DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO
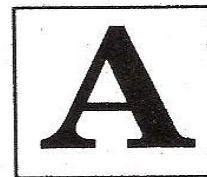
TEST BOOKLET SERIES

TEST BOOKLET

LECT (COMP. ENGG.) T.E.-2016

A

Time Allowed : 2 Hours]

[Maximum Marks : 100

All questions carry equal marks.

INSTRUCTIONS

1. Immediately after the commencement of the examination, you should check that test booklet does not have any unprinted or torn or missing pages or items, etc. If so, get it replaced by a complete test booklet.

2. **Encode clearly the test booklet series A, B, C or D as the case may be in the appropriate place in the answer-sheet.**

3. Write your Roll Number only in the box provided alongside. Do not write anything else on the Test Booklet.

4. This Test Booklet contains **100** items (questions). Each item comprises four responses (answers). Choose only one response for each item which you consider the best.

5. After the candidate has read each item in the Test Booklet and decided which of the given responses is correct or the best, he has to mark the circle containing the letter of the selected response by blackening it completely with Black or Blue ball pen. In the following example, response "C" is so marked :

Ⓐ   Ⓑ   ⬤   Ⓓ

6. Do the encoding carefully as given in the illustrations. While encoding your particulars or marking the answers on answer sheet, you should blacken the circle corresponding to the choice in full and no part of the circle should be left unfilled. After the response has been marked in the ANSWER SHEET, no erasing/fluid is allowed.

7. You have to mark all your responses ONLY on the ANSWER SHEET separately given according to 'INSTRUCTIONS FOR CANDIDATES' already supplied to you. *Responses marked on the Test Booklet or in any paper other than the answer sheet shall not be examined.*

8. All items carry equal marks. Attempt all items. Your total marks will depend only on the number of correct responses marked by you in the Answer Sheet. There will be no negative marking.

9. Before you proceed to mark responses in the Answer Sheet fill in the particulars in the front portion of the Answer Sheet as per the instructions sent to you.

10. If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct.

11. After you have completed the test, hand over the Answer Sheet only to the Invigilator.

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1.   Which of the following is *not* a measure of software quality ?

    (A)   Correctness   (B)   Maintainability

    (C)   Accessibility   (D)   Integrity

2.   Cyclomatic complexity is given by V(G) =

    (A) $E - N + 2$ (B) $E - N$

    (C) $E + N - 2$ (D) $E + N$

3.   Software testing is done to :

    (A)   Correct an error   (B)   Show absence of defect

    (C)   Find an error   (D)   None of these

4.   Alpha and Beta Testing are forms of :

    (A)   Acceptance testing   (B)   Integration testing

    (C)   System testing   (D)   Unit testing

5. As the reliability increases, failure intensity :

   (A) decreases

   (B) increases

   (C) no effect

   (D) none of these

6. If the number of conditions in a decision table is n, the maximum number of rules possible is :

   (A) n

   (B) $2n$

   (C) 2^n

   (D) None of these

7. Software engineering primarily aims on developing :

   (A) Reliable software

   (B) Cost effective software

   (C) Reliable and cost effective software

   (D) None of the above

8. Which of the following is a type of testing ?

   (A) Recovery Testing

   (B) Security Testing

   (C) Stress Testing

   (D) All of these

9. Data structure suitable for the application is discussed in :

(A) data design

(B) architectural design

(C) procedural design

(D) interface design

10. The probability of success of two modules in unit testing is 0.9 each. The probability of success of integration testing is 0.9. The joint probability of success is :

(A) 0.9

(B) 0.81

(C) 0.729

(D) 0.1

11. Mechanism to protect private networks from outside attack is :

(A) Firewall

(B) Digital signature

(C) Formatting

(D) None of these

12. Which of the following is the fastest media of data transfer ?

(A) Co-axial Cable

(B) Untwisted Wire

(C) Telephone Lines

(D) Fibre Optic

13. The internet is :

   (A) Network of networks   (B) Website

   (C) Host   (D) Server

14. Start and Stop bits are used in serial communication for :

   (A) error detection   (B) error correction

   (C) synchronization   (D) none of these

15. The method of communication in which transmission takes place in both directions, but only in one direction at a time is called :

   (A) Simplex   (B) Half duplex

   (C) Full duplex   (D) None of these

16. Unmodulated signal coming from a transmitter is known as :

   (A) carrier signal   (B) baseband signal

   (C) primary signal   (D) none of these

17. The Hamming distance between 001111 and 010011 is :

   (A) 1   (B) 2

   (C) 3   (D) 4

18. The number of cross points needed for 10 lines in a cross point switch which

   is full duplex in nature and there are no self connection is :

   (A) 100   (B) 45

   (C) 50   (D) 90

19. Maximum data rate of a channel for a noiseless 3 kHz binary channel is :

   (A) 3000 bps   (B) 6000 bps

   (C) 1500 bps   (D) none of these

20. End-to-end connectivity is provided from host to host in :

   (A) network layer   (B) transport layer

   (C) session layer   (D) none of these

21. Page fault occurs when :

    (A) page is corrupted   (B) page is in main memory

    (C) page is not in main memory (D) none of these

22. An operating system contains 3 user processes each requiring 2 units of resource R. The minimum number of units of R such that no deadlock will ever occur is :

    (A) 3   (B) 4

    (C) 5   (D) 6

23. At a particular time of computation, the value of a counting semaphore is 7. Then 20 P operations and 'X' V operations were completed on this semaphore. If the final value of the semaphore is 5, X will be :

    (A) 15   (B) 22

    (C) 18   (D) 13

24. Which of the following scheduling algorithm suffers from Belady's anomaly ?

    (A) LFU   (B) LRU

    (C) FIFO   (D) None of these

25. Which of the following scheduling policy is well suited for a time shared operating system ?

    (A) SJF   (B) Round Robin

    (C) FCFS   (D) None of these

26. Dirty bit is used to show the :

(A) page with corrupted data

(B) wrong page in the memory

(C) page that is modified after being loaded into cache memory

(D) less frequently accessed page

27. A program in execution is called :

(A) Process   (B) Instruction

(C) Procedure   (D) Function

28. A scheduler which selects processes from secondary storage device is called :

(A) Short-term scheduler   (B) Long-term scheduler

(C) Medium-term scheduler   (D) Process scheduler

29. Which of the following loaders is executed when a system is first turned on or restarted ?

(A) Boot loader   (B) Compile and Go loader

(C) Bootstrap loader   (D) Relating loader

30. Interval between the time of submission and completion of the job is called :

(A) Waiting Time   (B) Turnaround Time

(C) Response Time   (D) Throughput

31. The quick sort algorithm exploit .... design technique.

   (A) Greedy   (B) Dynamic programming

   (C) Divide and Conquer   (D) Backtracking

32. The data structure required to evaluate a postfix expression is :

   (A) queue   (B) stack

   (C) array   (D) linked-list

33. Which of the following traversal techniques lists the nodes of a binary search tree in ascending order ?

   (A) Post-order   (B) In-order

   (C) Pre-order   (D) None of these

34. What is the post-fix form of the following prefix $* + ab - cd$?

   (A) $ab + cd - *$ (B) $ab\ cd + - *$

   (C) $ab + cd * -$ (D) $ab + - cd *$

35. The order of binary search algorithm is :

   (A) n (B) n^2

   (C) $n \log(n)$ (D) $\log(n)$

36. The number of possible binary trees with 3 nodes is :

   (A) 12

   (B) 13

   (C) 5

   (D) 15

37. The order of algorithm that finds whether a given Boolean function of 'n' variables produces a 1 is :

   (A) Constant

   (B) Linear

   (C) Logarithmic

   (D) Exponential

38. The minimum number of edges in a connected cyclic graph on n vertices is :

   (A) $n - 1$

   (B) n

   (C) $n + 1$

   (D) None of these

39. Assume 5 buffer pages are available to sort a file of 105 pages. The cost of sorting using m-way merge sort is :

   (A) 206

   (B) 618

   (C) 840

   (D) 926

40. If the sequence of operations push(1), push(2), pop, push(1), push(2), pop, pop, pop, push(2), pop are performed on a stack the sequence of popped out values are :

   (A) 2, 2, 1, 1, 2

   (B) 2, 2, 1, 2, 2

   (C) 2, 1, 2, 2, 1

   (D) 2, 1, 2, 2, 2

41. Which of the normal form is considered adequate for relation database design ?

(A) 2NF (B) 3NF

(C) 4NF (D) BCNF

42. The column of a table is referred to as the :

(A) tuple (B) attribute

(C) entity (D) degree

43. An entity set that does not have sufficient attributes to form a primary key is a :

(A) strong entity set (B) weak entity set

(C) simple entity set (D) primary entity set

44. A subschema expresses :

(A) the logical view (B) the physical view

(C) the external view (D) all of these

45. The employee salary should not be greater than Rs. 5,000. This is :

(A) Integrity constraint (B) Referential constraint

(C) Over-defined constraint (D) Feasible constraint

46. Students and courses enrolled, is an example of :

(A) one to one relationship

(B) one to many relationship

(C) many to one relationship

(D) many to many relationship

47. Consider the relation :

Employee(Emp_no, Emp_name, Salary, Project_no, Due_date)

(Assuming an 1-1 relationship between project and employees)

Project_no is functionally dependent on :

(A) Emp_name

(B) Emp_no

(C) Due_date

(D) None of these

48. Count function in SQL returns the number of :

(A) values

(B) distinct values

(C) groups

(D) columns

49. The statement in SQL which allows to change the definition of a table is :

(A) Alter

(B) Create

(C) Select

(D) Update

50. What is a relationship called when it is maintained between two entities ?

(A) Unary

(B) Binary

(C) Ternary

(D) None of these

51. The following program :

```
Main( )
{
    int i = 2;
    {
        int i = 4, j = 5;
        printf("%d%d", i, j);
    }
    Printf("%d%d", i, j);
}
```

(A) will not compile successfully   (B) prints 4525

(C) prints 2525   (D) none of these

52. The use of macro in the place of functions :

(A) reduces execution time   (B) reduces code size

(C) increases execution time   (D) none of these

53. Consider the declaration in C :

int a = 5, *b = &a;

the statement

printf("%d", a * b);

prints :

(A) 25   (B) garbage

(C) 5 x address of b   (D) an error message

54. The following program fragment :

    int a;

    if(a = 7)

    Printf("a is seven");

    else

    printf("a is not seven");

    results in the printing of :

    (A) a is seven   (B) a is not seven

    (C) garbage   (D) none of these

55. Which of the following is procedural language ?

    (A) Pascal   (B) smalltalk

    (C) C++   (D) None of these

56. The minimum number of temporary variables needed to swap the contents of two variables is :

    (A) 1   (B) 2

    (C) 3   (D) 0

57. In C++ the statement :

    int a = 5;

    cout<<"FIRST"<<(a<<2)<<"SECOND";

    outputs :

    (A) FIRST52SECOND   (B) FIRST20SECOND

    (C) SECOND25FIRST   (D) None of these

58. In C++ "Reusability" is a desirable feature of a language as it :

(A) decreases the testing time
(B) reduces the compilation time
(C) reduces the execution time
(D) none of these

59. Choose the *correct* statement regarding inline functions used in C++ :

(A) It speeds up execution
(B) It slows down execution
(C) It decreases the code size
(D) None of these

60. In C++ constructor is called whenever :

(A) an object is declared
(B) an object is used
(C) a class is declared
(D) a class is used

61. Which of the following is *not* a primitive data type in java ?

(A) boolean
(B) byte
(C) string
(D) double

62. The statement in Java :

byte var = ~9;

System.out.println(var);

(A) prints-9
(B) prints-10
(C) prints-119
(D) prints-118

63. In Java constants that cannot be changed are declared using a keyword :

   (A) final   (B) static

   (C) abstract   (D) immutable

64. In Java which of the following methods is used to get the error message for exception that was thrown ?

   (A) printMessage   (B) extractMessage

   (C) throwMessage   (D) getMessage

65. In Java subclass is also called :

   (A) base class.   (B) derived class

   (C) superclass   (D) none of these

66. A top down parser generates :

   (A) left–most derivation

   (B) right–most derivation

   (C) right–most derivation in reverse

   (D) none of the above

67. The grammar $E \rightarrow E + E | E * E | a$, is :

(A) ambiguous

(B) unambiguous

(C) not depends on given sentence

(D) none of these

68. In a compiler, grouping of characters into token is done by the :

(A) scanner

(B) parser

(C) code generator

(D) code optimizer

69. A basic block can be analyzed by a :

(A) DAG

(B) graph involves cycle

(C) flow graph

(D) none of these

70. FSM can recognize :

(A) any grammar

(B) only CFG

(C) only unambiguous

(D) only regular grammar

71. The recognizing capability of NDFSN and DFSM :

(A) may be different

(B) must be different

(C) must be the same

(D) none of these

72. CFG is *not* closed under :

(A) union

(B) Kleene star

(C) complementation

(D) product

73. Which of the following codes needs 7 bits to represent a character ?

(A) ASCII

(B) BCD

(C) EBCDIC

(D) GRAY

74. The minimum time delay between the initiation of two independent memory operations is called :

(A) access time

(B) cycle time

(C) transfer time

(D) latency time

75. Tera is 2 to the power of :

(A) 32

(B) 30

(C) 40

(D) 25

76. Von Neuman architecture is :

(A) SISD

(B) SIMD

(C) MIMD

(D) MISD

77. Refresh rate below which a picture flickers is :

(A) 25　　　　　　　　　　　　　　(B) 30

(C) 35　　　　　　　　　　　　　　(D) 60

78. Pixel phasing is a technique for :

(A) shading　　　　　　　　　　　(B) anti-aliasing

(C) hidden line removal　　　　　　(D) none of these

79. When the computer is not able to maintain operation and display, bright

spot occur in the screen. This is called as :

(A) dropping out　　　　　　　　　(B) snowing

(C) flickering　　　　　　　　　　(D) blanking

80. All the following hidden surface algorithm employ image space approach,

except :

(A) back face removal　　　　　　　(B) depth buffer method

(C) scan line method　　　　　　　(D) depth sort method

81. Between 2001 and 2011 what has been the approximate increase in literacy rate in H.P. (in percentage terms) :

(A) 5.83   (B) 7.30

(C) 8.47   (D) 9.05

82. In which district of H.P. is *Dera Jogi Panga* ?

(A) Una   (B) Hamirpur

(C) Bilaspur   (D) Kangra

83. When did the Rana of Keonthal receive the title of raja ?

(A) 1857 A.D.   (B) 1887 A.D.

(C) 1907 A.D.   (D) 1917 A.D.

84. Which raja of Kangra refused to marry his sister to the son of Dhian Singh, the Prime Minister of Maharaja Ranjit Singh ?

(A) Ranbir Chand   (B) Jai Chand

(C) Pratap Chand   (D) Anirudh Chand

85. In which district of H.P. is Chandertal lake ?

(A) Kullu   (B) Kinnaur

(C) Shimla   (D) Lahul-Spiti

86. When is Pulech, the festival of flowers, celebrated (according to Vikrami Samvat) ?

   (A) Jyeshtha—Asadh   (B) Asadh—Shrawan

   (C) Shrawan—Bhadon   (D) Bhadon—Asauj

87. At which place in Kinnaur District of H.P. is the HPMC upgrading its packing house ?

   (A) Kalpa   (B) Reckong Peo

   (C) Nichar   (D) Bangtu

88. In what ratio is the cost of Mid-Himalayan Watershed Development Project being shared between the World Bank and the H.P. State Government ?

   (A) 70 : 30   (B) 80 : 20

   (C) 85 : 15   (D) 90 : 10

89. In which river basin is Khauli Hydel Project ?

   (A) Satluj   (B) Beas

   (C) Ravi   (D) Chenab

90. Upto which class the students of government schools in H.P. are allowed free travel in the HRTC buses ?

   (A) Class V   (B) Class VIII

   (C) Class X   (D) Class 10+2

91. What is the title of autobiography of famous Indian classical dancer Mrinalini Sarabhai ?

   (A) Voice From the Heart   (B) Art and Sound

   (C) Ringing Bells   (D) Heart Beats

92. With which region is Jallikattu, the bull taming sport associated ?

   (A) Punjab   (B) Tamil Nadu

   (C) Odisha   (D) Haryana

93. Which one of the following cities is being developed as smart city with the help of France ?

   (A) Nagpur   (B) Mumbai

   (C) Patna   (D) Lucknow

94. Who is the author of *India : The Crucial Years* ?

   (A) A.S. Daulat   (B) Jairam Ramesh

   (C) T.V. Rajeswar   (D) M.L. Fotedar

95. Who founded the farmers' organisation *Shetkari Sanghatana* ?

   (A) Sharad Yadav   (B) Sharad Joshi

   (C) Sharad Pawar   (D) Baba Maya Ram

96. To which country does Ariadna Gutierrez who was wrongly declared Miss Universe 2015 belong ?

(A) Brazil
(B) Colombia
(C) Philippines
(D) Spain

97. Identify the Indian origin cancer expert who was knighted by Queen Elizabeth in the new year honours list released in December, 2015 ?

(A) Hardev Singh
(B) Hardyal Singh
(C) Daljit Singh
(D) Harpal Singh Kumar

98. Who is Donald Trump ?

(A) a British writer
(B) a US Presidential hopeful
(C) a French economist
(D) a German football player

99. Who are called Umbrella soldiers ?

(A) Islamic state terrorists

(B) US commandos

(C) Supporters of Hong Kong's Democracy Movement

(D) Pakistani armymen in Pakistan Occupied Kashmir

100. What is the capital of Mali ?

(A) Bamako
(B) Male
(C) Valletta
(D) Port Louis