

Name :

Roll No. :

Invigilator's Signature :

CS/B. Pharm (NEW)/SEM-3/CS-303/2009-10

2009

**BASIC ELECTRONICS &
COMPUTER APPLICATIONS**

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

**GROUP – A
(Multiple Choice Type Questions)**

1. Choose the correct alternatives of the following : $10 \times 1 = 10$

- i) 'Driver' is an example of
- a) application software b) system software
- c) hardware d) none of these.
- ii) UNIX is a
- a) single user operating system
- b) multi user operating system
- c) batched operating system
- d) distributed operating system.

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[Turn over



x) The output of the following code is

```

for (i=1;i<=5;i++)
{
  If (i%2)
  continue;
  printf("%d",i);
}

```

- a) 1 2 3 4 5
- b) 1 3 5
- c) 2 4
- d) none of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

- 2. a) What is the difference between interpreter and compiler ? 2
- b) What are the important tasks performed by an operating system ? 3
- 3. a) What are local variable and global variable ? Explain with example. 3
- b) What will be the output for the following program segment ?

```

void main ( )
{
  int x = 10, y = 5, p, q ;
  p = x > 9 ;
  q = x > 3 && y != 3) ;
  printf ("%d\n %d", p, q ) ;
}

```

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4. a) What do you mean by universal gate ? Give example. 2
- b) Prove that $x + 1 = 1$. 2
- c) Write the truth table for NAND gate. 1
5. Write a C program to calculate the mean of n numerical values stored in an array.
6. a) What is recursion ? Explain with an example.
- b) What is ternary operator ?

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Explain the following operators with example : 4
- i) Modulo division operator
- ii) Conditional operator.
- b) Write a program in C to calculate the factorial of a number using function. Your program should display appropriate error message for invalid input. 4
- c) Convert decimal 73 to equivalent octal and hexadecimal number. 3
- d) What is distributed operating system ? 2

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- e) What are the rules to be followed to construct a variable name ? 2

- 8. a) What are the limitations of switch ... case statement ? 2

- b) What will be the output for the following program segment : 3
 - i)

```
int i = 3;

printf ("%d",i++ + ++i) ;
```

 - ii)

```
int i = - 4, j, num = 10 ;

j = i % - 3 ;

j = ( j ? 0 : num * num );

printf ("j = %d", j);
```

 - iii)

```
int x = 3;

x * = x + 4

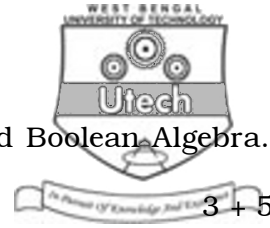
printf ("X = %d", x);
```

- c) Write a program in C to implement standard deviation. 4

- d) Draw a logic diagram for the following function : 2
$$F = \overline{A \cdot B} + C \cdot D + \overline{E \cdot F}$$

- e) What is multi programming ? Write a note on 'multi processor system'. 2 + 2

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9. a) State and prove D'Morgan's Laws and Boolean Algebra.
Design a Half Adder circuit. 3 + 5

b) Consider the program fragment :

```
int i = 5, j = 0, k = 0;
```

```
j = i ++;
```

```
k = i;
```

```
printf ("%d\t%d\t%d", j++, --i, k+1);
```

```
printf ("%d\t%d\t%d", j, i, k);
```

What are the outputs of the print statements ? What do you mean by arguments and return values of a function ? 3 + 4

10. a) Simplify the following expressions : 5

$$y + x.y.c.d + x'.y.c.d + x'.y.c'.d + x.y.c.d'$$

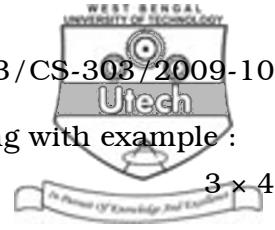
b) Prove or disprove by using a truth table : 5

$$x.y + x.z = x.(y + z)$$

c) Realize AND gate and NOR gate using only NAND gate. 5

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11. a) Write notes on any *four* of the following with example :

3 × 4

- i) Artificial intelligence
- ii) Call by value and call by reference
- iii) Pointer to a pointer
- iv) Structure pointer
- v) Distributive law
- vi) Type casting in C.

b) To open a file, what is the difference between “r” and “+ r” mode ?

3

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