

University of Baghdad
 College of Science
 Computer Science Dept
 M.Sc. Exam. Test
 Date: / / 2012
 Time: 3 hrs.



Notes:

- Answer All Questions.
- Questions are mainly divided into two groups: G1 --- > MCQ (60%). G2 --- > Short Answers (40%)
- Answer in English.
- It is not allowed to consult any other information during the exam except for your own knowledge and what during the exam the assistants will explain.

Q. Number	Mark (Numbering)	Mark (Written)	Signature
Q1			
Q2			
Q3			
Q4			
Q5			
Q6			
Total			

(GROUP 1: MCQ)

Q1. Answer with either True or False (20 Marks)

1. Linked lists are indexed structures.
2. If the language, L has a context free grammar (CFG), then L is called Regular Set.
3. The maximum number can be represented in base r numbering system and n digits is r^{n-1} .
4. Scrollbar value can be changed using the click and scroll events.
5. Grammar whose parsing table has no multiply defined entries is said to be LL (1).
6. A recursive descent parsing is a top down method.
7. Stealth virus uses compression so that the infected program is exactly the same length as an uninfected version.
8. With indirect communication, the messages are sent to and received from ports.
9. Unify the pairs of predicates $p(x, y, y)$ and $p(f(c), c, v)$ give the result $p(f(c), y, v)$.
10. Derived class pointer cannot point to base class.
11. A critical section is a program segment where shared resources are accessed.
12. Stretch property resizes the image control to display its entire contents.
13. The row wise decomposition of access matrix gives access control list.
14. Hypertext refers to any type of application or presentation that involves more than one type of media, such as text, graphics, video, animation, and sound.
15. Everything is attracted by something is equivalent to $\exists x \forall y A(x, y)$.
16. Adaptive maintenance aims to extend the SW beyond its original functional requirements.
17. Embedded software is used to control products and systems for the consumer and industrial markets, usually it resides in read-only memory.
18. The transformation slants the object along the X direction or the Y direction (as required) is called shearing.
19. A compiler which applies code improving transformation is called b) eliminated compiler.
20. Basic block can be defined as a program fragment that has only one entry point.

(GROUP 1: MCQ)

Q2. Mark with circle the best choice (40 Mark)

1. An on-line commercial site such as Amazon.com is an example of a (n).
 - A. Single-user database application.
 - B. Multiuser database application.
 - C. E-commerce database application.
 - D. Data mining database application

2. Helping people keep track of things is the purpose of a (n)
 - A. Database.
 - B. Table
 - C. Instance
 - D. Relationship

3. Which among the following is not a firewall
 - A. Packet filters.
 - B. Application level gateways.
 - C. Circuit level gateways.
 - D. Session gateway.

4. A DBMS that combines a DBMS and an application generator is
 - A. Microsoft's SQL Server.
 - B. Microsoft's Access.
 - C. IBM's DB2.
 - D. Oracle Corporation's Oracle

5. Microprocessor 8085 can address location up to
 - A. 32K
 - B. 128K
 - C. 64K
 - D. 1M

6. Which of the following contains a complete record of all activity that affected the contents of a database during a certain period of time?
 - A. Report writer
 - B. Query language
 - C. Data manipulation language
 - D. Transaction log.

7. A variable P is called pointer if
 - A. P contains the address of an element in DATA.
 - B. P points to the address of first element in DATA.
 - C. P can store only memory addresses.
 - D. P contains the DATA and the address of DATA.

8. The idea of an automation with a stack as auxiliary storage
 - A. Finite automata.
 - B. Push down automata.
 - C. Deterministic automata
 - D. None of above

9. The graphical representation of the transition of finite automata is
 - A. Finite diagram.
 - B. State diagram.
 - C. Node diagram.
 - D. Relation diagram.

10. The degree of any vertex of graph is
 - A. The number of edges incident with vertex.
 - B. Number of vertex in a graph.
 - C. Number of vertices adjacent to that vertex.
 - D. Number of edges in a graph.

11. Full adder can be designed using two half adder and external.
 - A. AND gate.
 - B. OR gate.
 - C. NOT gate.
 - D. NOR gate.

12. Object code
 - A. Is ready to execute.
 - B. Is the output of compilers, but not assemblers.
 - C. Must be "loaded" before execution.
 - D. Must be rewritten before execution

13. In c language, the use of the break statement in a switch statement is
 - A. Optional.
 - B. Compulsory.
 - C. Not allowed. It gives an error message.
 - D. To check an error.

14. Special software to create a job queue is called a
 - A. Drive.
 - B. Spooler.
 - C. Interpreter.
 - D. Linkage editor.

15. All the time a computer is switched on, its operating system software has to stay in
 - A. main storage
 - B. primary storage
 - C. floppy disk
 - D. disk drive

16. Which of the following is a component of an expert system?
- A. Inference engine.
 - B. Knowledge base.
 - C. User interface.
 - D. All of the above.
17. When data is transmitted from device A to device B, the header from A's layer is read by B's.
- A. Session layer.
 - B. Physical layer.
 - C. Data link layer.
 - D. None of the above.
18. The version of Ethernet that uses thin coaxial cable is
- A. 10base-2.
 - B. 10base-5.
 - C. 10base-T.
 - D. 10base-F.
19. A network that interconnects individual LANs and has a higher capacity than LANs being connected called
- A. Backbone.
 - B. MAN.
 - C. WAN
 - D. None of the above
20. The attack in which intruders create packets with false IP addresses and exploit applications that use authentication based on IP address is called
- A. Packet sniffing.
 - B. IP Spoofing.
 - C. Eaves dropping.
 - D. Modification.
21. Which among the following mechanisms prevents either sender or receiver from denying a transmitted message
- A. Confidentiality
 - B. Non-Repudiation.
 - C. Authentication
 - D. Integrity
22. In java, which will legally declare, construct, and initialize an array
- A. `int [] myList = {"1", "2", "3"};`
 - B. `int [] myList = (5, 8, 2);`
 - C. `int myList [] [] = {4,9,7,0};`
 - D. `int myList [] = {4, 3, 7};`

- 23.** In which of the following situations might a blind search be acceptable?
- A.** Real-life situation.
 - B.** Complex game.
 - C.** Small search space.
 - D.** All of the above.
- 24.** Which of the following is not a type of constructor?
- A.** Copy constructor.
 - B.** Friend constructor.
 - C.** Default constructor.
 - D.** Parameterized constructor.
- 25.** Which of the following concepts of OOP means exposing only necessary information to client?
- A.** Encapsulation.
 - B.** Abstraction.
 - C.** Data hiding.
 - D.** Data binding .
- 26.** Images included in many software titles are called
- A.** Clipart.
 - B.** Popup.
 - C.** jpg files.
 - D.** Tiff files.
- 27.** One of the disadvantages of multimedia is
- A.** Cost.
 - B.** Adaptability
 - C.** Usability
 - D.** Relativity
- 28.** The characteristics of the computer system capable of thinking, reasoning and learning is known is
- A.** Machine intelligence.
 - B.** Human intelligence.
 - C.** Artificial intelligence.
 - D.** Virtual intelligence.
- 29.** All routines are kept on disk in a relocatable load format. The main program is loaded into memory and executed. This type of loading is called
- A.** Static loading.
 - B.** Dynamic loading.
 - C.** Dynamic linking.
 - D.** None of the above.

- 30.** Latency time in cache memory arrange from.
- A. 30 – 50 ns.
 - B. 10 – 30 ms.
 - C. 15 – 20 ns.
 - D. 30 – 1000 ms.
- 31.** Routing message through three nodes from source node to destination node from 000 to 011 require at least.
- A. One link.
 - B. Two link.
 - C. Three link.
 - D. Four link.
- 32.** Computer software comprises.
- A. Programs and computer.
 - B. Programs and data.
 - C. Programs, document and data.
 - D. Programs and Instructions.
- 33.** A database program replaces what piece of office equipment?
- A. Typewriter.
 - B. Photo copier.
 - C. FAX machine.
 - D. Filing cabinet.
- 34.** The domain D of the relation R is defined as the
- A. Set of all elements of ordered pair which belongs to R.
 - B. Set of all last elements of ordered pair which belongs to R.
 - C. Set of all first elements of ordered pair which belongs to R.
 - D. None of these.
- 35.** Searching a database of Baghdad counties by using the statement, “all counties with a population of greater than 100 thousand” will include
- A. Counties with exactly 100 thousand.
 - B. Counties with 100 thousand or more.
 - C. Counties with more than 100 thousand.
 - D. Counties with less than 100 thousand.
- 36.** Every Visual Basic application contains at least one
- A. Form, label, and command button.
 - B. Command button.
 - C. Form.
 - D. Frame.

37. The types of parallel projection are
- A. Orthographic projection and quadric projection.
 - B. Orthographic projection and oblique projection.
 - C. Oblique projection and quadric projection.
 - D. None of these.
38. If two sets A and B have no common elements i.e (A intersection B) has no element then such sets are known as
- A. Intersection.
 - B. Union.
 - C. Disjoint.
 - D. Complement.
39. Who is the creator of the PASCAL language?
- A. Niklaus Writh.
 - B. Dijkstra.
 - C. Donald Knuth.
 - D. Basic Pascal.
40. The part of machine level instruction, which tells the central processor what has to be done, is
- A. Operation code.
 - B. Address.
 - C. Locator.
 - D. Flip-Flop.

(GROUP 2: Short Answers)

Q3. Within computer science discipline, write down **(in the blank entries)** full names of the following short forms (see the answered one) **(10 Marks)**

0	SW	Software
1	WMFC	
2	CMM	
3	DCP	
4	RAD	
5	TSL	
6	UML	
7	PLA	
8	SSPI	
9	DRE	
10	MTTC	

(GROUP 2: Short Answers)

Q4. Matching (10 Marks)

For each of the subjects listed in A, select the most suitable field in B that you may learn the subject in.

A	Answer	B
Phishing		1. Artificial Intelligence
Queue		2. Operating System
Predictive Parsing		3. Compiler
DMA		4. Software Engineering
Waterfall		5. Network Security
Inheritance		6. Database
SQL		7. Data Structure
A* Algorithm		8. Computation Theory
Priority Scheduling		9. Object Oriented Programming
Moore Machine		10. Computer Architecture

(GROUP 2: Short Answers)

Q5. Numerical answers (8 Marks)

1. In the given program, how many lines of output will be produced?

```
public class Test
{
    public static void main(String [] args)
    {
        int [] [] [] x = new int [3] [] [];
        int i, j;
        x[0] = new int[4][];
        x[1] = new int[2][];
        x[2] = new int[5][];
        for (i = 0; i < x.length; i++)
        {
            for (j = 0; j < x[i].length; j++)
            {
                x[i][j] = new int [i + j + 1];
                System.out.println("size = " + x[i][j].length);
            }
        }
    }
}
```

Solution:

2. What the number come inside the circle



Solution:

3. Determine the new coordinates if 2D point (2,1) was (1) rotated clockwise by 90° and (2) shifted by (Tx=5, Ty=4)

Solution:

4. How many fields are there in IPv4 header?

Solution:

(GROUP 2: Short Answers)

Q6: A. Answer the following (6 Marks)

1. What is the data structures used to perform recursion?

2. What is the difference between interrupt and polling?

3. What are the four parts that any effective project management focuses on?

- 1.
- 2.
- 3.
- 4.

4. What is the purpose of the system programs?

Q6: B. Write a function in any structured programming language to (6 Marks)

1. Check if X is prime.

2. Delete spaces from any string.