الأسم الكامل:

University of Baghdad
College of Science
Department of Computer Science
Higher Diploma Qualification Exam
Date: 8 September 2013
Time: 3 hrs.

Notes:

- **Answer <u>All</u> Questions.**
- **Answer in <u>English</u>.**
- **It is not allowed to consult for any information during the exam, depend on your own knowledge and on the clarifications given by assistants.**

Question Number	Mark (Numbering)	Mark (Written)	Signature
Q1			
Q2			
Q3			
Q4			
Q5			
Q6			
Q7			
Total			
Out of	100		

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

1	Before information can be transmitted, it must be transformed into digital signal.	
2	$(AB)^{-1} = A^{-1}B^{-1}$.	
3	In a large DBMS each user can access every subschema.	
4	Interval between the time of submission and completion of the job is called response time.	
5	An array can store many different types of values.	
6	The length of the instruction queue in 8080 microprocessor is equal to 4 bytes.	
7	Latency time in cash memory arrange from 30-1000 ms.	
8	Multiplexer is a combinational logic circuit which generates a particular binary word or number.	
9	A tautology is a statement that can never be true.	
10	Binary files are human readable in a text editor.	
11	Bresenham algorithm is dedicated for drawing circles.	
12	An algorithm is complete if it doesn't have a loop.	
13	Degree of a tree is the maximum level of any node in a tree.	
14	A hard disk is divided into tracks which are further subdivided into sectors.	
15	If you have 32 bit processor with 12 address lines, then the size of such a memory is 2KB×32.	
16	The arithmetic operators *, /, %, + and - all have the same level of precedence.	
17	Direct memory access is the technique that is used to transfer a block of data without processor.	
18	Virtual memory is an extremely large main memory.	
19	Hashing function is a search technique in which the key for a given data item is transformed to produce the address in which that item is stored in memory.	
20	File is a temporary storage of data.	

Q2 Choose the correct answer: (20 Marks)

1. The constructor that accepts no parameter is called ……. Constructor.

a. Parameterized, b. Default, c. Zero, d. Class

2. In computer security ……. means that computer assets can be modified only by authorized parities.

a. Confidentiality, b. Integrity, c. Availability, d. Authenticity

3. A symbol table is a data structure containing a record for each …….

a. Reserved word, b. Identifier, c. Error entry, d. None

4. A knowledge base contains …….

a. A rules, facts and relationships, b. Only rules and relationship,
c. Simulation of human thinking, d. Only facts.

5. DML is provided for …….

a. Description of logical structure of database
b. Addition of new structures in the database system
c. Manipulation & processing of database
d. Definition of physical structure of database system

6. The equations set ($X_{new} = a * X_{old}$, $Y_{new} = b * Y_{old}$) represents the ……. process

a. Translation, b. Scaling, c. Reflection, d. Rotation

7. Performance of cache memory is frequently measured in terms of quantity called …….

a. Reference ratio, b. Miss ratio, c. Hit ratio, d. Initial ratio

8. ……. gate, the output is 1, if and only if at least one input is 1.

a. NOR, b. AND, c. OR, d. NAND

9. A language which is close to that used within the computer is …….

a. High-level language, b. Assembly language,
c. Low-level language, d. None of the above,

10. ……. a data communication network designed to work over a large geographical area.

a. LAN, b. MAN, c. WAN, d. ISDN

11. Artificial intelligence is …….

a. The embodiment of human intellectual capabilities within a computer.
b. A set of computer programs that produce output that would be considered to reflect intelligence if it were generated by humans.

c. The study of mental faculties through the use of mental models implemented on a computer.
d. All of the above.

12. I/O instructions send to IOP to test IOP path from …….

a. ALU, b. Memory unit, c. Interface unit, d. CPU

13. Malicious software is known as …….

a. Badware, b. Malware, c. Maliciousware, d. Illegalware

14. A problem arising in hashing when two items has to the same position called …….

a. Clustering, b. Collision, c. Compacting, d. Consuming

15. A grammar is said to be …… if it generates more than one parse tree for some sentence of language L.

a. Context free grammar, b. Left factored, c. Ambiguous, d. a and b

16. The extension of executable file is ……..

a. EXE, b. COM, c. BAT, d. All of above

17. ……. is the technique of establishing the facts from the knowledge base of an expert system to prove a given goal.

a. Forward chaining, b. Reuse of code,
c. Backward chaining, d. Knowledge representation

18. Global variables are …….

a. Variables defined inside a function,
b. Variables defined inside a class,
c. Variables defined inside the main(),
d. Variables defined for the whole program

19. …… is part of the OSI model that the user interacts with directly.

a. Application layer, b. Physical layer,
c. Datalink layer, d. None of the previous

20. R is …… relation on the set A if (a,b)Î R then (b,a) Î R.

a. Symmetric, b. Transitive, c. Reflexive, d. Antisymmetric

Q3 A. What is the difference between (15 Marks)

1. TCP/IP & UDP

2. Procedural & Object Oriented Programming

3. Multi processing & Multithreading

4. Scalar & Vector

5. Sequential & Random Access File

Q3 B. Construct truth table for (p Ù q) Ú (~p) (5 Marks)

Q4 Within computer science discipline, write down (in the blank entries) full names of the following short forms. (10 Marks)

1	**DNS**	
2	**SQL**	
3	**STMP**	
4	**CASE**	
5	**FIFO**	
6	**DOS**	
7	**ASCII**	
8	**URL**	
9	**BIOS**	
10	**RAM**	

Q5 For each subject listed in A, select the most suitable course number in B that you may learn the subject in. (10 Marks)

A	**Answer**	**B**
Polymorphism		**1. Graphics**
Link list		**2. Data Structure**
One-time pad		**3. Operating System**
Rotation		**4. Data Base**
Depth-First Search		**5. Discrete Structure**
Backbone		**6. Compiler**
Process Scheduling		**7. Object Oriented Programming**
DDL		**8. Computer Security**
Intermediate Code Generator		**9. Artificial Intelligence**
Closure Reflexive		**10. Communication**

Q6 Find and correct the error in each of the following program segments: (10 Marks)

First Program:

```
void product()
{
    int a = 6, b = 5, c = 4, result;
    result = a * b * c;
    System.out.printf( "Result is %d\n", result );

    if (result > 0 )
    System.out.println( "Correct" );
    else;
    System.out.println( "Flase" );

    return result;
}
```

Second Program:

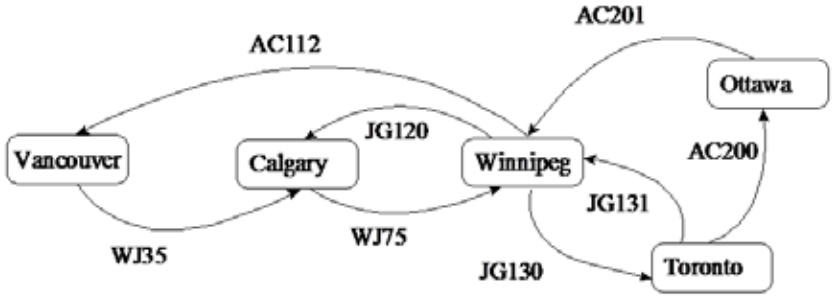
```
programs Test;

uses wincrt;
var i : integer;
i := 7;
j := 3;
i := i + j;
writeln(i);
if j == 3 writeln('J =3');
else writeln('J <> 10');
end;
```

Q7 Fix the Numerical Answer (10 Marks)

1. How many bits are there in the IPv4 port field?

Answer:

2. What are the <u>degree</u>, <u>in-degree</u> & <u>out-degree</u> of the airport in Winnipeg?



Answer:

3. If the ASCII code for (D=68), what is the ASCII code for g?

Answer:

4. In Assembly language programming, what is the minimum number of operands required for an instruction?

Answer:

5. A digital computer has a memory unit 64k×16 and a cache memory of 1k use direct mapping and block size of four words. What is the number of bits in tag, index, block and word fields of the address format?

Answer: