Test Booklet Series

A

Test Booklet
(Computer Application)

Test Booklet No.

Name of Applicant ..... Answer Sheet No. .....

Applicant ID/Roll No. : ..... Signature of Applicant : .....

Date of Examination : ..... Signature of the Invigilator(s)

Time of Examination : ..... 1. .....

2. .....

Duration : 2 Hour] **[Maximum Marks : 100**

IMPORTANT INSTRUCTIONS

(i) The question paper is in the form of Test-Booklet containing **100 (Hundred)** questions. All questions are compulsory. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct. Choose the correct option or the most appropriate option.

(ii) On receipt of the Test-Booklet (Question Paper), the candidate should immediately check it and ensure that it contains all the pages, i.e., **100** questions. Discrepancy, if any, should be reported by the candidate to the invigilator immediately after receiving the Test-Booklet.

(iii) A separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are **100** rows containing four circles each. One row pertains to one question.

(iv) The candidate should write his/her Application ID/Roll number at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and NOWHERE ELSE.

(v) No second Test-Booklet/Question Paper and Answer-Sheet will be given to a candidate. The candidates are advised to be careful in handling it and writing the answer on the Answer-Sheet.

(vi) For every correct answer of the question **One (1) mark will be awarded**.

(vii) Marking shall be done only on the basis of answers responded on the Answer-Sheet.

(viii) To mark the answer on the Answer-Sheet, candidate should darken the appropriate circle in the row of each question with Blue or Black pen.

(ix) For each question only **one** circle should be **darkened** as a mark of the answer adopted by the candidate. If more than one circle for the question are found darkened or with one black circle any other circle carries any mark, the answer will be treated as incorrect.

(x) The candidates should not remove any paper from the Test-Booklet/Question Paper. Attempting to remove any paper shall be liable to be punished for use of unfair means.

(xi) Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.

(xii) *Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*

(xiii) No candidate shall be permitted to leave the examination hall before the expiry of the time.

DO NOT OPEN THIS QUESTION BOOKLET UNTIL ASKED TO DO SO.

PART–A

1. Research is
   (A) Searching again and again
   (B) Finding a solution to any problem
   (C) Working in a scientific way to search for the truth of any problem
   (D) None of the above

2. The conceptual framework in which research is conducted is called a
   (A) Synopsis of research
   (B) Research design
   (C) Research hypothesis
   (D) Research paradigm

3. What are the main characteristics of Scientific Research?
   (A) Empirical
   (B) Theoretical
   (C) Experimental
   (D) All the above

4. Which research design will be most appropriate to study the relationship between the level of aspirations and achievement of rural children?
   (A) Experimental Research Design
   (B) Ex Post Facto Research Design
   (C) Historical Research Design
   (D) Survey Research Design

5. The principles of fundamental research are used in:
   (A) action research
   (B) applied research
   (C) philosophical research
   (D) historical research

6. A shift in attitude in respondents between two points during data collection is called
   (A) Reactive effect
   (B) Maturation effect
   (C) Regression effect
   (D) Conditioning effect

7. Ethical Norms in research do not involve guideline for:
   (A) Thesis Format
   (B) Copyright
   (C) Patenting Policy
   (D) Data sharing Policy

8. The primary objective of an experimental research design is to:
   (A) Explore an unknown topic.
   (B) Establish cause-and-effect relationships.
   (C) Describe a population or situation.
   (D) Examine the relationship between variables without manipulation.

9. The research that aims at immediate application is:
   (A) Action Research
   (B) Empirical Research
   (C) Conceptual Research
   (D) Fundamental Research

10. A null hypothesis is
   (A) when there is no difference between the variables
   (B) the same as research hypothesis
   (C) subjective in nature
   (D) when there is difference between the variables

11. When the researcher rejects a true null hypothesis a ---------- error occurs.
   (A) Type I
   (B) Type A
   (C) Type II
   (D) Type B

12. The researcher is usually interested in supporting ..... when he or she is engaging in hypothesis testing:
   (A) The alternative Hypothesis
   (B) The null Hypothesis
   (C) Both alternative and null Hypothesis
   (D) Neither the alternative or null Hypothesis

13. A research design is often described as the "blueprint" for a research project. This emphasizes its role in:
   (A) Collecting data
   (B) Analysing data
   (C) Providing a strategy and framework for the study
   (D) Presenting findings

14. What is a cross-sectional research design?
(A) A design in which a data is collected at one point of time.
(B) A design in which data is collected over a period of time.
(C) A design in which data is collected from a representative sample of the population.
(D) A design in which data is collected from a non-representative sample of the population.

15. Match the measurement scale to the given variables:

Scale of measurement	**Variable**
(a) Nominal	(i) Height of student
(b) Ordinal	(ii) Time of day
(c) Interval	(iii) Caste
(d) Ratio	(iv) Rank of Army Personnel

Choose the correct answer from the options given below:
(A) (a) – (i), (b) – (ii), (c) – (iii), (d) – (iv)
(B) (a) – (ii), (b) – (iii), (c) – (iv), (d) – (i)
(C) (a) – (iii), (b) – (iv), (c) – (ii), (d) – (i)
(D) (a) – (iv), (b) – (i), (c) – (ii), (d) – (iii)

16. Which is the simplest form of Measurement?
(A) Ordinal (B) Nominal
(C) Ratio (D) Interval

17. The data is obtained through a survey conducted is called:
(A) Primary data (B) Secondary data
(C) Continuous data (D) Qualitative data

18. A survey in which the information is collected from each and every individual of the population is known as:
(A) Sample survey (B) Pilot survey
(C) Biased survey (D) Census survey

19. Interview is an example of which data?
(A) Primary data (B) Secondary data
(C) Both (A) and (B) (D) None of the above

20. What is the process of organizing raw data into rows and columns for systematic analysis called?
(A) Compilation
(B) Presentation
(C) Tabulation
(D) Classification

21. The graphical representation of a frequency distribution is called
(A) Bar chart
(B) Line chart
(C) Histogram
(D) Pie char

22. Identify the correct sequence of research steps:
(A) Selection of topic, review of literature, data collection, interpretation of findings
(B) Review of literature, selection of topic, data collection, and interpretation of findings
(C) Selection of topic, data collection, review of literature, interpretation of findings
(D) Selection of topic, review of literature, interpretation of findings, data collection

23. When a research problem is related to heterogeneous population, the most suitable sampling method is:
(A) Cluster Sampling
(B) Stratified Sampling
(C) Convenient Sampling
(D) Lottery Method

24. A researcher wants to study the long-term effects of a new teaching method on student performance over several years. Which research design would be most appropriate?
(A) Cross-sectional design
(B) Case study design
(C) Longitudinal design
(D) Survey design

25. From the list given below identify those which are called non-probability sampling procedures:
(i) Simple random sampling
(ii) Dimensional sampling
(iii) Snowball sampling
(iv) Cluster sampling
(v) Quota sampling
(vi) Stratified sampling
Choose the correct option
(A) (i), (ii) and (iii)
(B) (ii), (iv) and (v)
(C) (i), (iii) and (v)
(D) (ii). (iii) and (v)

26. Among the following types of sampling techniques, which one is also known as 'Judgmental' sampling?

(A) Quota sampling
(B) Convenience Sampling
(C) Cluster Sampling
(D) Purposive Sampling

27. The primary objective of an experimental research design is to:

(A) Explore an unknown topic.
(B) Establish cause-and-effect relationships.
(C) Describe a population or situation.
(D) Examine the relationship between variables without manipulation.

28. "Students from the pure mathematics background can crack a bank recruitment test"—Which type of hypothesis is this?

(A) Relational Hypothesis
(B) Descriptive hypothesis
(C) Two tailed Hypothesis
(D) Null Hypothesis

29. Parametric tests make assumptions on:

(A) The population size
(B) The underlying distribution
(C) The sample size
(D) The mean sample

30. If the researcher has a nominal data, which non parametric test will he/she can use:

(A) T-test
(B) Z-test
(C) Chi square test
(D) All the above

31. If a researcher needs to verify whether there is a significant difference between the means of two groups to test a hypothesis, which statistical method would he/she employ?

(A) Chi-square test
(B) Correlation coefficient
(C) Sign-test
(D) Student's t-test

32. Chi-square is used to analyse:

(A) Scores (B) Ranks

(C) Frequencies (D) None of these

33. On which of the following does the critical value for a chi-square statistic rely?

(A) The degrees of freedom (B) The sum of the frequencies

(C) The row totals (D) The number of variables

34. Calculated value of chi-square is always.....

(A) Positive (B) Negative

(C) Zero (D) None of these

35. Which of the following best describes the purpose of using ANOVA in research?

(A) ANOVA is used to compare the means of two groups.

(B) ANOVA is use to compare the means of more than two groups.

(C) ANOVA is used to determine the correlation between two variables.

(D) ANOVA is used to determine the interaction effect between dependent variables.

36. What do ANOVA calculate?

(A) T-Ratio (B) Chi-square

(C) Z-Ratio (D) F-Ratio

37. What is the primary goal of factor analysis?

(A) To predict a dependent variable from multiple independent variables.

(B) To reduce a large number of variables into a smaller set of underlying factors.

(C) To determine the causal relationship between variables.

(D) To calculate the correlation between two variables.

38. Which assumption is required for factor analysis?

(A) Extreme collinearity exists among variables.

(B) Variables have a skewed distribution.

(C) A linear relationship exists among variables.

(D) There are many outliers in the data.

39. When using Principal Component Analysis (a common method for factor analysis), what does the first principal component capture?
(A) The minimum variance.
(B) The mean deviation.
(C) The maximum variance.
(D) The average variance.

40. Which statistical measure is used to assess the sampling adequacy for conducting factor analysis?
(A) Kaiser-Meyer-Olkin (KMO) measure.
(B) Bartlett's test of sphericity.
(C) Eigenvalue.
(D) All of the above.

41. The process by which we estimate the value of dependent variable on the basis of one or more independent variable is called:
(A) Correlation
(B) Regression
(C) Residual
(D) Slope

42. The major characteristic of correlation analysis is to seek out
(A) Differences among variables
(B) Variations among variables
(C) Association among variables
(D) Regression among variables

43. A correlation coefficient (r) of –1.0 indicates a:
(A) Perfect positive correlation
(B) Weak positive correlation
(C) No correlation
(D) Perfect negative correlation

44. The statistical tool that studies the degree of association between two variables is called:
(A) Regression
(B) Standard error
(C) Index numbers
(D) Correlation

45. Which type of correlation analysis is appropriate for examining the relationship between variables with non-linear relationships?
(A) Pearson's correlation
(B) Spearman's rank correlation
(C) Both Pearson's and Spearman's
(D) Neither Pearson's nor Spearman's

46. What is the primary goal of cluster analysis?
    (A) Classifying data into predefined groups.
    (B) Predicting a continuous value.
    (C) Grouping similar data points together based on their characteristics.
    (D) Reducing the number of variables in a dataset.

47. The primary purpose of conjoint analysis is to:
    (A) Identify which customer segments are most profitable.
    (B) Determine the price elasticity of demand for an existing product.
    (C) Quantify the value that consumers place on different features of a product or service.
    (D) Predict sales volume for a new product with absolute certainty.

48. The most common type of conjoint analysis, which presents respondents with sets of product profiles and asks them to choose the one they prefer most, is known as:
    (A) Adaptive Conjoint Analysis (ACA).
    (B) Choice-Based Conjoint (CBC).
    (C) Full-Profile Conjoint Analysis.
    (D) Self-Explicated Conjoint Analysis.

49. Which statement is an accurate representation of a "trade-off" in conjoint analysis?
    (A) A decision to buy a product from one brand over another.
    (B) A decision to delay a purchase until a later date.
    (C) A customer choosing a larger screen over longer battery life for a phone.
    (D) A customer buying a product with all the most desired features.

50. What is the primary purpose of discriminant analysis?
    (A) To determine the effect of independent variables on a continuous dependent variable.
    (B) To identify the underlying structure or dimensions within a set of variables.
    (C) To classify cases into two or more distinct, pre-defined groups based on a set of predictor variables.
    (D) To cluster data points into a specific number of groups based on their similarities.

PART–B

(Computer Application)

51. How many tokens are generated by the lexical analyser for the input string if (a >= 10) b = c?

(A) 10 (B) 11

(C) 12 (D) 9

52. A host uses stop-and-wait ARQ to send 10 data packets. The 3rd data packet is lost on the first attempt. Assuming no other packets or ACKs are lost, how many total packets (data + ACK) are exchanged to complete the transfer?

(A) 20 (B) 21

(C) 22 (D) 30

53. What is the decimal value of the 8-bit two's complement integer 10110101?

(A) 181 (B) –75

(C) –74 (D) –181

54. Two threads share a variable X (initially X = 10). T1 executes X = X + 5 and T2 executes X = X * 2. If the operations are non-atomic, which of the following is not a possible final value for X?

(A) 15 (B) 25

(C) 30 (D) 35

55. In a singly linked list with n nodes, what is the worst-case time complexity to insert a new node at the end of the list, given only the head pointer?

(A) O(1) (B) O(log n)

(C) O(n) (D) O(n^2)

56. A T-flip-flop has its T input held HIGH (logic 1). The circuit is driven by a clock signal with a frequency of 100 kHz. What is the frequency of the signal at the Q output?

(A) 100 kHz (B) 200 kHz

(C) 50 kHz (D) 0 kHz (stable)

57. Using a greedy algorithm to provide change for 46 cents using US coin denominations (1, 5, 10, 25 cents), what is the third coin selected?

(A) 25 (B) 10

(C) 5 (D) 1

58. What is the total number of nodes in a perfect binary tree of height h? (Assuming a tree with one node has h = 0).

(A) 2^h (B) 2^h – 1

(C) 2^{h + 1} – 1 (D) 2h + 1

59. In a standard single-cycle processor datapath, the RegWrite control line is stuck at 0 (de asserted). Which of the following instructions will fail to execute correctly?

(A) sw (store word) (B) beq (branch if equal)

(C) add (add) (D) j (jump)

60. A file system uses an indexed allocation scheme. An index block contains 128 direct block pointers. If the block size is 4 KB, what is the maximum size of a file?

(A) 128 KB (B) 4 MB

(C) 512 KB (D) 1 KB

61. What is the minimum number of states required in a Deterministic Finite Automaton (DFA) to recognize the language of binary strings that end with the substring 10?

(A) 2 (B) 3

(C) 4 (D) 5

62. Which I/O transfer mechanism provides the highest throughput by allowing data transfer between a device and main memory without direct CPU intervention for each word?

(A) Programmed I/O (B) Interrupt-driven I/O

(C) Direct Memory Access (DMA) (D) Polling

63. If a language L is "decidable" (or "recursive"), what must be true?

(A) A Turing machine exists that halts on all inputs w, accepting if w in L and rejecting if w not in L

(B) A Turing machine exists that halts and accepts if w in L, but may loop if w not in L

(C) L must also be a context-free language

(D) L can only be recognized by a non-deterministic Turing machine

64. Given the following C function, what is the return value of foo(4)?

C

```
int foo(int n) {
  if (n == 0)
    return 1;
  else
    return n * foo(n-1);
}
```

(A) 4 (B) 10

(C) 24 (D) 1

65. Given Employees (E_ID, Name) and Sales (S_ID, E_ID, Amount), which SQL query lists all employee names, including those with no sales?

(A) SELECT E.Name, S.Amount FROM Employees E INNER JOIN Sales S ON E.E_ID = S.E_ID;

(B) SELECT E.Name, S.Amount FROM Employees E LEFT OUTER JOIN Sales S ON E.E_ID = S.E_ID;

(C) SELECT E.Name, S.Amount FROM Employees E RIGHT OUTER JOIN Sales S ON E.E_ID = S.E_ID;

(D) SELECT E.Name, S.Amount FROM Employees E CROSS JOIN Sales S;

66. At which layer of the TCP/IP model are source and destination port numbers added to the protocol data unit?

(A) Application Layer (B) Transport Layer

(C) Network Layer (D) Data Link Layer

67. Given the context-free grammar G with the rule $S \rightarrow aSb \mid \in$, which of the following strings is not in the language L(G) ?

(A) aabb
(B) ab
(C) abb
(D) epsilon (empty string)

68. A relation R(A, B, C) has the candidate key A and the functional dependencies $A \rightarrow B$ and $B \rightarrow C$. Which is the highest normal form this relation violates?

(A) First Normal Form (1NF)
(B) Second Normal Form (2NF)
(C) Third Normal Form (3NF)
(D) Boyce-Codd Normal Form (BCNF)

69. What is the maximum number of comparisons required to find a value in a sorted array of 1000 elements using binary search?

(A) 1000
(B) 10
(C) 100
(D) 500

70. Processes P1, P2, and P3 arrive at time 0 with CPU burst times of 24 ms, 3 ms, and 3 ms, respectively. Using the FCFS scheduling algorithm, what is the average waiting time?

(A) 17 ms
(B) 9 ms
(C) 10 ms
(D) 27 ms

71. Evaluate the $\lim_{(x \rightarrow 0)} \frac{\sin(x)}{x}$:

(A) 0
(B) 1
(C) Infinity
(D) Undefined

72. What is the expected value (mean) of a single roll of a fair six-sided die?

(A) 3
(B) 3.5
(C) 4
(D) 6

73. In a typical C runtime environment, where is a local variable (e.g., int x; declared inside a function) allocated?

(A) The Heap
(B) The Stack
(C) The Data Segment
(D) The CPU Registers

74. Which algorithm guarantees finding the shortest path (by number of edges) between two nodes in an unweighted graph?

(A) Depth-First Search (DFS)
(B) Breadth-First Search (BFS)
(C) Prim's Algorithm
(D) Topological Sort

75. Which of the following expressions is logically equivalent to
$\neg(P \wedge Q)$ (NOT (P AND Q))
according to De Morgan's Law?

(A) $(\neg P) \wedge (\neg Q)$
(B) $(\neg P) \vee (\neg Q)$
(C) $P \vee Q$
(D) $P \wedge (\neg Q)$

76. What best describes Cache and main memory?

(A) Cache and main memory is not related to computing
(B) Cache and main memory is a fundamental concept in computer science
(C) Cache and main memory deals with unrelated topics
(D) Cache and main memory is used only in hardware systems

77. Which of the following concurrency control protocols ensures that transactions are executed in a serializable order?

(A) Two-phase locking
(B) Timestamp ordering
(C) Multiversion concurrency control
(D) All the above

78. Consider a database system that uses two-phase locking for concurrency control. A transaction T1 requests a lock on a data item X. If the lock is already held by another transaction T2, what will happen to T1?

(A) T1 will be aborted immediately
(B) T1 will be blocked until T2 releases the lock
(C) T1 will be given a temporary lock that can be revoked if T2 needs the lock
(D) T1 will be allowed to access X without locking it

79. Given the following C function, what is the return value of foo(4)?

(A) 4
(B) 10
(C) 24
(D) 1

80. What is the *minimum* number of states required in a Deterministic Finite Automaton (DFA) to recognize the language of binary strings that end with the substring 10?

(A) 2 (B) 3

(C) 4 (D) 5

81. What best describes Bayes theorem?

(A) Bayes theorem is not related to computing

(B) Bayes theorem deals with unrelated topics

(C) Bayes theorem is used only in hardware systems

(D) Bayes theorem is a fundamental concept in computer science

82. A network administrator is configuring an Ethernet bridge to connect two separate LANs. However, after configuring the bridge, devices on one LAN are unable to communicate with devices on the other LAN. What could be the possible cause of this issue?

(A) Incorrect IP address configuration on the bridge

(B) Mismatched subnet masks on the two LANs

(C) Spanning Tree Protocol (STP) is disabled on the bridge

(D) The bridge is configured to filter out MAC addresses of devices on one of the LANs

83. What happens when two or more devices connected to an Ethernet bridge transmit data at the same time?

(A) The bridge will buffer the packets and transmit them one by one

(B) The bridge will discard all the packets and send an error message

(C) The bridge will prioritize one packet over the other based on QoS settings

(D) The packets will collide, and the devices will retransmit after a random delay

84. What best describes Hashing?

(A) Hashing is not related to computing

(B) Hashing is used only in hardware systems

(C) Hashing is a fundamental concept in computer science

(D) Hashing deals with unrelated topics

85. Find the average value of the function $f(x) = \sin^2(x)$ on the interval $[0, \pi]$.

(A) 0 (B) $\frac{2}{\pi}$

(C) 1 (D) $\frac{1}{2}$

86. Let n = 6. Find the number of surjective functions f : {1, 2, 3, 4, 5, 6} to {1, 2, 3} such that f(1) is not equal to 1.

(A) 360 (B) 540

(C) 358 (D) 180

87. Find the number of paths from (0,0) to (5,5) moving only right (R) or up (U), which do not pass through any of the points P_1(1,2), P_2(3,2), or P_3(4,4).

(A) 39 (B) 42

(C) 51 (D) 37

88. What best describes Transactions?

(A) Transactions is used only in hardware systems

(B) Transactions is a fundamental concept in computer science

(C) Transactions deals with unrelated topics

(D) Transactions is not related to computing

89. Let R be the region enclosed by the parabola $y = x^2$ and the line $y = 2x$. Find the volume of the solid generated by revolving this region R around the horizontal line $y = -1$.

(A) $\frac{64\pi}{15}$ (B) $\frac{104\pi}{15}$

(C) $\frac{8\pi}{5}$ (D) $\frac{48\pi}{5}$

90. In how many ways can the letters of the word 'INDEPENDENCE' be arranged so that all the vowels (I, E, E, E, E) always occur together?

(A) 16800 (B) 17200

(C) 15600 (D) 20160

91. Evaluate the following definite integral, where a, b > 0 :

$$I = \int_0^1 \frac{x^a - x^b}{\ln(x)}\, dx$$

(A) $\ln(a) - \ln(b)$

(B) $\frac{1}{a+1} - \frac{1}{b+1}$

(C) $\ln\left(\frac{b+1}{a+1}\right)$

(D) $\ln\left(\frac{a+1}{b+1}\right)$

92. A TCP connection is in the ESTABLISHED state. The client sends a packet with Seq=200 and 100 bytes of data. If this packet is received correctly, what will be the Sequence Number and Acknowledgment Number in the ACK packet sent by the server?

(A) Seq=300, Ack=201

(B) Seq=(Server's current Seq), Ack=300

(C) Seq=(Server's current Seq), Ack=200

(D) Seq=300, Ack=(Server's current Seq)

93. A test for a rare disease (1% prevalence) is 99% accurate (true positive rate) and has a 5% false positive rate. If a person tests positive, what is the *approximate* probability they actually have the disease?

(A) 99%

(B) 50%

(C) 17%

(D) 95%

94. Which of the following applies to TCP/IP layers?

(A) TCP/IP layers involves random events

(B) TCP/IP layers is used for efficient computation

(C) TCP/IP layers is unrelated to algorithms

(D) TCP/IP layers defines memory structure

95. Consider the following processes with their arrival times and CPU burst times. Using the Shortest Remaining Time First (SRTF) pre-emptive scheduling algorithm, what is the *average waiting time* for all processes?

Process	Arrival Time (ms)	Burst Time (ms)
P1	0	8
P2	1	4
P3	2	9
P4	3	5

(A) 6.5 ms

(B) 5.0 ms

(C) 7.75 ms

(D) 9.25 ms

96. Which of the following applies to Transactions?

(A) Transactions involves random events

(B) Transactions is used for efficient computation

(C) Transactions is unrelated to algorithms

(D) Transactions defines memory structure

97. What is the Post order traversal of a binary tree whose Inorder traversal is D, B, H, E, A, F, C, I, G, J and Preorder traversal is A, B, D, E, H, C, F, G, I, J?

(A) D, H, E, B, F, I, J, G, C, A

(B) D, H, B, E, F, I, J, G, A, C

(C) H, D, E, B, F, I, C, G, J, A

(D) H, E, D, B, I, J, G, F, C, A

98. From a group of 10 students, in how many ways can a committee of 3 students be chosen to represent the class?

(A) 720

(B) 30

(C) 120

(D) 90

99. A min-heap data structure is built by inserting the following elements in order : 20, 10, 50, 5, 30, 40, 2. What is the state of the heap (represented as an array) after a single extract Min() operation is performed?

(A) [5, 10, 20, 40, 30, 50]

(B) [5, 20, 10, 30, 50, 40]

(C) [5, 10, 20, 50, 30, 40]

(D) [5, 30, 10, 50, 40, 20]

100. Which of the following represents a famous undecidable problem, meaning no Turing machine can be constructed to solve it for all possible inputs?

(A) Determining if a string is a palindrome

(B) Sorting a list of n integers

(C) The Halting Problem (determining if an arbitrary program will stop or run forever)

(D) Finding the shortest path between two nodes in a graph

ROUGH WORK