

COMPUTING AND INFORMATICS

Time : Three hours

Maximum marks : 100

Answer FIVE questions, taking ANY TWO from Group A, ANY TWO from Group B and ALL from Group C.

All parts of a question (a, b, etc.) should be answered at one place.

Answer should be brief and to-the-point and be supplemented with neat sketches. Unnecessary long answers may result in loss of marks.

Any missing or wrong data may be assumed suitably giving proper justification.

Figures on the right-hand side margin indicate full marks.

Group A

1. (a) (i) Convert the binary real number 1101.1010 to a equivalent decimal number. 2
- (ii) Convert the decimal fraction 0.62 to its equivalent hexadecimal fraction. 2
- (iii) Convert the octal number 364 to its equivalent decimal number. 2
- (iv) Convert the octal number 536 to its equivalent hexadecimal number. 2
- (b) What is ternary operator? Is any such operator available in C language? If yes, explain with an example? 4

- (c) Draw a flow-chart of the given problem. Read marks of four subjects and print grade of the student according to total marks obtained. 8

Total Marks	Grade
Above 800	A
601-800	B
401-600	C
201-400	D
Below 200	F

2. (a) (i) What is meant by compiling a program? 3
(ii) Differentiate between a compiler and an interpreter? 3
- (b) (i) Simplify the following Boolean expression:
 $X + XY' + Y' + (X + Y')X'Y$. 3
- (ii) Why are NAND and NOR gates called universal gates? 3
- (c) What is EPROM? How is it different from PROM? 4
- (d) (i) Perform the following addition: 2
 $1010111 + 1011010$
- (ii) Perform the following subtraction: 2
 $1101011 - 1010110$
3. (a) (i) What is memory management? Why is it essential in a multi-user environment? 4
(ii) How does a 'while' control structure differ from 'do-while' structure? 3
- (b) With a suitable block diagram, briefly explain the major components and their functions of any conventional computer system. 7

- (c) (i) What is a protocol? What is IP protocol? 3
(ii) What is Telnet? 3
4. (a) (i) What is the difference between application software and system software? 4
(ii) What is device driver and explain its function? 4
- (b) (i) Distinguish between the data and information. 3
(ii) What is a key word and what are the restrictions of using them? 3
- (c) Explain the following: (i) Bridge, and (ii) router. 3+3

Group B

5. (a) (i) List the desirable features of an algorithm. 3
(ii) What is a program counter? What information does it store? 3
- (b) Write a program to add first seven terms in the following series: 6
 $1/1! + 2/2! + 3/3! + 4/4! + \dots$
- (c) Write a program to print four digit positive integer number in reverse order. 6
- (d) What is bitwise operator? 2
6. (a) Write a program to display all the prime numbers from 70 to 100. 6
(b) Write a program to evaluate the factorial value of a number. 6
(c) Write a program to find the length of given string. 6

- (d) What is void pointer? 2
7. (a) Distinguish between the block variable and the local variable. 3
- (b) What is the task performed by the fseek () function? 3
- (c) What is the difference between process and processor? 2
- (d) Write a program to read names of students in a file and copy the data from that file to another file. 6
- (e) Write a program to reverse a string and check for palindrome. 6
8. (a) Write a program to display the ASCII value of a given character. 6
- (b) Distinguish between break and continue statements in C. 4
- (c) Write a program to check whether the given number is an Armstrong number. 6
- (d) How is XCOPY a better command than COPY? 4

Group C

9. Choose the *correct* answer from the following and write one sentence justification for your choice: 10 × 2

- (i) main ()
 {
 int x = 4, y, z;
 y = --x;
 z = x--;
 printf (“\n%d%d%d”, x, y, z);
 }
 output
 (a) 2 2 2
 (b) 2 3 3
 (c) 5 4 2
 (d) 1 1 1

- (ii) main ()
 {
 int x = 1;
 while (x == 1)
 {
 x = x - 1;
 printf (“%d\n”, x);
 }
 }
 output
 (a) 0
 (b) 2
 (c) 3
 (d) 1
- (iii) main ()
 {
 int a[10];
 for (i = 1; i <= 10; i++)
 {
 scanf (“%d”, a[i]);
 printf (“%d”, a[i]);
 }
 }
 output
 (a) 10 20 30 40
 (b) 10 30 40 20
 (c) 20 10 30 40
 (d) 10 20 30 50