AL HUDA SCIENCE ACADEMY

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Guess Paper of Computer Class 9th

اللہ سب کو سچ کہنے کی ہمت عطا فرمائیں۔آمین

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SHORT QUESTIONS – SET 1

(Systems, Von Neumann Architecture, Number Systems, Encoding, Digital Logic & Boolean Algebra)

1. Define a system. What are its basic components?
2. Write a short note on systems theory.
3. What is the objective of a system?
4. What is the role of DNA in the human system?
5. What are key properties of system environment?
6. What is the relationship between knowledge and science?
7. What is the use of design science?
8. What is computer science?
9. What are the main components of the Von Neumann architecture?
10. What is the Von Neumann computer architecture? List its key components.
11. What are the four main steps in the Von Neumann architecture's instruction cycle?
12. What is Von Neumann bottleneck?
13. What is the key advantage of the Von Neumann architecture?
14. Name three types of system buses and describe their purpose.
15. What are the two main parts of CPU?
16. What is the first stage of instruction processing in Von Neumann architecture?
17. What happens in the decoding stage of Von Neumann architecture?
18. What is the role of the Instruction Register (IR) in instruction processing?
19. What is meant by a single memory store in Von Neumann architecture?
20. What does sequential execution mean?
21. What is a number system?
22. List three types of number systems.
23. What is the binary number system?
24. What is the hexadecimal number system?
25. What is the difference between decimal and binary number systems?
26. Convert $(65)_{10}$ into a binary number.
27. Convert $(786)_{10}$ to hexadecimal.

28. Convert $(AB)_{16}$ into binary.
29. Convert $(11011)_2$ into decimal.
30. Convert $(137)_{10}$ into hexadecimal.
31. What is the range of values for an unsigned 2-byte integer?
32. Explain how a negative integer is represented in binary.
33. What is the benefit of using unsigned integers?
34. How does the number of bits affect the range of integer values?
35. What are whole numbers?
36. What are integers?
37. What is the primary purpose of the ASCII encoding scheme?
38. Explain the difference between ASCII and Unicode.
39. How does Unicode handle characters from different languages?
40. What are text encoding schemes?
41. What is ASCII?
42. Write ASCII codes for any three characters.
43. What is Unicode?
44. What is UTF-32?
45. Explain the difference between analog and digital signals.
46. What is a digital system?
47. Describe analog signal with examples.
48. Describe digital signal with examples.
49. What is meant by ADC?
50. What do you mean by DAC?
51. What is digital logic?
52. Define a Boolean function and give an example.
53. What is the significance of the truth table in digital logic?
54. Describe the function of a NOT gate with its truth table.
55. What is Boolean algebra?
56. How does the AND operation work?

57. How does the OR operation work?
58. How does the NOT operation work?
59. What is a truth table?
60. What are the applications of Boolean functions in computers?
61. What is an AND gate? How does it work?
62. What is an OR gate? How does it work?
63. What is a NAND gate? How does it work?
64. What is an XOR gate? How does it work?
65. What is the identity law?
66. What is the idempotent law?
67. What is the distributive law?
68. What are the absorption laws?
69. What is the double negation law?
70. What is the use of a logic diagram?

SHORT QUESTIONS – SET 2

(System Software, Computer Networks)

1. Define system software and provide two examples.
2. Differentiate between system software and application software with examples.
3. What was the message displayed by the "Creeper" virus?
4. What is the role of application software in a computer system?
5. What is the primary function of a media player application?
6. What type of software is Fortnite categorized as?
7. Name a software tool used for editing text documents.
8. What is a computer network?
9. What are the primary components of a computer network?
10. How do computer networks help in communication?
11. What is video conferencing?
12. What is Google Drive?

13. What is a MAC address?
14. Define data communication and list its key components.
15. Explain the role of routers in a computer network.
16. What are networking devices?
17. Name four networking devices.
18. What is the role of a switch in a network?
19. What is the difference between hub and switch?
20. How does a router work?
21. What is bus topology?
22. What is star topology?
23. What is the major disadvantage of star topology?
24. What is ring topology?
25. What is mesh topology?
26. Define data transmission mode and list its types.
27. Differentiate between half-duplex and full-duplex transmission modes.
28. What are the main functions of the network layer in the OSI model?
29. Name the seven layers of the OSI model.
30. What is the role of the data link layer in the OSI model?
31. What is the role of the session layer in the OSI model?
32. What is the role of the application layer in the OSI model?
33. What is the use of IP?
34. Differentiate between IPv4 and IPv6.
35. What is the purpose of DHCP?
36. Differentiate between TCP and UDP in terms of reliability.
37. Name four protocols used in networks.
38. What is HTTP?
39. Give an example of DNS and IP address.
40. What is network security and why is it important?
41. Briefly differentiate between LAN and WAN.

42. What is a Virtual Private Network (VPN)?
43. Write some real-world applications of computer networks.
44. How are networks used in healthcare?
45. What are protocols?
46. What do you know about TCP/IP?

SHORT QUESTIONS – SET 3

(Computational Thinking, Algorithms, Flowcharts, Data, AI, IoT, Cybersecurity, Entrepreneurship)

1. Define computational thinking.
2. What is decomposition in computational thinking?
3. Explain pattern recognition with an example.
4. Describe abstraction and its importance in problem-solving.
5. What is an algorithm?
6. List key components of computational thinking.
7. Describe the importance of decomposition.
8. What is the role of algorithm in computational thinking?
9. How does problem understanding help in computational thinking?
10. What are flowcharts and how are they used?
11. Explain the purpose of pseudocode.
12. How do you differentiate between flowcharts and pseudocode?
13. What is pseudocode?
14. Draw flowchart symbols for Processing and Input/Output.
15. What do you mean by time complexity?
16. What is meant by space complexity?
17. What is a dry run and why is it important?
18. What is simulation? Write its two uses.
19. Describe LARP and its significance in learning algorithms.
20. List and explain two debugging techniques.
21. What are bugs and their types?

22. Describe syntax errors.
23. Describe runtime errors.
24. Describe logical errors.
25. What is debugging?
26. What is data?
27. What is the difference between qualitative and quantitative data?
28. Which type of data describes the qualities of something?
29. What are the key characteristics of qualitative data?
30. What is quantitative data?
31. Write the key characteristics of quantitative data.
32. Why is it important to organize data into tables/charts before analyzing it?
33. What is meant by data collection?
34. Describe a direct method of data collection.
35. What is observation?
36. How does structured data differ from unstructured data?
37. Explain why data visualization is important.
38. Describe a line graph's use with an example.
39. What is data visualization?
40. Give three benefits of data visualization.
41. What is data preprocessing?
42. What are outliers?
43. What is data validation?
44. What is the difference between quantitative and qualitative analysis?
45. List some benefits of collaborative tools.
46. What is data science?
47. Define Artificial Intelligence (AI).
48. Provide two examples of AI applications in healthcare.
49. Explain the role of AI techniques in advancing machine learning models.
50. Elaborate on the importance of AI in daily life.

51. How can AI be used in education?
52. How can AI be helpful in finance?
53. What is the use of AI in e-commerce?
54. How does deep learning work?
55. How does a neural network work?
56. What is robotics? Give examples.
57. What do you know about explainable algorithms?
58. What are unexplainable algorithms?
59. Differentiate between whitebox and blackbox models.
60. Define the Internet of Things (IoT).
61. Define the significance of IoT in connecting devices and systems.
62. What is the purpose of actuators in an IoT system?
63. Give two applications of IoT in transportation.
64. How can IoT devices be protected from cyberattacks?
65. What is the importance of using computers safely and responsibly?
66. What is cyber hygiene, and why update antivirus software regularly?
67. What is the purpose of regular software updates?
68. What is Two-Factor Authentication (2FA), and why is it useful?
69. Why avoid using public Wi-Fi for sensitive transactions?
70. How can you verify if an email/message is a scam?
71. What should you do if you receive an email from an unknown sender asking for personal information?
72. What does "safe operation" of digital platforms/devices mean, and why is it important?
73. What is meant by a password?
74. What are the characteristics of a strong password?
75. How can you protect yourself from harmful links and downloads?
76. Why be careful about what you share on social media?
77. What is the difference between copyright, trademarks, and patents?
78. Why is it important to respect intellectual property rights?

79. What is a patent, and how does it protect new inventions?
80. What is the meaning of the word "entrepreneur" and its origin?
81. What is entrepreneurship?
82. What are the key characteristics of entrepreneurs?
83. How does entrepreneurship contribute to economic growth?
84. How does digital technology help entrepreneurs reach a global audience?
85. How does social media support entrepreneurship?
86. What is big data analytics, and why is it useful?
87. What is digital marketing and e-commerce?
88. What is Search Engine Optimization (SEO)?
89. What is an e-commerce platform, and why is it important for business?
90. Why is it important to identify market needs when generating a business idea?
91. What is prototyping and iteration, and how have successful companies used them?
92. Explain the importance of market analysis in a business plan.
93. What are revenue models, and why are they essential in a business plan?
94. How can businesses contribute to environmental sustainability (SDGs)?
95. What is ethical entrepreneurship, and what are its key principles?

LONG QUESTIONS

Group A — Systems, Computer Science & Von Neumann Architecture

1. Define and describe the concept of a system. Explain the fundamental components, objectives, environment, and methods of communication within a system.
2. Define system theory. Describe two key properties of the system environment.
3. What is computer science? How are the methods of natural science and design science used to understand computer science?
4. Explain the Von Neumann architecture of a computer. Include a discussion on the main components, their functions, and the step-by-step process of how the architecture operates.
5. Discuss the characteristics, advantages, and disadvantages of the Von Neumann architecture.

Group B — Computer Networks

6. Discuss the objectives of computer networks and provide examples of how they facilitate resource sharing and data communication.

7. Describe network as a system. Discuss its primary components.
8. Define data communication. Discuss the components of data communication.
9. What are networking devices? Explain how they work in a computer network.
10. Compare and contrast the different types of network topologies (star, ring, bus, and mesh).
11. What is network topology? Explain different types of network topologies with examples. Also discuss their advantages and disadvantages.
12. What is data transmission mode? Explain its types with examples.
13. What is the OSI networking model? Also describe the different layers of the OSI model with examples.
14. Define IP address. Also discuss the two primary versions of IP addresses.
15. Discuss the role and importance of protocols in data communication. Explain the functions of key protocols such as TCP/IP, HTTP, DNS, and DHCP.
16. Describe real-world applications of computer networks in business, education, and healthcare (with examples).

Group C — Data, Computational Thinking & Entrepreneurship

17. Explain the differences between qualitative and quantitative data. Provide examples of each type.
18. Define qualitative data. Explain the key characteristics of qualitative data with examples.
19. Analyse the benefits and challenges of using digital tools like Google Forms for data collection.
20. What is data collection? Discuss its different data collection methods.
21. Discuss different types of data with respect to storage and processing.
22. What is data preprocessing? Discuss various techniques for data preprocessing.
23. What is the purpose of data analysis techniques? What are two techniques used for data analysis?
24. Describe different collaborative tools and cloud storage.
25. Explain why entrepreneurship is important for economic growth and innovation. Provide examples from the text to support your answer.
26. How has the digital age changed entrepreneurship? Which digital technologies help entrepreneurs grow their businesses?
27. What is business idea generation? Explain the steps used in this process.
28. Describe the process of developing business plans. Discuss its components.
29. Explain the term "ethical and sustainable entrepreneurship."