S'09:2 FN:AN 203/AD 303 (1403)

## **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 answer 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. Assume that a cartesian co-ordinate point is represented by a pair of integers (X, Y) indicating its X and Y co-ordinate values.
  - (a) Define a class, named, Coord that would store X and Y co-ordinate values.
  - (b) Overload the constructor of the Coord such that if no parameters exist, then the co-ordinate with default parameter (0,0) is created, otherwise a co-ordinate point with specified X and Y values should be created.

6

(c) Read 10 pairs of integers and create the co	orres-		
ponding ten co-ordinate points.	5	Group B	
(d) Arrange the created co-ordinates of part (c) of question in the increasing order of X co-ordin		5. (a) Using a block diagram, show how the the memory unit, and the secondary a computer are interconnected.	
2. (a) What is the difference between call by reference call by value mechanisms? Illustrate the use of		(b) What do you understand by cache is cache memory needed in a comp	-
two by using appropriate C <sup>++</sup> code segments. V is the mechanism used to pass object parameter		(c) Write the truth table of a 1-bit adden	ler and draw the
(b) What do you understand by method overle Explain its use by using an example. How is	-	6. (a) What is the role of an operating system	ninacomputer? 6
overloading different from method overriding		(b) What do you understand by booting What are the main activities that a	re carried out by
3. A class has 30 students. Each student has a name (30 characters) and roll number (integer). Each stappears in an examination of 100 marks. The name the students who have scored more than class average	udent nes of	a computer during booting?  (c) What is a flip-flop? Draw the logic tion of a flip-flop. How is a flip-flop	•
to be printed.  (a) Draw flow-chart for the problem.	6	<ol> <li>(a) What do you understand by file Explain the organization of a file suitable schematic diagram.</li> </ol>	•
(b) Write C <sup>++</sup> code for solving the problem. The should be adequately documented.	code 14	(b) Convert the following two hexadeci binary and decimal numbers: (i) 9	
4. (a) What are the advantages of storing data pert to an application in a database management s	_	(c) Perform the following hexadecima 5F + AB, and (ii) CD + BE.	l operations: (i)
compared to storing data in a file.	7	8. (a) Explain how data are stored and acc disk.	essed from a hard 7
(b) What is a relational database management sys	tem? 6	(b) What is BIOS in DOS? What is its	role? . 7
(c) Why data in an RDBMS needs to be normalize		(c) What are the important ways in operating system is different from I	
S'09:2 FN: AN 203/AD 303 (1403) (2)	Continued)	S'09:2 FN:AN 203/AD 303 (1403) ( 3	) (Turn Over)

## Group C

- Choose the *correct* answer for the following and write one sentence justification for your choice:  $10 \times 2$ 
  - (i) The packing of data and functions into a single unit in a program is known as
    - (a) polymorphism
    - (b) abstraction
    - (c) encapsulation
    - (d) inheritance
  - (ii) The mechanism of defining the same method with multiple types of parameters is known as
    - (a) method overriding
    - (b) method overloading
    - (c) virtual method
    - (d) method aggregation
  - (iii) The type of members of a class are by default
    - (a) private
    - (b) public
    - (c) protected
    - (d) None of the above.
  - (iv) For the following C program, how many times is the for loop executed?
    - main(){
    - inti;
    - for (i = 0; i < 10;)printf("loop count = % d n", i);
- S'09:2 FN: AN 203/AD 303 (1403) (4) (Continued)

- (a) 9
- (b) 10
- (c) 11
- (d) infinite number of times
- (v) In the following C program segment, what would be the value of x after the execution of the program

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segment?
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x = -5; y = 10;

if (x>y)if (x<0) x = x\*-1:

else  $x = 2^* x$ :

- (a) 5
- (b) -5
- (c) 10
  - (d) -10
- and (ii) hard disk of a modern PC? (a) 1 Gb and 150 Gb
- (b) 1 MB and 20 Mb
- (c) 15 Kb and 200 Mb
- (d) 20 Gb and 800 Gb
- (vii) What would be the output of the following program:

(vi) What are the typical capacities of (i) main memory,

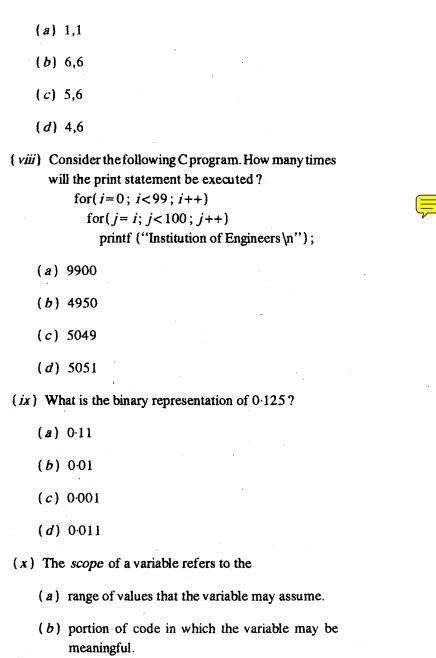
```
main (){
```

printf ("Expression values = %d %d\n",

5/2\*2,6/2\*2):

S'09: 2 FN: AN 203/AD 303 (1403)

(5)(Turn Over



- (c) set of variables to which the given variable can be meaningfully assigned.
  (d) set of variables from which the given variable can meaningfully assume.
  - can meaningfully assume.