

CET-(PG)2015

Sr. No. : 235038

Question Booklet Series : A

Important: Please consult your Admit Card / Roll No. Slip before filling your Roll Number on the Test Booklet and Answer Sheet.

Roll No.

In Figures

In Words

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O.M.R. Answer Sheet Serial No.

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Signature of the Candidate : _____

Subject : M.Sc. (Hons. School)-Computer Science

Time : 90 minutes

Number of Questions : 75

Maximum Marks : 75

DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO

INSTRUCTIONS

1. Write your Roll No. on the Question Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Subject and Series Code of Question Booklet on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Ball Point / Black Gel pen.**
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. To open the Question Booklet remove the paper seal gently when asked to do so.
5. Please check that this Question Booklet contains 75 questions. In case of any discrepancy, inform Assistant Superintendent within 10 minutes of the start of test.
6. Each question has four alternative answers (A, B, C, D) of which only one is correct. For each question darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Ball Point / Black Gel pen.**
7. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in Answer Sheet. No marks will be deducted in such cases.
8. Darken the bubbles in the OMR Answer Sheet according to the Serial No. of the questions given in the Question Booklet.
9. Negative marking will be adopted for evaluation i.e., 1/4th of the marks of the question will be deducted for each wrong answer. A wrong answer means incorrect answer or wrong filling of bubble.
10. For calculations, use of simple log tables is permitted. Borrowing of log tables and any other material is not allowed.
11. For rough work only the sheets marked "Rough Work" at the end of the Question Booklet be used.
12. The Answer Sheet is designed for **computer evaluation**. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e., not following the instructions completely, shall be of the candidate only.**
13. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
14. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so, would be expelled from the examination.
15. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistance or found giving or receiving assistance or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent/Observer whose decision shall be final.
16. **Telecommunication equipment such as pager, cellular phone, wireless, scanner, etc., is not permitted inside the examination hall. Use of calculator is not allowed.**

SEAL

1. Which of the following represents the life-cycle of software development ?
 - (A) Analysis → Design → Coding → Testing → Operation and Maintenance
 - (B) Design → Analysis → Coding → Testing → Operation and Maintenance
 - (C) Design → Analysis → Coding → Testing
 - (D) Analysis → Design → Coding → Operation and Maintenance

2. Open source software products often have fewer bugs than their commercial counterparts because of the :
 - (A) stringent quality checks undertaken by the original developers
 - (B) relatively poorer standards of commercially programmed software
 - (C) pyramidal programming practice followed by OSS developers
 - (D) large number of persons who have looked at the code

3. From Facebook to YouTube, you'll find LAMP software powering many of the sites you visit each day. Which of the following sets of software represents the constituents of the LAMP stack ?
 - (A) Limewire, Acrobat Reader, Mozilla, Python
 - (B) Linux, Apache, MySQL, Perl
 - (C) Linux, Android, Mac OS X, PHP
 - (D) Limewire, AppleScript, MATLAB, Photoshop

4. Which of these is TRUE of the relationship between objects and classes in C++?
 - (A) A class is an instance of an object
 - (B) An object is the ancestor of its subclass
 - (C) An object is an instance of a class
 - (D) An object is the descendant of its superclass

5. Defining a class so that the implementation of the data and methods of the class are not known to the programmers who use the class is called :
 - (A) Data Binding
 - (B) Polymorphism
 - (C) Encapsulation
 - (D) Inheritance

6. Whether by private or public inheritance in C++, a derived class scope nests inside :
 - (A) The scope of its immediate base class
 - (B) The Global scope
 - (C) The Local scope
 - (D) The scope of the abstract class with pure virtual function

7. "Operator overloading allows us to define the behavior of operators when applied to objects of a class". Which of the following C++ operators can be overloaded ?
 (A) . (member access operator) (B) & (address-of operator)
 (C) size of operator (D) ?: (conditional operator)
8. "Function overloading is simply defined as the ability of one function to perform different tasks". Function overloading in C++ is done at :
 (A) Run time (B) Execution time
 (C) Compile time (D) Linking time
9. _____ abstraction is used in both structured design and object-oriented design, while _____ abstraction is only used in object-oriented design.
 (A) Fast, Slow (B) Data, Procedural
 (C) Procedural, Data (D) Off-line, On-line
10. Which one of the following most accurately describes "multiple inheritances" in C++ ?
 (A) When two classes inherit from each other
 (B) When a base class has two or more derived classes
 (C) When a child class has two or more parent classes
 (D) When two classes do not inherit from each other
11. What term is used to describe a function that calls itself in a programming language ?
 (A) Iterative (B) Assimilative
 (C) Recursive (D) Cooperative
12. What is the value of variable z after executing the following code ?

```
int x = 5;
int y = 5;
int z = 5;
if(x > 3)
    if(y > 4)
        if(z > 5)
            z += 1;
    else
        z += 2;
else
    z += 3;
    z += 4;
```

- (A) 9 (B) 5
 (C) 11 (D) 7

17. Which of the following respectively represent commutative law, associative law and distributive law of Boolean algebra ?
- I. $A \cdot (B \cdot C) = (A \cdot B) \cdot C$
 II. $A \cdot (B + C) = A \cdot B + A \cdot C$
 III. $A + B = B + A$
- (A) I, II, III
 (B) III, I, II
 (C) III, II, I
 (D) I, III, II
18. The simplified form of the Boolean expression $(A + \bar{B} + C)(A + \bar{B} + \bar{C})(A + B + C)$ is :
- (A) $(C + \bar{A}B)$
 (B) $(C + AB)$
 (C) $(A + \bar{B}C)$
 (D) $(\bar{A} + \bar{B}C)$
19. Which of the following decimal numbers has an exact representation in binary notation ?
- (A) 0.2
 (B) 0.3
 (C) 0.4
 (D) 0.5
20. In 'https', the letter 's' stands for :
- (A) Standard
 (B) Secure
 (C) Simple
 (D) Smart
21. Communication between a computer and a keyboard involves _____ transmission.
- (A) Simplex
 (B) Half-duplex
 (C) Full-duplex
 (D) Automatic
22. A SIM in a mobile phone stands for :
- (A) Subscriber Internet Module
 (B) Subscriber Identity Module
 (C) Subscriber Internet Model
 (D) Subscriber Identity Memory
23. Which of the following HTML code will affect the vertical alignment of the table content ?
- (A) `<td style="vertical-align: middle">Text goes here.</td>`
 (B) `<td valign="center">Text goes here.</td>`
 (C) `<td style="text-align: center">Text goes here.</td>`
 (D) `<td align="middle">Text goes here.</td>`
24. The best method to rearrange books in a library shelf at the end of the day is :
- (A) Insertion sort
 (B) Radix sort
 (C) Merge sort
 (D) Heap sort
25. In databases, an attribute in one table that references a unique record in another table is called a :
- (A) determinant
 (B) foreign key
 (C) referential attribute
 (D) functional dependency
26. In databases, referential integrity dictates that :
- (A) the value of a primary key must appear in a foreign key of the related table
 (B) the value of a foreign key must appear in a primary key of the related table
 (C) the value of a primary key cannot appear in a foreign key of the related table
 (D) the value of a foreign key cannot appear in a primary key of the related table

27. Which of the following features is supported in the relational database model ?
 (A) Complex data types (B) Multi-valued attributes
 (C) Associations with multiplicities (D) Generalization relationships
28. DROP is a _____ statement in SQL.
 (A) Query (B) Embedded SQL
 (C) DDL (D) DCL
29. The clause in SQL that specifies that the query result should be sorted in ascending or descending order based on the values of one or more columns is :
 (A) View (B) Order by
 (C) Group by (D) Having
30. The Java compiler translates source code into :
 (A) Machine code (B) Assembly code
 (C) Byte code (D) JVM code
31. The size of the IPv4 address is :
 (A) 16 bits (B) 32 bits
 (C) 64 bits (D) 128 bits
32. From what has the term 'Wi-Max' been derived ?
 (A) Worldwide Interoperability for Microwave Access
 (B) Worldwide Interconnection for Microwave Access
 (C) Worldwide Interchangeability for Microwave Access
 (D) Worldwide Interconnection for Multiple Access
33. A language with string manipulation facilities uses the following operations :
head(s) – Returns the first character of string *s*
tail(s) - Returns all but the first character of string *s*
concat(s1, s2) – Concatenates strings *s1* and *s2*
 If the value of string *s* = 'acbc', then the output of *concat (head(s), head (tail (tail (s))))* =
 (A) "ab" (B) "ba"
 (C) "ac" (D) "aa"

Directions for the next three questions:

Assume *x* and *y* are non-zero positive integers. Let us consider the following pseudo-code fragment :

```
While x <> y do
    If x > y then
        x ← x - y
    else
        y ← y - x
    endif
endwhile
print(x)
```

Let us assume that at beginning of this code fragment, the value of *x* and *y* is respectively 20 and 15.

34. How many time will the *while* loop be executed ?
 (A) 0 (B) 1
 (C) 3 (D) 4
35. What is the value of x printed ?
 (A) 0 (B) 5
 (C) 10 (D) 15
36. What is the code doing ?
 (A) It computes the LCM of two numbers
 (B) It divides the largest number by the smaller number
 (C) It computes the GCD of two numbers
 (D) It finds the smaller of two numbers
37. In Software Engineering, site for alpha testing is :
 (A) Software Company (B) Installation Place
 (C) Anywhere (D) www.google.com/alpha/testing/
38. A condition that is caused by run-time error in a computer program is known as :
 (A) Syntax error (B) Semantic error
 (C) Fault (D) Exception
39. Object oriented programming tends to achieve :
 (A) high coupling and low cohesion (B) high coupling and high cohesion
 (C) low coupling and high cohesion (D) low coupling and low cohesion
40. What is the value of the cell containing the formula =SUMIF(A1:A6, ">50", B1:B6) in the Excel worksheet shown below ?

	A	B	C
1	45	35	
2	30	85	
3	75	10	
4	15	55	
5	25	20	
6	65	15	
7			

- (A) 45 (B) 195
 (C) 25 (D) 210
41. What does ISP stand for ?
 (A) International Service Protocol (B) Internal Service Port
 (C) Internet Service Provider (D) Internet Search Program

42. In computers, the proper sequence of actions in a machine cycle is :

- (A) Fetch → execute → decode → store
- (B) Fetch → decode → execute → store
- (C) Execute → decode → store → fetch
- (D) Decode → fetch → execute → store

43. In computers, Disk Defragmenter :

- (A) Regroups fragmented sectors on a hard drive
- (B) Regroups pieces of files together on a hard drive
- (C) Compresses fragmented files
- (D) Un-compresses fragmented files

44. What does BCC mean in E-Mail ?

- (A) Black Carbon Copy
- (B) Blind Carbon Copy
- (C) Business Computer Copy
- (D) Business Computer Card

45. Which of the following TCP/IP protocol is used for transferring electronic mail messages from one machine to another ?

- (A) FTP
- (B) SNMP
- (C) SMTP
- (D) RPC

46. The heart and the nerve centre of a computer is its :

- (A) output unit
- (B) input unit
- (C) CPU
- (D) Memory

47. If $(211)_x = (152)_8$, then the value of base x is :

- (A) 6
- (B) 5
- (C) 7
- (D) 9

48. Consider the following database table :

```
create table test (  
  one integer,  
  two integer,  
  primary key (one),  
  unique (two),  
  check (one >= 1 and <= 10),  
  check (two >= 1 and <= 5)
```

);

How many data records/tuples at most can this table contain ?

- (A) 5
- (B) 10
- (C) 15
- (D) 50

49. Consider the following lists :

List I

1. *Linux*
2. *Mozilla Firefox*
3. *Notepad*
4. *JPEG*

List II

- P. *Text File Editor*
- Q. *Image File Format*
- R. *Operating System*
- S. *Web Browser*

The correct match is :

- (A) 1 → R, 2 → S, 3 → P, 4 → Q (B) 1 → S, 2 → R, 3 → Q, 4 → P
(C) 1 → R, 2 → P, 3 → S, 4 → Q (D) 1 → Q, 2 → S, 3 → P, 4 → R

50. What is the technological advancement that made it possible for computers to become as small as they are today ?

- (A) Repeater (B) Vacuum tube
(C) Transistor (D) Silicon chip

51. Which input method does mainly banks use for processing cheques ?

- (A) OMR (B) MICR
(C) Bar code reader (D) Light Pen

52. Read the following descriptions about X, Y and Z :

X : It does something harmful to the computer system, but is disguised as something useful. Usually it does not make copies of them.

Y : It is a computer program that propagates itself across computers, creating copies of itself in each computer and infecting the entire network.

Z : It is a computer program designed to replicate itself by infecting other files or system areas which need a host program to spread to another computer.

Identify X, Y, Z.

- (A) X : Virus Y : Worm Z : Trojan horse
(B) X : Trojan horse Y : Virus Z : Worm
(C) X : Worm Y : Trojan horse Z : Virus
(D) X : Trojan horse Y : Worm Z : Virus.

53. In user interface design, the term *modal window* refers to :

- (A) the ability to reposition a form at run time
(B) the user not being allowed to shift the focus to any other form until the displayed modal form is hidden
(C) the ability to display more than one form at one time
(D) the user being allowed to shift the focus to any other form, thus allowing the workflow on the application main window

54. Hardware or software designed to guard against unauthorized access to a computer network is known as a(n) :

- (A) Hacker-proof program (B) Firewall
(C) Hacker-resistant server (D) Encryption safe wall

55. Adobe developed _____, which allows documents to be transmitted and stored without loss of formatting.

- (A) defragmentation (B) assembler document format
(C) filtering format (D) portable document format

56. In a C program, variables x and y are declared to be of type `int`. Consider the following four statements :

- S1: $y = x \& 1;$ S2: $y = x \% 2;$
S3: $y = x / 2;$ S4: $y = \ll 1;$

Which of the statements will result in the same value of y for every value of x ?

- (A) S3 and S4 (B) S1 and S3
(C) S1 and S2 (D) S2 and S4

57. When sharing printing resources, this process allows each program to write each line that is to be printed onto a disk.

- (A) Spooling (B) Paging
(C) Dialing (D) Time Sharing

58. Multiprogramming is :

- (A) An executable program that is composed of modules built using different programming languages
(B) Having multiple processors execute different programs at the same time
(C) Keeping several programs in memory at once and switching between them
(D) When a program has multiple threads that run concurrently

59. Consider the following C-function :

```
int goFast(int x) {  
    if (x < 100) x = goFast(x + 10);  
    return (x - 1);  
}
```

What does `goFast(60)` return ?

- (A) 59 (B) 69
(C) 95 (D) 99

60. Which of the following options specifies the correct order of performance for the processors given in each option ?
- (A) 80386, Pentium, core i5, dual core (B) 80386, Pentium, dual core, core i5
 (C) 80386, dual core, core i5, Pentium (D) Pentium, dual core, core i5, 80386
61. In data communications, ATM is an acronym for :
- (A) Automated Teller Machine
 (B) Automatic Transmission Model
 (C) Asynchronous Telecommunication Method
 (D) Asynchronous Transfer Mode
62. ODBC stands for :
- (A) Object Database Connectivity (B) Oral Database Connectivity
 (C) Oracle Database Connectivity (D) Open Database Connectivity
63. In the context of databases, ACID test implies transactions should hold following properties :
- (A) Accountability, Commitment, Independence, Durability
 (B) Atomicity, Commitment, Isolation, Durability
 (C) Atomicity, Consistency, Independence, Durability
 (D) Atomicity, Consistency, Isolation, Durability
64. The solution to the Towers of Hanoi problem with n disks requires _____ moves :
- (A) 2^n (B) $2^n - 1$
 (C) $2^n - 2$ (D) $2^n + 1$
65. How many bit strings of length n (where n is a positive integer) start and end with an one (1) ?
- (A) $2^{n/2}$ (B) 2^n
 (C) 2^{n-2} (D) 2^{n-1}
66. The largest negative number which can be stored in a computer that has 8-bit word length and uses 2's complement arithmetic is :
- (A) -256 (B) -255
 (C) -128 (D) -127
67. Who is original developer of Linux, the free UNIX clone on the PC ?
- (A) Bill Gates (B) Linus Torvalds
 (C) Dennis Ritchie (D) Richard Stallman
68. Which of these UNIX commands will set the permissions on file *textfile* to read and write for the owner, read for the group, and nothing for everyone else ?
- (A) `chmod 046 textfile` (B) `chmod 640 textfile`
 (C) `chmod 310 textfile` (D) `chmod rwr nil textfile`

69. The Newton-Raphson method formula for finding the square root of a real number R from the equation $x^2 - R = 0$ is

(A) $x_{i+1} = \frac{x_i}{2}$

(B) $x_{i+1} = \frac{3x_i}{2}$

(C) $x_{i+1} = \frac{1}{2} \left(x_i + \frac{R}{x_i} \right)$

(D) $x_{i+1} = \frac{1}{2} \left(3x_i - \frac{R}{x_i} \right)$

70. If $e^{0.2} = 1.221$ and $e^{2.2} = 9.025$, then the value of $\int_{0.2}^{2.2} x e^x dx$ by the using one-segment trapezoidal

rule is most nearly :

(A) 11.672

(B) 11.807

(C) 20.099

(D) 24.119

71. Rotational delay is the time to spin the disk to the correct sector and is measured in RPM. If a disk is rotating at a rate of 5000 RPM, what is the average rotational delay in milliseconds ?

(A) 4 milliseconds

(B) 6 milliseconds

(C) 8 milliseconds

(D) 12 milliseconds

72. What is a correct definition of Cloud computing ?

(A) a large pool of usable and accessible virtualized resources

(B) a network of globally interconnected client computers

(C) a service architecture based on thin clients

(D) a service offered by a Service provider, not limited by a Service Level Agreement (SLA)

73. Which of the following is true about cloud computing ?

(A) Cloud firms often have wasteful excess capacity to account for service spikes

(B) Cloud firms are often located in warehouse-style buildings designed for computers, not people

(C) Cloud firms are usually crammed inside inefficiently cooled downtown high-rises

(D) Cloud computing firms often have data centers that are not designed to pool and efficiently manage computing resources

74. A die is rolled and a coin is tossed, the probability that the die shows an odd number and the coin shows a head, is equal to.
- (A) 0.25 (B) 0.50
(C) 0.75 (D) 1.00
75. A computer that represents only 4 significant digits with chopping would calculate $66.666 * 33.333$ as
- (A) 2220 (B) 2221
(C) 2221.17778 (D) 2222