

**DO NOT OPEN THIS BOOKLET UNTIL TOLD TO DO SO**

Question Booklet No.

300012

**DESCRIPTIVE & OBJECTIVE TYPE (MCQ)  
SUBJECT : COMPUTER SCIENCE**

Roll No.

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Full Marks : 200 (100 Descriptive & 100 MCQ)

Time : 3 Hours

**CANDIDATES SHOULD READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE ANSWERING THE QUESTIONS :**

1. The Question Booklet has a seal pasted on it. Candidates should break open the seal only when they are asked to do so by the invigilators.
2. Immediately after breaking open the seal, candidates must check that the Question Booklet contains 100 marks for Section 'A' (Descriptive Type) and 100 marks for Section 'B' (MCQ). If any discrepancy is found, immediately report to the invigilator for changing of the Question Booklet.
3. Candidates must take care to fill up all the required particulars at the appropriate places marked on the Question Booklet as well as on the Answer Booklet. Do not write anything in the spaces provided for office use.
4. For answering Section 'A' questions candidates must answer in Answer Booklet provided.
5. For answering Section 'B' questions candidates must use OMR answer sheet.
  - (i) Each question in Section 'B' has 4 (four) alternative answers given as 1, 2, 3, 4 on the OMR answer sheet. Choose the one which you consider to be the best alternative answer and shade the appropriate bubble on the OMR answer sheet.
  - (ii) Each question carries 1 (one) mark with no negative marking.
  - (iii) Use **only blue or black ball point pen** only.
  - (iv) The OMR answer sheet will be processed by electronic means using scanner. Hence, any irrelevant/stray marking, incorrect/multiple shadings, faulty erasing of answers or any damage to the OMR answer sheet will be the sole responsibility of the candidate.
6. Page(s) for Rough Work is provided at the end of the Question Booklet.
7. Candidates must hand over the Answer Booklets and OMR answer sheets before leaving the examination hall. They may take away the Question Booklet.
8. Mobile phones and electronics devices are strictly prohibited. Any candidate found in possession of mobile phone in the examination hall will be immediately disqualified and expelled from the examination.
9. Any misconduct or indiscipline in the examination hall/resorting to any form of unfair means/failure to follow the examination rules will result in disciplinary action as deemed fit by the Commission.
10. The decision of the Commission on all matters is final.

Correct Method

① ● ③ ④

SEAL

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**COMPUTER SCIENCE**  
**SECTION – A (DESCRIPTIVE)**

1. Answer any 2(two) of the following questions. (2 × 20) = 40 marks
- (i) Given the Boolean function  
 $F = xy'z + x'y'z + w'xy + wx'y + wxy$   
(a) Obtain the truth table of the function.  
(b) Draw the logic diagram using the original Boolean expression.  
(c) Simplify the function to a minimum number of literal using Boolean algebra.  
(d) Draw the logic diagram from the simplified expression and compare the total number of gates with the diagram of part (b).
- (ii) Explain the different types of database schema. Elaborate the types of indexing used in DBMS. What are the three ways the dynamic SQL can be used. What is the concurrency control? Enlist some concurrency control schemes. (Marks 8+5+3+4)
- (iii) Name the four different cursor types in ADO and describe them briefly. Name the four different locking type in ADO and describe them briefly. What are the ADO objects? Explain them. Provide a scenario using three of them to return data from a database. Describe In Process and Out of Process component? ( Marks 6+6+4+4)
- (iv) Can a C++ class have an object of self type? What is the difference between parameter and argument? What is the Parsing and also explain how many types of Parsing? What is Quadratic probing? (Marks 6+6+4+4)
2. Answer any 2(two) of the following questions. (2 × 10) = 20 marks
- (i) What is the SQL wildcard? What are the difference between DDL, DML and DCL commands?
- (ii) What is the ASP.NET Ajax Framework? What role does the Script Manager play?
- (iii) In a B+ tree index contains 20000 records with key size 40 bytes and pointer size 10 bytes. If there are 1000 bytes per disk block, then how many levels are there in the B+ tree? How many levels will there be in resulting tree, if the key is compressed to 10 bytes only?
3. Answer any 8(eight) of the following questions. (8 × 5) = 40 marks
- (i) Which one is faster DELETE/TRUNCATE?
- (ii) What is different level of Abstraction in database.
- (iii) What is the difference between an object and a class?
- (iv) Difference between realloc() and free() in C?
- (v) Difference between ASP and ASP.Net
- (vi) How to change page theme dynamically at runtime in ASP.NET.
- (vii) How do you convert a XOR gate into a buffer and a inverter (Use only one XOR gate for each)
- (viii) What is phantom deadlock? What is significance of checkpoint and when does it occur.
- (ix) What is the difference between having and where clause?
- (x) What is a transaction? What are ACID properties?

## SECTION – B OBJECTIVE (MCQ)

1. Which classes allow primitive types to be accessed as objects?  
(1) Storage (2) Virtual  
(3) Friend (4) Wrapper
2. Which of the following is not a standard exception built in C++.  
(1) `std::bad_creat`  
(2) `std::bad_alloc`  
(3) `std::bad_cast`  
(4) `std::bad_typeid`
3. Which of the following is a valid destructor of the class name "Country"  
(1) `int ~Country()`  
(2) `void Country()`  
(3) `int ~Country(Country obj)`  
(4) `void ~Country()`
4. The two types of file structure existing in VSAM file are  
(1) Key sequenced structure, entry sequenced structure  
(2) Key sequence structure, exit sequenced structure  
(3) Entry sequence structure, exit sequenced structure  
(4) None of above
5. What's wrong? `While( (i< 10) && (i> 24))`  
(1) the logical operator `&&` cannot be used in a test condition  
(2) the while loop is an exit-condition loop  
(3) the test condition is always false  
(4) the test condition is always true
6. When is `std::bad_alloc` exception thrown?  
(1) When new operator cannot allocate memory  
(2) When alloc function fails  
(3) When type requested for new operation is considered bad, this exception is thrown  
(4) When delete operator cannot delete the allocated (corrupted) object
7. Which one of the following is not a fundamental data type in C++  
(1) float (2) string  
(3) int (4) `wchar_t`
8. Value of a in `a = (b = 5, b + 5);` is  
(1) Junk value (2) Syntax error  
(3) 5 (4) 10
9. The output of this program is  

```
int a = 10;
void main()
{
int a = 20;
cout<< a << ::a;
}
```

  
(1) Syntax error (2) 10 20  
(3) 20 10 (4) 20 20
10. What is the Difference between struct and class in terms of Access Modifier?  
(1) By default all the struct members are private while by default class members are public.  
(2) By default all the struct members are protected while by default class members are private.  
(3) By default all the struct members are public while by default class members are private.  
(4) By default all the struct members are public while by default class members are protected.
11. What's wrong? `while( (i< 10) && (i> 24))`  
(1) the logical operator `&&` cannot be used in a test condition  
(2) the while loop is an exit-condition loop  
(3) the test condition is always false  
(4) the test condition is always true

12. If class A is friend of class B and if class B is friend of class C, which of the following is true?
- (1) Class C is friend of Class A
  - (2) Class A is friend of Class C
  - (3) Class A and Class C do not have any friend relationship
  - (4) None of the above
13. Which of the following language is not supported by C++?
- (1) Exception Handling
  - (2) Reflection
  - (3) Operator Overloading
  - (4) Namespaces
14. Which of the following given below can perform conversions between pointers to related classes?
- (1) `cast_static`
  - (2) `dynamic_cast`
  - (3) `static_cast`
  - (4) `cast_dynamic`
15. How do we define a constructor?
- (1) `x~() {}`
  - (2) `X() {}~`
  - (3) `X() ~{}`
  - (4) `~X() {}`
16. What happens when a pointer is deleted twice?
- (1) It can abort the program
  - (2) It can cause a failure
  - (3) It can cause an error
  - (4) It can cause a trap
17. Expression `C=i++` causes
- (1) Value of `i` assigned to `C` and then `i` incremented by 1
  - (2) `i` to be incremented by 1 and then value of `i` assigned to `C`
  - (3) Value of `i` assigned to `C`
  - (4) `i` to be incremented by 1
18. How many copies of a class static member are shared between objects of the class?
- (1) A copy of the static member is shared by all objects of a class
  - (2) A copy is created only when at least one object is created from that class
  - (3) A copy of the static member is created for each initiation of the class
  - (4) No memory is allocated for static members of a class
19. Inline functions are invoked at the time of
- (1) Run time
  - (2) Compile time
  - (3) Depends on how it is invoked
  - (4) Both (2) and (3) above
20. Value of `ix+j`, if `i,j` are integer type and `ix` long type would be
- (1) integer
  - (2) float
  - (3) long integer
  - (4) double precision
21. Which of the following library function below by default aborts the program?
- (1) `terminate()`
  - (2) `end()`
  - (3) `abort()`
  - (4) `exit()`
22. If a member needs to have unique value for all the objects of that same class, declare the member as
- (1) Global variable outside class
  - (2) Local variable inside constructor
  - (3) Static variable inside class
  - (4) Dynamic variable inside class
23. Which of the following is the most general exception handler that catches exception of any type?
- (1) `catch(std::exception)`
  - (2) `catch(std::any_exception)`
  - (3) `catch(...)`
  - (4) `catch()`

24. When class B is inherited from class A, what is the order in which the constructors of those classes are called
- (1) Class A first Class B next
  - (2) Class B first Class A next
  - (3) Class B's only as it is the child class
  - (4) Class A's only as it is the parent class
25. If n has the value 3, then the output of the statement `printf( "%d %d", n++, ++n);`
- (1) is 3 5
  - (2) is 4 5
  - (3) is 4 4
  - (4) is implementation dependent
26. The period of time between an allocation and its subsequent disposal is called
- (1) Scope
  - (2) (dynamic) binding
  - (3) lifetime
  - (4) longevity
27. What is the implicit pointer that is passed as the first argument for nonstatic member functions?
- (1) 'self' pointer
  - (2) `std::auto_ptr` pointer
  - (3) 'Myself' pointer
  - (4) 'this' pointer
28. Which of the following operators can be overloaded?
- (1) . (dot or member access operator)
  - (2) & (address-of operator)
  - (3) size of operator
  - (4) ?: (conditional operator)
29. Which of the following operators below allow to define the member functions of a class outside the class?
- |        |       |
|--------|-------|
| (1) :: | (2) ? |
| (3) :? | (4) % |
30. Which of the following functions below can be used Allocate space for array in memory?
- (1) `calloc()`
  - (2) `malloc()`
  - (3) `realloc()`
  - (4) both (1) and (2)
31. The output of
- ```
{
int a = 5;
int b = 10;
cout<< (a>b?a:b);
}
```
- (1) 5
  - (2) 10
  - (3) Syntax error
  - (4) None of above
32. Which of the following cannot be passed to a function?
- (1) Reference variable
  - (2) Arrays
  - (3) Class objects
  - (4) Header files
33. State true or false.
- (i) We cannot make the function inline by defining a function outside the class.
  - (ii) A member function can be called by using its name inside another member function of the same class, this is known as nesting of member function.
- (1) True, True
  - (2) True, False
  - (3) False, True
  - (4) False, False

34. What will be the values of x, m and n after execution of the following statements?

```
int x, m, n;
m=10;
n=15;
x= ++m + n++;
```

- (1) x=25, m=10, n=15
- (2) x=27, m=10, n=15
- (3) x=26, m=11, n=16
- (4) x=27, m=11, n=16

35. The major goal of inheritance in C++ is

- (1) To facilitate the conversion of data types
- (2) To help modular programming
- (3) To facilitate the re usability of code
- (4) To extend the capabilities of a class

36. Which of the following are true regardless of the implementation

- (1) size of(int) is not less than size of (long)
- (2) size of (short) equals size of (int)
- (3) size of (int) equals size of (unsigned)
- (4) size of (double) is not less than size of (float)

37. Coercion

- (1) takes place across an assignment operator
- (2) takes place if an operator has operands of different data types.
- (3) None of the Above
- (4) all of the above

38. Pick the operator whose meaning is context dependent

- (1) \*
- (2) #
- (3) /
- (4) No such operator exists.

39. A function that calls itself within its own body is called

- (1) Mutually Recursive
- (2) Indirect Recursive
- (3) Direct Recursive
- (4) Inherited Recursive

40. What would be the output of the following C Program ?

```
void main()
{
int x=4;
first();
printf("%d",x);
}
int x=3;
void first()
{
printf("%d",x);
}
```

- (1) 3 3
- (2) 3 4
- (3) 4 3
- (4) 4 4

41. Which of the following code is NOT valid in BCD code ?

- (1) 0010
- (2) 0101
- (3) 1000
- (4) 1010

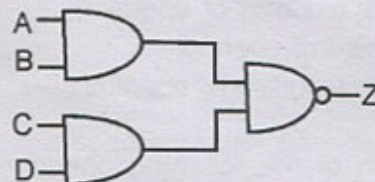
42. When two n-bit binary numbers are added, the resultant sum will contain at most

- (1) n bits
- (2) n+1 bits
- (3) n+2 bits
- (4) n+n bits

43. Which of the following code(s) is/are not self-complementary ?

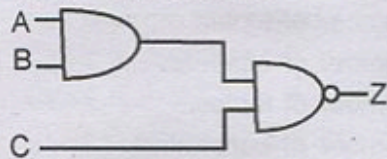
- (1) 8-4-2-1 BCD
- (2) 2-4-2-1 BCD
- (3) Excess-3
- (4) None of these

44. The output of the following logic circuit can be expressed as



- (1)  $Z = \overline{ABCD}$
- (2)  $Z = \overline{AB + CD}$
- (3)  $Z = \overline{AB} + \overline{CD}$
- (4) None of these

45. The output of the following logic circuit can be expressed as



- (1)  $Z = \overline{ABC}$   
 (2)  $Z = \overline{A+B+C}$   
 (3)  $Z = \overline{AB+C}$   
 (4) None of these

46. The minimum number of gates required to implement the Boolean expression

$$XY + XY' + X'Z$$

is

- (1) 1 AND gate and 1 OR gate  
 (2) 3 NAND gates  
 (3) 3 AND gates and 2 OR gates  
 (4) None of these

47. The Boolean expression for the difference output in full-sub tractor is same as the Boolean expression for

- (1) Difference output in a half-sub tractor  
 (2) Sum output in a half-adder  
 (3) Sum output in a full-adder  
 (4) Carry output in full-adder

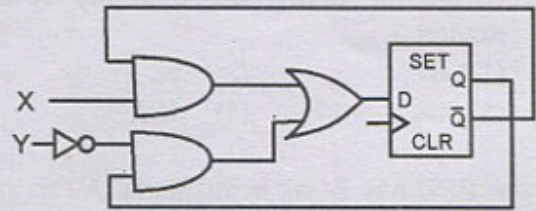
48. A full-adder circuit has

- (1) Two inputs and two outputs  
 (2) Two inputs and three outputs  
 (3) Three inputs and one output  
 (4) Three inputs and two outputs

49. The number of 4-to-16 line decoders required to make an 8-to-256 line decoders with using any other gate is

- (1) 16                      (2) 17  
 (3) 32                      (4) 64

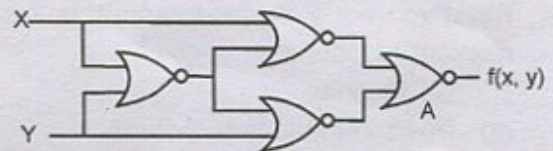
50. Consider the logic circuit given below :



The circuit has initially been reset. Both the input X and Y are high after three clock pulse, the output Q will be

- (1) High  
 (2) Low  
 (3) Intermediate  
 (4) None of these

51. Identify the logic function performed by circuit



- (1) Exclusive OR  
 (2) Exclusive NOR  
 (3) NAND  
 (4) NOR

52. The minimum no of clock pulses required to change the content of 8-bit Johnson counter from 11000000 to 00000011 is

- (1) 2                      (2) 3  
 (3) 4                      (4) 5

53. A RAM chip has a capacity of 1024 words of 8 bit each ( $1K \times 8$ ). The number of  $2 \times 4$  decoders with enable line needed to construct a  $16K \times 16K$  RAM from  $1K \times 8$  RAM is

- (1) 4                      (2) 5  
 (3) 6                      (4) 7

54. How many 32K × 1 RAM chips are needed to provide a memory capacity of 256 Kbytes ?  
 (1) 8 (2) 32  
 (3) 64 (4) 128
55. A CPU has 24-bit instructions. A Program starts at address 300 (in decimal). Which of the following is a legal program counter (all values in decimal) ?  
 (1) 400 (2) 500  
 (3) 600 (4) 700
56. The address space of the 8086 CPU is  
 (1) One Megabyte  
 (2) 256 Kilobyte  
 (3) 1K Megabytes  
 (4) 64 Kilobytes
57. Relative mode of addressing is most relevant to writing  
 (1) Co-routines  
 (2) Position-independent Code  
 (3) Sharable Code  
 (4) Interrupt Handlers
58. By Default, the micro-instruction stored in the control memory are read  
 (1) Sequentially (2) Randomly  
 (3) Independently (4) In Parallel
59. The limiting factor in instruction level parallelism is  
 (1) Storage  
 (2) Memory Space  
 (3) CPU Resource  
 (4) Dependency
60. The signals that are used by the control unit to perform non-scheduled operations are  
 (1) Flags (2) Clock  
 (3) Timing (4) None of these
61. In the relational modes, cardinality is termed as:  
 (1) Number of tuples.  
 (2) Number of attributes.  
 (3) Number of tables.  
 (4) Number of constraints
62. Cartesian product in relational algebra is  
 (1) a Unary operator.  
 (2) a Binary operator.  
 (3) a Ternary operator.  
 (4) not defined.
63. 'AS' clause is used in SQL for  
 (1) Selection operation.  
 (2) Rename operation.  
 (3) Join operation.  
 (4) Projection operation.
64. The database schema is written in  
 (1) HLL (2) DML  
 (3) DDL (4) DCL
65. The property/properties of a database is/are :  
 (1) It is an integrated collection of logically related records.  
 (2) It consolidates separate files into a common pool of data records.  
 (3) Data stored in a database is independent of the application programs using it.  
 (4) All of the above.
66. The method in which records are physically stored in a specified order according to a key field in each record is  
 (1) hash.  
 (2) direct.  
 (3) sequential.  
 (4) all of the above.



67. It is possible to define a schema completely using
- (1) VDL and DDL.
  - (2) DDL and DML.
  - (3) SDL and DDL.
  - (4) VDL and DML.
68. SET concept is used in :
- (1) Network Model
  - (2) Hierarchical Model
  - (3) Relational Model
  - (4) None of these
69. Which of the following operations need the participating relations to be union compatible?
- (1) UNION
  - (2) INTERSECTION
  - (3) DIFFERENCE
  - (4) All of the above
70. \_\_\_\_\_ is a virtual table that draws its data from the result of an SQL SELECT statement.
- (1) View
  - (2) Synonym
  - (3) Sequence
  - (4) Transaction
71. The method of access which uses key transformation is known as
- (1) Direct
  - (2) Hash
  - (3) Random
  - (4) Sequential
72. In E-R diagram generalization is represented by
- (1) Ellipse
  - (2) Dashed ellipse
  - (3) Rectangle
  - (4) Triangle
73. The natural join is equal to :
- (1) Cartesian Product
  - (2) Combination of Union and Cartesian product
  - (3) Combination of selection and Cartesian product
  - (4) Combination of projection and Cartesian product
74. Which one of the following is not true for a view:
- (1) View is derived from other tables.
  - (2) View is a virtual table.
  - (3) A view definition is permanently stored as part of the database.
  - (4) View never contains derived columns.
75. A primary key if combined with a foreign key creates
- (1) Parent-Child relationship between the tables that connect them.
  - (2) Many to many relationship between the tables that connect them.
  - (3) Network model between the tables that connect them.
  - (4) None of the above.
76. A top-to-bottom hierarchy among data items can be established in
- (1) Network Model
  - (2) Hierarchical Model
  - (3) Relational Model
  - (4) All of these
77. Frame memory model and unifying model are types
- (1) Object based logical models
  - (2) Physical models
  - (3) Record based logical models
  - (4) Both (1) and (3)
78. Consider the following statements:
- I. There can be only a single primary key that can be defined for a relation
  - II. There can be multiple unique keys that can be defined for a relation.
- Which of these are true ?
- (1) Both I and II are true
  - (2) Both are false
  - (3) Only I is true
  - (4) Only II is true

79. Armstrong's rule for FD are  
 (1) Sound and complete  
 (2) Sound but not complete  
 (3) Neither sound nor complete  
 (4) Not Sound but complete
80. In the two-phase locking technique ,if a transaction never releases an exclusive lock until after it commits or aborts, then it is called  
 (1) Conservative 2PL  
 (2) Strict 2PL  
 (3) Rigorous 2PL  
 (4) None of the above
81. It refers to an symbols that are used to denote operations and are usually context-dependent  
 (1) Visual programming  
 (2) Operation icons  
 (3) Multi dimensional language  
 (4) None of these
82. \_\_\_\_\_are operators that involve spatial relations among image, text or other spatial objects  
 (1) Spatial operators  
 (2) Visual operators  
 (3) Virtual operators  
 (4) None of these
83. TAOs stands for  
 (1) Teleaction objects  
 (2) Talent objects  
 (3) Teleaction oral  
 (4) None of these
84. To help multimedia application designers to construct index cells, \_\_\_\_\_ was built  
 (1) A visual programming tool, IC Builder  
 (2) A window programming tool, IC Builder  
 (3) A multimedia programming tool, IC Builder  
 (4) None of these
85. \_\_\_\_\_ is also an iconic language system used for augmentative communication by people with speech disabilities:  
 (1) Smiley  
 (2) Minspeak  
 (3) Maxspeak  
 (4) None of these
86. Which refers to a mask property for an object icon  
 (1) Object icon  
 (2) Transparent icon  
 (3) Command icon  
 (4) All of these
87. In a MFC which file contains all standard 'include files:'  
 (1) stdafx.cpp  
 (2) mainframe.cpp  
 (3) application.cpp  
 (4) frame.cpp
88. Which is not the mouse click event  
 (1) WM\_LBUTTONDOWN  
 (2) WM\_BUTTONDOWN  
 (3) WM\_RBUTTONDOWN  
 (4) WM\_MBUTTONDOWN
89. If we are going to create handling WM\_LBUTTONDOWN message handling function then what is the name of function created by Class Wizard:  
 (1) OnLeftButtonDown (...)  
 (2) OnLButtonDown (...)  
 (3) OnButtonDown (...)  
 (4) None of these (...)
90. Match the following:  
 i. WM\_LBUTTONDOWN      a. OnLButtonDblClick  
 ii. WM\_LBUTTONDBLCLICK      b. OnRButtonDown  
 iii. WM\_RBUTTONDOWN      c. OnLButtonDown  
 iv. WM\_RBUTTONDBLCLICK      d. OnRButtonDblClick  
 (1) i-a, ii-c, iii-d, iv-b  
 (2) i-c, ii-a, iii-b, iv-d  
 (3) i-a, ii-b, iii-c, iv-d  
 (4) i-c, ii-a, iii-d, iv-b

91. Which of the following Loop structure does not supported by VB.Net?  
 (1) Do ..... Loop  
 (2) For ..... Next  
 (3) Do ..... While  
 (4) For Each ..... While
92. The corresponding .Net FCL type for Short is \_\_\_\_\_.  
 (1) System.Int32 (2) System.Int64  
 (3) System.Int16 (4) System.Object
93. State whether the statement true or false.  
 (i) Function procedures are public by default.  
 (ii) Function procedure return values whereas sub procedures cannot return a value to the calling procedure.  
 (1) True, True  
 (2) True, False  
 (3) False, True  
 (4) False, False
94. The \_\_\_\_\_ method converts the value of this instance to a double representing the OLE automation date.  
 (1) From OA Date  
 (2) TO OA Date  
 (3) Today  
 (4) Now
95. The \_\_\_\_\_ enable us to pass data between a program and a class.  
 (1) Functions (2) Properties  
 (3) Procedures (4) Variables
96. A C# program may consist of the following parts.  
 (i) Namespace declaration  
 (ii) Class methods  
 (iii) A main method  
 (iv) Statement & Expressions  
 (1) (i), (ii) and (iii) only  
 (2) (ii), (iii) and (iv) only  
 (3) (i), (iii) and (iv) only  
 (4) All (i), (ii), (iii) and (iv)
97. .... conversions are performed by C# compiler itself and ..... conversions are performed by users by using predefined functions.  
 (1) Implicit type, Explicit type  
 (2) Explicit type, Implicit type  
 (3) External type, Internal type  
 (4) Internal type, External type
98. A constructor is called whenever  
 (1) An object is declared  
 (2) An object is used  
 (3) A class is declared  
 (4) A class is used
99. A Program has 100 instructions and another program (for the same problem) has 200 instructions. Which of the following comment logically follows ?  
 (1) The execution time of the second program is more than that of the first.  
 (2) The execution time of the second program is same as that of the first.  
 (3) Compilation time of the second program is more than that of the first.  
 (4) None of the above.
100. In a certain language, the expression  $5-3+2 \times 4+1$ , evaluates to 0. Which of the following conclusions about the precedence and associativity of the operators +, -, \*, are correct ?  
 (1) + has precedence over - and - has precedence over +  
 (2) All these have equal precedence and associate to the right  
 (3) All these have equal precedence and associate to the left  
 (4) + and - has equal precedence, which is over \* and all associate to the left.