Assignment

Basic Level

1. Let S be a finite set containing n elements. Then the total number of commutative binary operations on S is

(a) $n^{\frac{n(n+1)}{2}}$ (b) $n^{\frac{n(n-1)}{2}}$ (c) n^{n^2} (d) 2^{n^2}

2. If S is a finite set having n elements, then the total number of non-commutative binary operation on S is

(a) $n^{\frac{n(n+1)}{2}}$ (b) $n^{n^2} - n^{\frac{n(n+1)}{2}}$ (c) $n^{n^2 - \frac{n(n-1)}{2}}$ (d) $n^{\frac{n(n-1)}{2}}$

3. If the composition table for a binary operation * defined on a set S is symmetric about the leading diagonal, then

(a) * is associative on S (b) * is commutative on S

(c) S has the identity element for * (d) None of these

4. Subtraction of integers is an operation that is **[CET 1994]**

(a) Commutative and associative (b) Not commutative but associative

(c) Neither commutative nor associative (d) Commutative but not associative

5. The law $a+b=b+a$ is called

(a) Closure law (b) Associative law (c) Commutative law (d) Distributive law

6. If any one of the rows of the composition table for a binary operation * on a set S coincides with the top most row of the table, then

(a) S has a left identity for * (b) S has a right identity for *

(c) S has the identity element for * (d) * is commutative and associative on S

7. If any one of the columns of the composition table for a binary operation * on a set S coincides with the left most column of the table, then

(a) S has a left identity for * (b) S has a right identity for *

(c) S has the identity element for * (d) * is commutative and associative on S

8. Which of the following binary operations is commutative

(a) * on R, given by $a*b=a^2b$

(b) O on R, given by $aob=a^b$

(c) Δ on $P(S)$, the power set of a set S given by $A\Delta B=(A-B)\cup(B-A)$

(d) None of these

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Assignment

Basic Level

1. A problem to be solved is not subjected to any conditions on variables and is not repetitive in nature. The basic control operation to be used is

(a) Sequential (b) Selection (c) Repetitive (d) None of these

2. A computer can execute

(a) An algorithm (b) A flow-chart (c) A program (d) None of these

3. A basic control structure always has

(a) One entry and two exit points (b) Two entry and one exit points

(c) One entry and one exit points (d) Any number of entry and exit points

4. The heart and nerve centre of a computer is

(a) Input unit (b) Output unit (c) CPU (d) Memory

5. An algorithm must have at least

(a) One input (b) One output (c) One assignment (d) None of these

6. A number of data items are to be read in a problem. The control structure needed is

(a) Only sequential (b) Only selection (c) Selection or repetition (d) Sequential or repetition

7. The control structure IF-THEN-ELSE is a

(a) Single selection (b) Multiple selection (c) Repetition structure (d) None of these

8. The FOR-DO construct executes the loop at least

(a) Once (b) Twice (c) Thrice (d) None of these

9. The control structure CASE-OF is a

(a) Single selection (b) Multiple selection (c) Repetition structure (d) None of these

10. If A = 15, B = 22, the value of *X* after execution of the following pseudo code program is

```
READ A, B
IF A ⊂ B
IF A ⊂ 10
  X ← A + B
ELSE X ← B – A
END
```

(a) 7 (b) 15 (c) 22 (d) None of these

11. If *A* = 7, *B* = 9, the value of *A* after execution of the following pseudo-code program is

```
BEGIN
INPUT A, B
IF A > B
TEMP A ← B
     B ← A
```

$A \leftarrow$ TEMP
ELSE
STOP
END

(a) 7 (b) 9 (c) 7 + 9 (d) 7 – 9

12. What is the decimal equivalent of binary number 10101 **[DCE 1999]**

(a) 20 (b) 21 (c) 22 (d) 23

13. The octal equivalent of $(101001110)_2$ is **[DCE 1994]**

(a) 116 (b) 561 (c) 615 (d) 516

14. What is the decimal equivalent of the octal number 219 **[DCE 1999]**

(a) 140 (b) 145 (c) 150 (d) 155

Advance Level

15. The value of P by execution of the following algorithm is

$P \leftarrow 1$
$I \leftarrow 1$
Step I : $P \leftarrow P * I$
$I \leftarrow I + 1$
If $I > 6$ Stop
else Go To Step I
Output P
end

(a) 6 (b) 24 (c) 120 (d) 720

16. Study the following algorithm

Sum $\leftarrow 0$
$I \leftarrow 0$
Repeat
Sum $\leftarrow$ Sum + $(2I + 1)$
$I \leftarrow I + 1$
until $I \geq 6$

Then the minimum value of Sum is

(a) 36 (b) 49 (c) 140 (d) None of these

17. The statement

For $k = 1$ To 10 by 20
do S

results in

(a) 2 cycles (b) 5 cycles (c) 10 cycles (d) None of these

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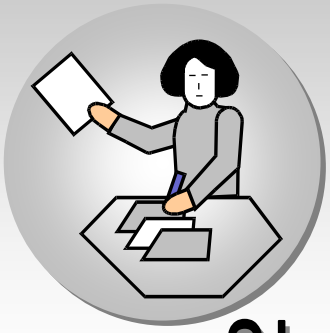

Answer Sheet

Computing — *Assignment (Basic and Advance Level)*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
a	c	c	c	b	b	a	a	b	a	a	b	d	b	d	b	b

Binary Operations — *Assignment (Basic and Advance Level)*

1	2	3	4	5	6	7	8
a	b	b	c	c	a	b	c