BRAINWARE UNIVERSITY

Course – BCA

Computer Fundamentals and PCS (BCAC 101)

(Semester – 1)

Time allotted: 3 Hours **Full Marks : 70**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question) 1 x 10 = 10

1. Answer the following by choosing the correct alternative.

i) What is the equivalent binary number of $(56)_{10}$?

a) 101101010 b)111000

c)111010 d)11010101

ii) What is the equivalent decimal number of $(3B)_{16}$?

a) $(55\ \ )_{10}$ b) $(95)_{10}$

c) $(59)_{10}$ d) $(39)_{10}$

iii) What is the 2's complement of $(11111111)_2$?

a) $(10000000)_2$ b) $(11110000)_2$

c) $(01010101)_2$ d) $(000000001)_2$

iv) If any Hard disk transfer rate is 2MB/sec, How much time it will take to copy a 1GB file?

a) 2sec b)500 sec

c)1000sec d)512sec

v) In the Process state diagram the transition from Running state to Waiting state caused by

a) I/O or Event b) Interrupt

c) Scheduler dispatch d)Terminated

vi) The candidate key is a

a) Database table b) minimal super key

c) Not unique d) Can be empty

vii) Network broadcast address is

a) 127.0.0.1 b)127.0.0.0

c) 255.255.255.255 d) 255.0.0.1

viii) The gray code of $(1011)_2$ is

a) 0100 b)1000

c)1111 d)1110

ix) EULA in Software is a/an

a) Program code b) Error

c) Database d) license agreement

x) Network layer in OSI layers communicates with

a) Physical layer b) Transport layer

c) Application layer d) Session layer

Group – B

(Short Answer Type Question) 3 x 5 = 15

Answer **any *three*** from the following

2. Convert the following decimal numbers into binary equivalent. 2.5 x 2 = 5

   a) 123.625

   b) 98

3. Subtract the following numbers using 1's complement method. 2.5 x 2 = 5

   a) 100110 - 101

   b) 1101 – 1111

4. Write down briefly the main functionalities of Operating System.
5. Draw and briefly discuss the memory hierarchy of a computer system and indicate their relative orders in terms of size and access time.
6. Define pixel. Compute the size of a binary image of dimension 500 x 600. 2 + 3 = 5

Group – C

(Long Answer Type Question) 3 x 15 = 45

Answer **any *three*** from the following

7. Draw a diagram to illustrate working principle of a Cathode Ray Tube (CRT), discussing the functionalities of the components. 7 + 8 = 15
8. Draw and explain process state diagram. Define *throughput*, *turnaround time* and *response time.* 9 + 6 = 15
9. What is a database? Give two examples of DBMS packages. Discuss the advantages of using database over traditional file systems. 3 + 2 + 10=15
10. Discuss different network topologies with their advantages and limitations. Briefly discuss about Coaxial cable and twisted pair cable. 10 + (2.5 x 2) = 15

11. Write short notes on 3 x 5 = 15
    a) IP addressing
    b) Phases of software development
    c) ASCII and Gray Code.