in Accounts division

58. In database management system, what is the advantage of Normalization?

     a. Helps in Data Hiding   b. Removes Data Redundancy
     c. Encrypts Data   d. Reduces Number of Tables

59. In object oriented programming, private methods of a class

    a. can be accessed only within the class
    b. can be accessed by an object of the class that inherits it
    c. can be overridden by the class that extends it
    d. All of the above

60. Which of the locking provides the highest degree of concurrency in a relational database management system?

    a. Page locking   b. Row locking   c. Table locking   d. Database locking

61. Which of the following is NOT a necessary condition for a deadlock

    a. Hold & wait   b. No pre-emption   c. Starvation   d. Circular Wait

62. Which protocol is used in Email?

    a. FTP   b. SMB   c. TELNET   d. SMTP

63. Which of the following establishes a secure communication between the client and the server?

    a. HTTP and FTP   b. Only HTTPS   c. Only SSH   d. HTTPS and SSH

64. In cryptography, the encrypted text is called

    a. Plain Text   b. Known Text   c. Hidden Text   d. Cipher Text

65. Which of the following are object oriented programming languages

    I. JAVA   II. C   III. C++   IV. BASIC

    a. Only I and III   b. Only II and III
    c. Only III and IV   d. I, III and IV

66. ARP(Address Resolution Protocol) is used for resolving

    a. Network address to broadcast address
    b. IP address to MAC address
    c. Network frame to packet
    d. subnet mask address to a machine IP address.

67. In Computer Network, which of the following represents local host ?

    a. 127.0.0.1   b. 255.255.255.254   c. 10.41.7.102   d. 127.255.255.255

68. What does MIME stand for

    a. Multipart Internet Multi Extension
    b. Multiple Internet Mail Extension
    c. Mono Internet Multiple Extension
    d. Multi-Purpose Internet Mail Extension

69. The ASCII code for character NULL is

    a. 1111111   b. 0000000   c. 1000001   d. 1100100

70. Consider the following C declaration

```
#include <stdio.h>
#include <string.h>
int main() {
        char data[10];
        char *myString="HAT";
        int length=strlen(myString);
        printf("%d", length);
        return 0;
}
```

The output of the program is

     a. 2   b.4   c. 3   d. 5

71. Which of the following is NOT a RDBMS

    a. MySQL   b. Oracle   c. C++   d. MS SQL

72. In authentication, what is OTP?

    a. Origin Time Password   b. One Time Profile
    c. Once Triggered Password   d. One Time Password

73. Testing carried out by users at their own locations is called

    a. Beta Testing b. Alpha Testing   c. Regression Testing   d. Monkey Testing

74. Which one of the following is NOT a part of the ACID properties of database transaction?

    a. Applicability   b. Consistency   c. Isolation   d. Durability

75. Derivative of $cosx$ with respect to $sinx$ is

    (a)cotx   (b)secx   (c)-secx   (d)-tanx

76. Number of solutions for the system of linear equations $2x - y = 8, 4x - 2y = 15$ is

    (a) infinite   (b)unique   (c)two   (d) no solution

77. $x^2 + 2y^2 = 8$ represents

    (a) parabola   (b) ellipse   (c) hyperbola   (d)circle

78. 10th and 13th terms of an AP are 101 and 110. Common difference of this AP is

    (a) -1   (b)3   (c)9   (d)-9

79. The product of three consecutive terms of a geometric progress is 64. Its middle term is

    (a) 8   (b)4   (c)2   (d)6

80. Rank of the matrix $\begin{pmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 1 & 2 \end{pmatrix}$ is

    (a) 3   (b)2   (c) 1   (d) 9

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