

Set no.

1. What will be the value of the variable x after executing:

```
int a=3,b=2,c=1,d=-1,x;
x=a>6*b/(c * a - d++);
```

- (a) 3
- (b) 0
- (c) -1

2. What will be printed on the standard output:

```
int a,b=10;
for(a=1;;++a){
    printf("%d",a++);
    if(a>b)break;
}
```

- (a) 123456789
- (b) 246810
- (c) 1357911

3. What will be printed on the standard output:

```
char *p,tekst[80]="abcdefghijklmnop";
int i;
p=&tekst[4];
for(i=3;i<=7;i++)printf("%c",*(p++));
```

- (a) efghi
- (b) 623
- (c) abcde

4. How many '!' characters will appear on the standard output:

```
int i,j;
for(i=1;i++<5;)
    for(j=1;j<i;j++) printf("!");
```

- (a) 10
- (b) 15
- (c) 0

5. What will be the value of the variable x:

```
int a=9,b,x=100;
double c=6;
x=b=a/c;
```

- (a) value cannot be determined
- (b) 1
- (c) 1.5

6. We have a BST consisting of 50 different numbers:
- (a) The height of the BST may be greater than 100.
 - (b) The number of nodes visited while looking for number 123 may be less than 3.
 - (c) The number of nodes visited while looking for number 123 may be greater than 10.
7. Sorting of n elements using heapsort can be done in time:
- (a) $O(n)$
 - (b) $O(n \log n)$
 - (c) $O(n^2)$
8. Expressions $1\ 2\ +\ 3\ 4\ 5\ * + +$ written in RPN:
- (a) Is correct
 - (b) Is equal to 24
 - (c) Is the same as $1+2 +3 * (4+5)$ in infix notation
9. The value of $\log_2 10^9$ is:
- (a) less than 28
 - (b) equal to $9\log_2 10$
 - (c) greater than 35
10. We need to find the maximum value in an array of length n :
- (a) If the array is unordered, the best-case time complexity is $O(1)$.
 - (b) If the array is ordered, the best-case time complexity is $O(1)$.
 - (c) If the array is unordered, the worst-case time complexity is $O(\log n)$.
11. Which form in the database normalization assumes that each table stores elementary (atomic) values?
- (a) 1NF
 - (b) 2NF
 - (c) 3NF
12. Relation between a student and a course is:
- (a) one-to-one
 - (b) one-to-many
 - (c) many-to-many
13. Reference integrity in relational databases is obtained through:
- (a) indices
 - (b) primary keys
 - (c) foreign keys
14. Modification of record content in a relational database is possible using the SQL command:
- (a) ALTER
 - (b) CREATE
 - (c) UPDATE
15. The following clause is used in the SQL SELECT statement:

- (a) GROUP BY
 - (b) ORDER BY
 - (c) HAVING
16. One of the main concepts of object-oriented programming is:
- (a) encapsulation
 - (b) inheritance
 - (c) polymorphism
17. Which method in C ++ is automatically created by the compiler when omitted by the programmer?
- (a) comparison operator
 - (b) assignment operator
 - (c) copy-constructor
18. Specifier **protected** allows to access:
- (a) from outside a class
 - (b) within a class
 - (c) from a derived class
19. An interface in the object-oriented programming:
- (a) describes the presentation form of results
 - (b) contains common data
 - (c) specifies a set of common methods
20. The dynamic polymorphism allows to:
- (a) late binding of methods
 - (b) override a method in the derived class
 - (c) inherit from multiple base classes
21. Although CSMA/CD is still a feature of Ethernet, why is it no longer necessary?
- (a) the virtually unlimited availability of IPv6 addresses
 - (b) the use of full-duplex capable Layer 2 switches
 - (c) the use of Gigabit Ethernet speeds
22. What are two services performed by the data link layer of the OSI model?
- (a) It accepts Layer 3 packets and encapsulates them into frames.
 - (b) It determines the path to forward packets.
 - (c) It provides media access control and performs error detection.
23. Which two characteristics describe Ethernet technology?
- (a) It is supported by IEEE 802.3 standards.
 - (b) It uses a ring topology.
 - (c) It uses the CSMA/CD access control method.
24. Why does a Layer 3 device perform the ANDing process on a destination IP address and subnet mask?

- (a) to identify the host address of the destination host
 - (b) to identify faulty frames
 - (c) to identify the network address of the destination network
25. What does the IP address 172.17.4.159/28 represent?
- (a) multicast address
 - (b) broadcast address
 - (c) host address
26. What is the TCP mechanism used in congestion avoidance?
- (a) three-way handshake
 - (b) sliding window
 - (c) socket pair
27. How many active processes are there in system simultaneously?
- (a) one
 - (b) not more than processors
 - (c) as many as processors
28. File allocation table is used also as
- (a) bitmap of disk using
 - (b) page translation table
 - (c) catalog of file names
29. Multitasking is multiprogramming with
- (a) time sharing for running programs
 - (b) programs (separated memory) and tasks (shared memory)
 - (c) programs as sets of threads
30. Process can change its state from active to ready because of
- (a) the end of work
 - (b) the request of input/output operation
 - (c) time preemption