FEDERAL PUBLIC SERVICE COMMISSION
SECTION OFFICERS PROMOTIONAL EXAMINATION - 2017

COMPUTER SCIENCE

Roll Number

TIME ALLOWED: THREE HOURS	**MAXIMUM MARKS = 100**

NOTE: (i) Attempt **FIVE** questions in all. **ALL** questions carry **EQUAL** Marks.
(ii) All the parts (if any) of each Question must be attempted at one place instead of at different places.
(iii) Candidate must write **Q. No.** in the **Answer Book** in accordance with **Q. No.** in the **Q. Paper**.
(iv) No Page/Space be left blank between the answers. All the blank pages of Answer Book must be crossed.
(v) Extra attempt of any question or any part of the attempted question will not be considered.
(vi) Leave some blank space and draw two horizontal lines (======) at the end of each answer.

Q. No. 1.
(a) Convert the following numbers from decimal to binary: (8)
(i) 45 (ii) 33
(iii) 52 (iv) 127
(b) Convert the following numbers from binary to decimal: (8)
(i) $(100101)_2$ (ii) $(110011)_2$
(iii) $(111110)_2$ (iv) $(101011)_2$
(c) Convert the following number from hexadecimal to decimal: (4) **(20)**
$(7DE)_{16}$

Q. No. 2.
(a) What these abbreviations stand for (in networking)? (5)
(i) OSI (ii) ARP (iii) RARP
(iv) DNS (v) MAC
(b) Name at least 5 devices used in computer networking. (5)
(c) List down the OSI Seven Layers in order and describe the function of each. (10) (**20**)

Q. No. 3.
(a) Write a simple program using C++ that takes temperature in degree Fahrenheit as input and displays result in degree centigrade. (10)
It should also display,
Enter the temp. in degree F :
The equivalent temp. in degree C is :
(b) Describe the following program. (5)

```
#include <iostream>

Int main{ }
{
int var1;
int var2;

var1 = 20;
var2 = var1 + 10;

cout << " The result is = ";
cout << var2 << endl;
return 0;
}
```

(c) Define the following terms: (5) (**20**)
(i) class (ii) structure (iii) identifier
(iv) macro (v) iterator

Q. No. 4.
(a) Define and describe normalization in databases. Describe first, second and third normal forms briefly. (8)
(b) What are super, primary, candidate and foreign keys? (6)
(c) What are advantages of DBMS over traditional file based systems? (6) (**20**)

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Q. No. 5.
(a) What are the five steps involved in digital image processing? (5)
(b) Name at least five image enhancement methods. (5)
(c) Define the followings: (10) (**20**)
(i) Gray level (ii) Digital image
(iii) Pixel (iv) RGB color model
(v) NSI color model

Q. No. 6.
(a) What is an operating system and what is the relationship between operating systems and computer hardware? (7)
(b) What is Throughput, Turnaround time, waiting time and Response time? (8)
(c) What are the different operating systems? (5) (**20**)

Q. No. 7.
(a) Explain Software Development Life Cycle SDLC. (8)
(b) How colors are defined in HTML? (6)
(c) What is Javascript and what javascript can do? (6) (**20**)

Q. No. 8. Write short note on each: (4 each) **(20)**
(a) Polymorphism
(b) Inheritance
(c) Encapsulation
(d) Abstraction
(e) Shadowing

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