科目名稱	計算機概論	類組代碼	B30/D33
		科目碼	B3091

※本項考試依簡章規定所有考科均「不可」使用計算機。 本科試題共計 5 頁

[Session I] Multiple Choice (100 points)

Choose ONE answer only for each question (2.5 points for each question)

1. The binary representation of 39-10 is:
   A. 11011
   B. 11101
   C. 11001
   D. 11110
2. The binary representation of 39+8 is:
   A. 101111
   B. 110001
   C. 101101
   D. 110011
3. The floating-point notation of 41.625 is:
   A. 110001.011
   B. 101001.011
   C. 101001.101
   D. 110001.101
4. Which one of the following has the highest access speed?
   A. main memory
   B. hard disk
   C. cache
   D. register
5. Which of the following is a CISC instruction set architecture?
   A. MIPS
   B. x86
   C. ARM
   D. none of the above
6. The mechanism of executing several instructions simultaneously is called ____.
   A. multiplexing
   B. multiprocessing
   C. pipelining
   D. debugging
7. The result of that 25 bitwise and 19 equals to:
   A. 17
   B. 19
   C. 21
   D. 23
8. The result of that 25 bitwise or 19 equals to:
   A. 25
   B. 27
   C. 29
   D. 31
9. The following processes arrive for execution at the times as indicated. Each process will run the listed amount of time. Suppose the first-in-first-out (FIFO) scheduling algorithm is used, what is the average waiting time for these processes?

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Process	Arrival Time	Burst Time
P0	0	3
P1	1	5
P2	2	7

A. 2.00
B. 2.33
C. 2.67
D. 3.00

10. Following the question above, what is the average turnaround time for these processes?
A. 6.67
B. 7.00
C. 7.33
D. 7.67

11. Which of the following is not the requirement of critical section?
A. mutual exclusion
B. progress
C. bounded waiting
D. no preemption

12. The operating system Raspbian is based on ____.
A. Windows
B. Linux
C. macOS
D. Android

13. 5GC is a kind of:
A. PAN
B. Core Network
C. MAN
D. Radio Access Network

14. An IPv6 address has ____ bits.
A. 32
B. 64
C. 128
D. 256

15. The unreliable transport layer protocol is called:
A. ARP
B. DHCP
C. TCP
D. UDP

16. What is the transport layer protocol of the e-mail system?
A. TCP
B. UDP
C. HTTP
D. SMTP

17. Which of the following is polynomially bounded?
A. $n!$
B. n^n
C. $100^{\log n}$
D. none of the above

背面有題，請繼續作答。

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18. The time complexity of linear search is:
   A. O(logn)
   B. O(n)
   C. O(nloglogn)
   D. O(nlogn)
19. Which one of the following has the highest complexity?
   A. 4^{logn}
   B. 2^{logn}
   C. nlogn
   D. n
20. Which one of the following applies bottom-up methodology?
   A. recursion
   B. function
   C. binary search
   D. loop
21. C# is a kind of ____.
   A. machine language
   B. formal language
   C. assembly language
   D. OOP language
22. What is the value of arr[5] after the following code?

```
int arr[10];
for(int i=0; i<10; ++i)
   arr[i]=0;
for(int i=0; i<10; ++i){
   if (i==5)
      break;
   arr[i]=i*i;
}
```

   A. 0
   B. 5
   C. 25
   D. 36
23. Following the question above, what is the value of arr[6] after those code?
   A. 0
   B. 6
   C. 36
   D. 49
24. ____ is a first-in-first-out (FIFO) data structure.
   A. array
   B. linked list
   C. stack
   D. queue
25. Which one of the following cannot be modified after its declaration?
   A. function
   B. global variable
   C. constant variable
   D. static variable

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26. Which one of the following is not contained in the translation process?
A. lexical analysis
B. parsing
C. debugging
D. code generation

27. Which one of the following is not the member of the class?
A. instance variable
B. setter and getter methods
C. constructor
D. package

28. Which one of the following C keyword can let the object access a reference to itself?
A. static
B. this
C. private
D. public

29. Given a binary search tree, the preorder and inorder traversal of this tree are 5,4,2,1,3,6,8, and 1,2,3,4,5,6,8, respectively. Which one of the following is the root of this tree?
A. 1
B. 4
C. 5
D. 6

30. Following the question above. What is the postorder traversal of this tree?
A. 1,3,4,2,8,6,5
B. 1,3,2,4,8,6,5
C. 1,3,4,2,8,5,6
D. 1,3,2,4,8,5,6

31. Given a binary tree with 18 nodes, 7 nodes of them whose degree is 1. How many nodes with degree 2 are in this tree?
A. 5
B. 6
C. 7
D. 8

32. A collection of data that is multidimensional in the sense that internal links between its entries make the information accessible from a variety of perspectives is called ____.
A. array
B. database
C. flat file
D. binary search tree

33. The actual manipulation of the database is accomplished by ____.
A. flat file
B. application software
C. DBMS
D. relation

34. Dividing a relation into smaller relations but causing no loss of information is called ____.
A. lossy decomposition
B. lossless decomposition
C. pure decomposition
D. none of the above

背面有題，請繼續作答。

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35. Which one of the following is an animation software?
A. Maya
B. TensorFlow
C. Keras
D. none of the above

36. The ____ model is very suitable for training sequential data.
A. DQN
B. CNN
C. GAN
D. RNN

37. The ____ model is not for reinforcement learning.
A. SAC
B. TD3
C. PPO
D. SVM

38. Which one of the following is a branch of machine learning?
A. reinforcement learning
B. particle swarm optimization
C. genetic algorithm
D. simulated annealing

39. Which one of the following is an NP-complete problem?
A. 2-CNF-SAT problem
B. 3-CNF-SAT problem
C. spanning tree problem
D. breadth-first-search problem

40. Which one of the following is not an NP-complete problem?
A. traveling-salesman problem
B. clique problem
C. 3-CNF-SAT problem
D. depth-first-search problem