



COMMON P. G. ENTRANCE TEST – 2020

Test Booklet No. :

**DEPT. OF HIGHER EDUCATION, GOVT. OF ODISHA
TEST BOOKLET**

Subject Code **17**

Subject **COMPUTER SCIENCE**

Time Allowed : **90 Minutes**

Full Marks : **70**

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST 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. You have to enter your **Hall Ticket No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
3. **YOU ARE REQUIRED TO FILL UP & DARKEN HALL TICKET NO. & TEST BOOKLET NO. IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET SERIAL NO. & ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
4. This Test Booklet contains 70 items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose **ONLY ONE** response (answer) for each item (question).
5. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by using **BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
6. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There is no negative marking.**
7. **After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the Answer Sheet issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the Test Booklet, after completion of the examination, for your reference.**
8. Sheets for rough work are appended in the Test Booklet at the end.

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

1. The Octal equivalent of $(849.26)_{10}$ is :
- (A) $(1521.2050)_8$
 - (B) $(1024.6711)_8$
 - (C) $(1504.5060)_8$
 - (D) None of the above
2. A combinational logic circuit which is used to send data coming from a single source to two or more separate destinations is called :
- (A) Decoder
 - (B) Encoder
 - (C) Multiplexer
 - (D) Demultiplexer
3. What is a short-term scheduler ?
- (A) It selects which process has to be brought into the ready queue
 - (B) It selects which process has to be executed next and allocates CPU
 - (C) It selects which process to remove from memory by swapping
 - (D) None of the above
4. Which of the following sorting algorithm has the worst case time complexity of $n \log(n)$?
- (A) Heap sort
 - (B) Quick sort
 - (C) Insertion sort
 - (D) Selection sort
5. What will be the output of the following 'C' program ?
- ```
main()
{
 int x;
 x = 3 + 4 - 7 * 8 / 5 % 10;
 printf("%d", x);
}
```
- (A) 0
  - (B) 5
  - (C) 6
  - (D) 7

6. A parity bit is an extra bit added with binary data such that it makes :
- (A) Total number of 1's in data either odd or even
  - (B) Total number of 0's in data either odd or even
  - (C) Total number of 1's and 0's in data either odd or even
  - (D) None of the above
7. In C++, the range of signed int datatype is :
- (A) 0 to 65535
  - (B) - 32768 to 32767
  - (C) - 128 to 127
  - (D) 0 to 255
8. Which of the following page replacement algorithms suffers from Belady's Anomaly ?
- (A) Optimal replacement
  - (B) LRU
  - (C) FIFO
  - (D) Both optimal replacement and FIFO
9. What will be the output of the following postfix expression ?  
 $2\ 5\ 6\ +\ * \ 2\ ^\ 4\ /$
- (A) 256
  - (B) 121
  - (C) 104
  - (D) 148
10. In E-R Diagram, weak entity is represented by \_\_\_\_\_.
- (A) Rectangle
  - (B) Square
  - (C) Double Rectangle
  - (D) Circle
11. What will be the output of the following program ?
- ```
main()
{
    int x = 3, y = 4, z = 4;
    printf("ans = %d", (z >= y >= x ? 100 : 200));
}
```
- (A) 300
 - (B) 200
 - (C) 100
 - (D) 400

12. The language used in application programs to request data from the DBMS is referred to as _____.
- (A) DML
 - (B) DDL
 - (C) DCL
 - (D) None of the above
13. If $\pi = 3.14$ instead of $\frac{22}{7}$, then relative error will be :
- (A) 0.00090
 - (B) 0.00800
 - (C) 0.00900
 - (D) None of the above
14. If the sum of first 'n' natural numbers is $\frac{1}{5}$ times the sum of their squares, then the value of n is :
- (A) 5
 - (B) 6
 - (C) 7
 - (D) 9
15. Which of the following is not the characteristic of constructor ?
- (A) They should be declared in the public section
 - (B) They do not have return type
 - (C) They can not be inherited
 - (D) They can be virtual
16. If A and B are two matrices such that $AB = B$ and $BA = A$, then $A^2 + B^2 =$
- (A) 2AB
 - (B) 2BA
 - (C) A + B
 - (D) AB
17. The ability to manipulate the representational structures in such a way as to derive new structures corresponding to new knowledge inferred from old is called :
- (A) Inferential efficiency
 - (B) Acquisitional efficiency
 - (C) Inferential adequacy
 - (D) None of the above

18. Refreshing on raster scan displays is carried out at the rate of _____ frames per second.
- (A) 30 to 40
 - (B) 40 to 50
 - (C) 60 to 80
 - (D) 90 to 100
19. The hexadecimal equivalent of $(011011110001)_2$ is :
- (A) 1A6
 - (B) 6F1
 - (C) 9E2
 - (D) 5B7
20. Which class provides many methods for graphics programming ?
- (A) Java.awt
 - (B) Java.Graphics
 - (C) Java.awt.Graphics
 - (D) None of the above
21. What will be the output of the following program ?
- ```
main()
{
int x, y, z;
x = y = z = 1;
z = ++x && ++y || ++z;
printf("%d %d %d", x, y, z);
}
```
- (A) 2, 2, 1
  - (B) 1, 1, 1
  - (C) 2, 2, 2
  - (D) 2, 1, 2
22. \_\_\_\_\_ are Java's way of grouping a variety of classes and/or interfaces together.
- (A) API
  - (B) Packages
  - (C) Applets
  - (D) None of the above

23. If the disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98, 37, 14, 124, 65, 67.
- (A) 239
  - (B) 310
  - (C) 321
  - (D) 325
24. Which of these classes is used to read characters and strings in Java from console ?
- (A) BufferedReader
  - (B) StringReader
  - (C) BufferedStreamReader
  - (D) InputStreamReader
25. The \_\_\_\_\_ translates internet domain and host names to IP address.
- (A) Domain name system
  - (B) Routing information protocol
  - (C) Network time protocol
  - (D) Internet relay chat
26. In a moderately symmetrical distribution, the mode and mean are 32.1 and 35.4 respectively. Calculate the median :
- (A) 33.5
  - (B) 34.3
  - (C) 34.5
  - (D) None of the above
27. \_\_\_\_\_ is a technique by which multiple instructions overlap in execution.
- (A) Encoder
  - (B) Pipelining
  - (C) Accumulator
  - (D) None of the above
28. In a directed graph the outdegree for a sink node is :
- (A) 1
  - (B) 2
  - (C) 3
  - (D) 0



29. The default layout manager of Frame is \_\_\_\_\_.
- (A) FlowLayout
  - (B) BorderLayout
  - (C) GridLayout
  - (D) CardLayout
30. \_\_\_\_\_ is the ratio of horizontal points to vertical points necessary to produce equal length lines in both direction.
- (A) Dot Pitch
  - (B) Resolution
  - (C) Aspect Ratio
  - (D) Height-Width Ratio
31. To deliver a message to the correct application program running on a host, the \_\_\_\_\_ address must be consulted.
- (A) Port
  - (B) Physical
  - (C) IP
  - (D) None
32. Switching the CPU to another process requires performing a state save of the current process and a state restore of a different process, which is known as \_\_\_\_\_.
- (A) Swapping
  - (B) Context switch
  - (C) Demand paging
  - (D) Page fault
33. \_\_\_\_\_ is responsible for accessing the frame buffer to refresh the screen.
- (A) Graphics package
  - (B) Video controller
  - (C) CPU
  - (D) Monitor
34. Optimal page – replacement algorithm is :
- (A) Replace the page that has not been used for a long time
  - (B) Replace the page that has been used for a long time
  - (C) Replace the page that will not be used for a long time
  - (D) None of the above

35. Switch is a Device of \_\_\_\_\_ Layer of OSI Model.
- (A) Network Layer
  - (B) Data Link Layer
  - (C) Application Layer
  - (D) Session Layer
36. Which is an example for non-emissive displays ?
- (A) LED
  - (B) LCD
  - (C) Gas Discharge tube
  - (D) Plasma Panel
37. Which of the following is a Data Definition Language (DDL) command ?
- (A) Delete
  - (B) Insert
  - (C) Drop
  - (D) Merge
38. The mapping of a part of a world coordinate scene to a device coordinate is referred to as \_\_\_\_\_ transformation.
- (A) Viewing
  - (B) Finite
  - (C) Composite
  - (D) Infinite
39. The Probability that a number selected at random between 100 and 999 (both inclusive) will not contain the digit 7 is :
- (A)  $16/25$
  - (B)  $27/75$
  - (C)  $18/25$
  - (D)  $(9/10)^3$
40. A programme which converts Source programme into Object programme for some other machine is called :
- (A) Interpreter
  - (B) Compiler
  - (C) Cross-compiler
  - (D) Linker

41. Hub is a \_\_\_\_\_ device and Switch is \_\_\_\_\_ device.
- (A) Unicast, Multicast  
 (B) Multicast, Unicast  
 (C) Broadcast, Unicast  
 (D) None of the above
42. Which tag allows you to add a row in a table ?
- (A) <td> and </td>  
 (B) <cr> and </cr>  
 (C) <th> and </th>  
 (D) <tr> and </tr>
43. IPv6 header has \_\_\_\_\_ bit addresses.
- (A) 32 (B) 64  
 (C) 128 (D) 256
44. \_\_\_\_\_ is used to import an external style sheet.
- (A) @insert (B) @import  
 (C) #import (D) #insert
45. Estimation of software development effort for organic software in COCOMO is :
- (A)  $E = 2.4(KLOC)^{1.05}PM$   
 (B)  $E = 3.4(KLOC)^{1.06}PM$   
 (C)  $E = 2.0(KLOC)^{1.05}PM$   
 (D)  $E = 2.4(KLOC)^{1.07}PM$

46. What will be the output of the following 'C' program ?

```
main()
{
 int x = 5, y;
 y = ++x + x++;
 printf("x = %d y = %d", x, y);
}
```

- (A) x = 5 and y = 10 (B) x = 6 and y = 11  
 (C) x = 6 and y = 12 (D) x = 7 and y = 12

47. Which one is the most important feature of spiral model ?
- (A) Quality management
  - (B) Risk management
  - (C) Performance management
  - (D) Efficiency management
48. Which of the following is not a network layer protocol ?
- (A) Internet Protocol
  - (B) TCP
  - (C) IGMP
  - (D) RARP
49. Marquee is a tag in HTML to :
- (A) Mark the list of items to maintain in queue
  - (B) Mark the text so that it is hidden in browser
  - (C) Display text with scrolling effect
  - (D) None of above
50. If requirements are frequently changing, which model is to be selected ?
- (A) Waterfall model
  - (B) Prototyping model
  - (C) RAD model
  - (D) Iterative enhancement model
51. Alpha and Beta testing techniques are related to :
- (A) System testing
  - (B) Unit testing
  - (C) Acceptance testing
  - (D) Integration testing
52. \_\_\_\_\_ is a search technique in which feedback from the test procedure is used to help the generator decide which direction to move in the search space.
- (A) Depth first search
  - (B) Breadth first search
  - (C) Hill Climbing
  - (D) Problem reduction

53. \_\_\_\_\_ programming algorithm remembers past results and uses them to find new results.
- (A) Branch and Bound
  - (B) Dynamic
  - (C) Divide and Conquer
  - (D) Backtracking
54. Which function in C++ can be used to access the private data members of a class?
- (A) Member function
  - (B) Friend function
  - (C) Inline function
  - (D) All of the above
55. \_\_\_\_\_ notation is the method used for expressing the lower bound of an algorithm's running time which is the smallest amount of time it could possibly take for the algorithm to complete.
- (A) Big-Oh( $O$ )
  - (B) Little-Oh( $o$ )
  - (C) Little Omega( $\omega$ )
  - (D) Big Omega( $\Omega$ )
56. The time complexity of the following recurrence relation  
 $T(n) = T(n/3) + T(2n/3) + O(n)$  is :
- (A)  $O(\lg n)$
  - (B)  $O(n)$
  - (C)  $O(n \lg n)$
  - (D)  $O(n^2)$
57. The term 'baud' is a measure of the :
- (A) Speed at which data travels over the communication line
  - (B) Memory capacity
  - (C) Instruction execution time
  - (D) All of the above

58. The data structure used for storing return addresses in subroutine calls is :
- (A) Array
  - (B) Stack
  - (C) Linked list
  - (D) Heap
59. The common name for the crime of stealing passwords is :
- (A) Jacking
  - (B) Identity theft
  - (C) Spoofing
  - (D) Hacking
60. The main difference between JK and RS flip-flop is :
- (A) JK flip-flop does not need a clock pulse
  - (B) There is feedback in JK flip-flop
  - (C) JK flip-flop accepts both inputs as 1
  - (D) JK flip-flop is acronym of junction cathode multivibrator
61. The variance and standard deviation for the five measurements 5, 7, 1, 2, 4 is :
- (A) 7.5 and 3.2
  - (B) 5.7 and 2.39
  - (C) 9.3 and 3.1
  - (D) 7.5 and 2.4
62. In OSI model, the main function of network layer is to :
- (A) Sends data to physical layer
  - (B) Controls the operation of the subnet
  - (C) Allow routers
  - (D) None of the above
63. In the \_\_\_\_\_ traversal, the root node is visited after the traversal of its left subtree and before the traversal of its right subtree.
- (A) Pre-order
  - (B) In-order
  - (C) Post-order
  - (D) None of the above

64. A problem in mathematics is given to three students A, B and C. If the probability of A solving the problem is  $1/2$  and B not solving it is  $1/4$ . The whole probability of the problem being solved is  $63/64$  then what is the probability of solving it ?
- (A)  $1/8$  (B)  $1/64$   
 (C)  $7/8$  (D)  $1/2$
65. The number of tuples in a relation is termed as \_\_\_\_\_.
- (A) Cardinality (B) Entity  
 (C) Column (D) None of the above
66. A protected member, inherited in the public mode derivation, becomes \_\_\_\_\_ in the derived class.
- (A) Public (B) Protected  
 (C) Private (D) None of the above
67.  $\sqrt{5 + 12i} =$  \_\_\_\_\_
- (A)  $3 + 2i$  (B)  $5 - 12i$   
 (C)  $3 - 2i$  (D)  $5 + 2i$
68. Run Time Polymorphism is achieved by \_\_\_\_\_.
- (A) Friend function  
 (B) Operator Overloading  
 (C) Function Overloading  
 (D) Virtual function
69. If 'n' is number of vertices, then the number of leaves in a binary tree T is :
- (A)  $(n + 1)/2$  (B)  $(n)/2$   
 (C)  $n(n + 1)/2$  (D) None of the above
70. The DE compiler translates :
- (A) Machine language to Assembly language  
 (B) Machine language to High level language  
 (C) High level language to Machine level language  
 (D) High level language to Assembly language



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**SPACE FOR ROUGH WORK**

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