Step Academy official

Model Town Grw PH: 03016652757

STUDENT NAME	
PAPER CODE	57181
TIME ALLOWED	
Paper Date	

CLASS	1st Year
SUBJECT	Computer
TOTAL MARKS	\
Paper Type	

Q1. Choose the correct answer.

1. What are the two fundamental digits used in binary code?

(A) 0 and 2 **(B)** 1 and 3 **(C)** 0 and 1 **(D)** A and 8

2. How many bits does the ASCII code use to represent a character?

(A) 8 bits **(B)** 16 bits **(C)** 32 bits **(D)** 64 bits

3. In a digital computer, what do logic levels "0" and "1" represent in terms of voltage?

(A) 0V for "0" and 5V for "1" **(B)** OV for "1" and 5V for "0" **(C)** 0V for both "0" and "1" **(D)** 5V for both "0" and "1"

4.
Which of the following logic gates produces a HIGH (1) outpu output only when all of its inputs are HIGH (1)?

(A) AND gate **(B)** OR gate **(C)** NOT gate **(D)** XOR gate

5.
Which principle of Boolean algebra allows interchanging the AND and OR operators while negating the variables?

(A) Absorption Law **(B)** Identity Law **(C)** Principle of Duality **(D)** Distributive Law

6.
Which principle in Boolean algebra involves interchanging the AND and OR operators while complementing the variables?

(A) Absorption Law **(B)** Identity Law **(C)** Principle of Duality **(D)** Distributive Law

7.
Which principle of Boolean algebra allows interchanging the AND and OR operators while negating the variables?

(A) Complement principle **(B)** Dual principle **(C)** Inversion principle **(D)** Identity principle

8.
Which phase of SDLC involves assessing whether the proposed software/system is feasible in terins of resources and budget?

(A) Design Phase **(B)** Analysis Phase **(C)** Feasibility Study Phase **(D)** Coding Phase

9.
Which phase of SDLC focuses on understanding user expectations and identifying software requirements?

(A) Maintenance/Support Phase **(B)** Deployment/Implementation Phase **(C)** Requirement Engineering Phase **(D)** Testing/Verification Phase

10. Which Agile model phase involves evaluating the software to identify and fix defects?

(A) Design **(B)** Testing **(C)** Deployment **(D)** Requirements Gathering

11.
Which software development model is characterized by iterative development and frequent updates throughout the project's lifecycle?

(A) Waterfall Model **(B)** Agile Model **(C)** Feasibility Model **(D)** Design Model

12. Which type of topology is known for its high redundancy and reliability?

(A) Bus Topology **(B)** Star Topology **(C)** Mesh Topology **(D)** Ring Topology

13. What is the main disadvantage of Ring Topology?

(A) Limited bandwidth **(B)** High cost **(C)** Complex installation **(D)** SProne to failure

14. What type of topology combines elements from multiple topologies to create a efficient network?

(A) Star Topology **(B)** Bus Topology **(C)** Mesh Topology **(D)** Hybrid Topology

15. What is the main advantage of asymmetric encryption over symmetric encryption?

(A) Faster encryption and decryption **(B)** Simplified key distribution **(C)** Non-repudiation **(D)** Lower computational complexity

16.
What type of attack involves cybercriminals impersonating trusted entities to deceive users into revealing sensitive information?

(A) Malware attack **(B)** Denial of Service attack **(C)** Phishing attack **(D)** Insider threat

17. What type of encryption uses a single, secret key for both encryption and decryption?

(A) Asymmetric encryption **(B)** Public-key encryption **(C)** Symmetric encryption **(D)** Triple DES encryption

18. What does 2FA (Two-Factor Authentication) require for user access?

(A) Two different passwords | **(B)** Two different encryption keys | **(C)** Two different authentication methods | **(D)** Two different user accounts methods

19. What is the primary purpose of a firewall in cybersecurity?

(A) Encrypting data | **(B)** Monitoring network traffic | **(C)** Blocking malicious traffic | **(D)** Generating strong passwords

20. A complexity of algorithm depends upon_____

(A) Time Only | **(B)** Space Only | **(C)** Both Time and Space | **(D)** None of above

21. An algorithm: can be represented through_____

(A) Flow charts | **(B)** Pseudo-codes | **(C)** Instructions in common language | **(D)** All of the mentioned above

22.
There are two algorithms suppose Atakes 1.41 milliseconds while B takes 0.9 milliseconds, which one of them is better considering all other things the same?

(A) A is better than B | **(B)** B is better than A | **(C)** Both are equally good | **(D)** None of the mentioned

23.
Considering an array has 10 elements and the searching element is at array Index 6. A starting element is present at index zero. How many comparisons are required to search and element using linear search?

(A) 5 | **(B)** 6 | **(C)** 7 | **(D)** 8

24. In computer science, the computational artifacts could include_____

(A) Programs | **(B)** Simulations | **(C)** Videos | **(D)** Programs, Simulations and videos

25. trace method is used to_____

(A) Take input | **(B)** Hand simulate the execution algorithm. | **(C)** Take a pont | **(D)** Align margins

26. Trace Tables are used to_____

(A) dry run algorithm | **(B)** test if algorithm is giving expected output | **(C)** show the variables change | **(D)** a, b and c

27. Algorithms are evaluated using_____

(A) Correctness **(B)** Efficiency **(C)** a and b **(D)** None of above

28. Python was first introduced in_____.

(A) 1990 **(B)** 1994 **(C)** 1992 **(D)** 2022

29. Operator !=is used for_____.

(A) Equal **(B)** Logical AND **(C)** Not equal **(D)** Logical OR

30. We can design 2D geometrical shapes in Python, using____.

(A) Operators **(B)** interations **(C)** Variables **(D)** Turtle Graphics

31. What will the following program do:for i in range(10,0,-1):print('iteration no-,i)

(A) It will give error **(B)** It will run 9 times **(C)** It will run 10 times **(D)** It will run 11 times

32. The interactive computer program accept some input which is from a user program like_____.

(A) Sub program **(B)** Web browser **(C)** print job **(D)** page break

33. _____provide basic variable types as str, integer, float, etc.

(A) Print job **(B)** Page break **(C)** Python **(D)** Procedure

34. The input() function treats the entered data as a set of_____.

(A) Digitals **(B)** Characters **(C)** Symbols **(D)** Arithmetic operators

35. ' **'is used to represent_____.

(A) Division **(B)** Floor division **(C)** Multiplication **(D)** Exponentiation

36. We apply comparison with the help of_____ statement.

(A) For **(B)** While **(C)** If **(D)** But

37. IDE stands for_____.

(A) Internet Development Environment **(B)** Illegal Development Environment **(C)** Integrated Development **(D)** Installer Development Environment

38. Turtle graphics help us to gn basic drawing and_____.

(A) 1D shapes **(B)** 2D shapes **(C)** 3D shapes **(D)** 4D shapes

39. AREPL means_____.

(A) Read-Enter-Print-Loop **(B)** Read-Exit-Print-Loop **(C)** Read-Eval-Print-Loop **(D)** Read-Evolve-Print-Loop

40. To draw a triangle, we need to play with_____.

(A) Angles **(B)** Vertices **(C)** Lines **(D)** Shapes

41. Bug is an unanticipated error which is generally_____ in nature.

(A) Analog **(B)** Digital **(C)** Logical **(D)** Legal

42. Supervised learning is one of the main category of_____.

(A) Statistical modeling **(B)** Data waggling **(C)** Data collection **(D)** Evaluation modeling

43. For accurate data collection, an existing data from_____ is acquired.

(A) Sampling department **(B)** Modeling techniques **(C)** Meteorological department **(D)** Educational department

44. Natural disaster prediction helps the people to take preventive measures against_____.

(A) Pandemic **(B)** Cyclones **(C)** Data analysis **(D)** Temperature

45.
Alinear regression model is a mathematical equation that allows us to predict a response for given_____.

(A) Predictor value **(B)** Variable **(C)** Intercepts **(D)** Model

46. A point where graph line meet the y-axis is called_____.

(A) Y-axis **(B)** Y-intercept **(C)** Y-coordinates **(D)** Y-dimensions

47. Clustering algorithms are examples of_____.

(A) Classical learning **(B)** Professional learning **(C)** Unsupervised learning **(D)** Cognitive learning

48. We can create our own database by generating some random number by using_____.

(A) Python code **(B)** Data code **(C)** System code **(D)** Pseudo code

49. During summer people of hot regions consume more cold items. This information is called_____.

(A) Parameter **(B)** Population **(C)** Statistics **(D)** Random sample

50.
If there are some flaws in data collection method, after analyzing such data the result would be more_____.

(A) Accurate **(B)** Huge **(C)** No result can be drawn **(D)** Erroneous

51. Experimental design is a tool used to _____the result effectively.

(A) Add **(B)** Evaluate **(C)** Organize **(D)** Test

52. Fluid flow sensor is a type of:

(A) Environmental sensor **(B)** Industrial sensor **(C)** Motion detection sensor **(D)** Climate control sensor

53. The cloud model that provides services to multiple organizations is known as:

(A) Public cloud **(B)** Private cloud **(C)** Community cloud **(D)** Hybrid cloud

54. The cloud model that provides best security of data is:

(A) Public cloud **(B)** Private cloud **(C)** Community cloud **(D)** Hybrid cloud

55. Exchange of information between IoT devices and end users is provided by:

(A) Cloud computing **(B)** Big data analytics **(C)** Embedded systems. **(D)** Communication protocols

56. The Blockchain network that is most difficult to set up is:

(A) Public Blockchain network **(B)** Private Blockchain network **(C)** Permissioned Blockchain network **(D)** Consortium Blockchain network

57. The Blockchain network that is open for everyone to join is called:

(A) Public Blockchain network **(B)** Private Blockchain network **(C)** Permissioned Blockchain network **(D)** Consortium Blockchain network

58. Sensors used for measuring humidity, air quality, air pressure, tempreture and wind speed are called:

(A) Envirnoment sensors **(B)** Industrial sensors **(C)** Motion detection sensors **(D)** Measurement sensors

59. Software that is permanently installed in an electronic machine is known as:

(A) System software **(B)** Application software **(C)** Machine software **(D)** Firmware

60. A digital ledger of trasactions shared and maintained by network users is called:

(A) Database **(B)** Accounting software **(C)** Blockchain **(D)** Network ledger

Q2. Write short answers of the following questions.

1 . What is the principle of duality in Boolean algebra, and why is it important in digital logic?

2 . How memory circuits use logic gates? Give their significance in digital systems.

3 . Provide two examples of data encoding and decoding applications that involve logic gates.

4 . Give three uses of logic gates.

5 . What is the primary purpose of the Software Development Life Cycle (SDLC)?

6 .

Name the different phases of SDLC.

7 . Why feasibility study is important in the SDLC? Give three reasons.

8 . How does the design phase contribute to the development of a software system?

9 . What is the significance of testing/verification in SDLC?

10 . Give three advantages and 2 disadvantages of Bus Topology in networking?

11 . How does Mesh Topology provide redundancy in network communication?

12 . Compare and contrast Horizontal Scalability and Vertical Scalability in cloud computing.

13 . Define cybersecurity. Also give its significance in today's interconnected world.

14 . Name three common types of cybersecurity threats.

15 . What is the role of encryption in cybersecurity, and how does it protect sensitive data?

16 . Differentiate between symmetric and asymmetric encryption methods.

17 .
Why is it essential for individuals and organizations to keep their software up to date in terms of cybersecurity?

18 . What is 2FA (Two-Factor Authentication)? Give its importance in securing user accounts.

19 . What is the primary purpose of a firewall in network security, and how does it work?

20 . What are the characteristics of a strong password? Give two examples.

21 . Differentiate between.i Clarity vs. Efficienii Abstraction vs. Pattern Recognition

iii Pseudocode vs. Flowchartsiv Data Structures vs. Control Structuresv Algorithm vs. Pseudocode

22 . Write a note on working of Bubble Sort.

23 . Write names of commonly used computational artifacts made during computational thinking.

24 . Where we prefer to use binary search algorithm rather than linear search algorithm?

25 . What are the advantages of using flowcharts?

26 . What are the applications of computer programming in daily life?

27 . Write code to take input a number from user and print its mathematical table on screen from 1 to 10.

28 .
Take an odd number as input from the user, check if it is odd, otherwise ask the user to re-enter an odd number.

29 . Write down the main examples of Python based application.

30 . Differentiate between global and local variables with the help of suitable example.

31 . List out the parameters and statistics from given statements:a) Average length of height of a giraffe.

b) Average weight of watermelon.c) There are 430 doctors in a hospital.

d) Average age of students of 6th class in a school is 12 years.

32 . 1. List out the parameters and statistics from given statements:

a) Average length of height of a giraffe.b) Average weight of watermelon.

c) There are 430 doctors in a hospital.d) Average age of students of 6th class in a school is 12 years.

e) The number of a basketball team players having height above 6 feet.

33 . Make a pie chart of vegetable prices in the market. Consider five to ten vegetables.

34 .
Enlist steps to represent the monthly temperatures of pakistan city in 2023 from January till December using a line graph.

35 . How IoT can enhance our daily life?

36 . Provide 3 examples of WSNs used in IoT system.

37 . Differentiate between public cloud model and private cloud models.

38 . What is Blockchain? Why data stored in a Blockchain is secure?

39 . Why integration of Blockchain and IoT is beneficial?

40 . Define permissioned Blockchain network.

Q3. Write detailed answers of the following questions.

1 . Design logic circuits for the following Boolean functions.

i) $E1 = (\overline{A}+B) \cdot \overline{(A+\overline{B})}$

ii) $E2 = (A.\overline{B}) + (A+B) \cdot (\overline{C})$

iii) $E3 = (\overline{A}.B+C) + \overline{A}.(C+B)$

iv) $E4 = \overline{(A+B)} \cdot \overline{B} + (\overline{A}+C)$

v) $E5 = \overline{x}\,\overline{y}\,\overline{z} + \overline{x}\,\overline{y}\,z + \overline{x}\,y\,z + x\,y\,\overline{z}$

vi) $E6 = x\,\overline{z} + \overline{x}\,\overline{y}$

2 . Draw Truth tables for the Boolean functions in Q1.

3 .
Compare and contrast the Waterfall model and Agile model in software development. Which one do you think is more suitable for modern software development, and why:

4 .

Outline the various methods of system deployment/implementation mentioned in the text (Direct, Parallel, Phased, Pilot). Provide real-world scenarios where each deployment method would be most suitable.

5 .
In the context of cloud computing, elaborate on the concepts of scalability and reliability.How do these concepts contribute to the effectiveness of cloud services? Provide a real-world example.

6 . Explain Symmetric and Asymmetric encryption methods in the context of cybersecurity.

7 .
Imagine you are responsible for the cybersecurity of a large organization. Describe a comprehensive cybersecurity strategy that includes multiple layers of defense against various threats.

8 . Determine the properties involved in computational thinking.

9 . Implement an algorithm to print multiplication table of a number in reverse order.

10 . A newly developed Algorithm needs to be tested. Argue about the reasons.

11 . Explain the applications of Python in different business and technical domains.

12 . What are the basic functions that 'List' provides. Elaborate each of them with an example.

13 .
Write a program for a Dice Rolling Race game for 2 players, Alternatively, generate a random number for each player. If the number rolls out to be 6, then the player gets another roll. Rolls of every iteration is summed up to the previous rolls. The player who reaches 100 first, wins.

14 . How to locate and select Debugger in IDLE? Write steps by taking an example into consideration.

15 .
Write code to print the multiplication of first 10 odd numbers and first 10 even numbers and find the difference of the two.

16 . Simulate on paper, an experimental design for awareness of food security (Narrative Visualization).

17 . Argue about the use of statistical modeling techniques. Highlight all techniques discussed in this unit.

18 .
Compare linear regression and classification. Emphasize on their respective roles in statistical modeling.

19 .
Defend either of supervised learning and unsupervised learning. Give reasons for your preference to the other.

20 .
Write a Python code to generate a dataset with two variables where $y = x^2+2x$. Fit scatter plot and box plot on this data.

21 .
Relate some real world examples (other than Airbnb, Facebook and You Tube) where data science was used to improve marketing strategies and enhance the business.

22 .

What is Blockchain technology? Describe in detail how transactions are processed using Blockchain technology.

23 . Briefly explain the role of following technologies that enabled IoT.a. Cloud computing

b. Communication protocolsc. Embedded systems

24 .
Examine the reasons behind the conflicting requirements among stakeholders during the development of AI systems.

25 .
Consider creating a cutting-edge system for language learning. The priorities of teachers, learners, and programmers will all differ. How would it help to make the new language learning system better by incorporating the varying priorities? How can AI be added to it?