B.Tech. Model Test Paper

1. What is the solution of the equation 2x+3=72x + 3 = 72x+3=7?.
a) 1
b) 2
c) 3
d) 4

2. If x+2=7x + 2 = 7x+2=7, what is the value of xxx?
a) 3
b) 5
c) 7
d) 9

3. The integral of sin(x) dx is:
a) –cos(x) + C
b) cos(x) + C
c) sin(x) + C
d) –sin(x) + C

4. Which of the following is NOT a programming language?
a) Python
b) Java
c) HTTP
d) C++

5. In Python, which of the following statements is used to define a function?
a) function myFunction()
b) def myFunction()
c) define myFunction()
d) func myFunction()

6.Which of the following data structures uses LIFO (Last In First Out)?
a) Queue
b) Stack
c) Array
d) Linked List

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B.Tech. Model Test Paper

7. In a binary tree, each node has:
a) At most one child
b) At most two children
c) Unlimited children
d) No children

8. The time complexity of searching an element in a binary search tree is:
a) O(n)
b) O(log n)
c) O(n log n)
d) O(1)

9. What is the unit of capacitance?
a) Henry
b) Farad
c) Ohm
d) Volt

10. A diode allows current to flow in:
a) Both directions
b) No direction
c) One direction
d) It depends on the voltage

11. The output voltage of an operational amplifier (op-amp) is determined by:
a) The supply voltage only
b) The input voltage only
c) The feedback network and input voltage
d) None of the above

12. What part of speech is the word "quickly" in the sentence: "She ran quickly to catch the bus"?
a) Noun
b) Verb
c) Adverb
18. d) Adjective

13. Which of the following is the longest river in the world?
A) Amazon
B) Nile
C) Yangtze
D) Mississippi

B.Tech. Model Test Paper

14. The Great Barrier Reef is located in which country?
A) United States
B) Australia
C) Brazil
D) India

15. Mount Everest is located on the border between which two countries?
A) India and Bhutan
B) China and Nepal
C) Pakistan and India
D) Tibet and India

16. What type of climate is characterized by very little rainfall and extreme temperatures?
A) Tropical
B) Desert
C) Temperate
D) Polar

17. Which continent is known as the 'Dark Continent'?
A) Asia
B) Europe
C) Africa
D) Australia

18. What is the capital city of Canada?
A) Toronto
B) Ottawa
C) Vancouver
D) Montreal

19. Which country has the largest land area in the world?
A) Canada
B) China
C) United States
D) Russia

20. The term "Ring of Fire" refers to:
A) A region known for its extreme heat
B) A zone of frequent earthquakes and volcanic eruptions
C) A circle of mountain ranges
D) A major river system

21. What is the primary mountain range that separates Europe and Asia?
A) Rockies
B) Andes
C) Ural Mountains
D) Himalayas

22. Which of the following is not a greenhouse gas?
A) Carbon dioxide
B) Methane
C) Nitrous oxide
D) Oxygen

23. Which civilization is known for the invention of the wheel?
A) Egyptian Civilization
B) Mesopotamian Civilization
C) Indus Valley Civilization
D) Chinese Civilization

24. The Great Wall of China was primarily built during which dynasty?
A) Han
B) Ming
C) Qing
D) Tang

25. Who was the first emperor of the Roman Empire?
A) Julius Caesar
B) Augustus Caesar
C) Nero
D) Tiberius

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26. Which event marked the beginning of the French Revolution?

A) The Storming of the Bastille

B) The Tennis Court Oath

C) The Reign of Terror

D) The Declaration of the Rights of Man

27. Who was the leader of the Soviet Union during World War II?

A) Vladimir Lenin

B) Leon Trotsky

C) Joseph Stalin

D) Nikita Khrushchev

28. Which treaty ended World War I?

A) Treaty of Versailles

B) Treaty of Trianon

C) Treaty of Brest-Litovsk

D) Treaty of Saint-Germain

28. What is the sum of the interior angles of a triangle?

a) 90°

b) 180°

c) 270°

d) 360°

29. What is the mean of the following data set? 2, 4, 4, 4, 5, 5, 7, 9

a) 5

b) 4.5

c) 4

d) 6

30. The standard deviation measures:

a) Central tendency

b) Dispersion

c) Correlation

d) Probability

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31. If two events A and B are independent, then:
a) $P(A \cup B) = P(A) + P(B)$
b) $P(A \cap B) = P(A) * P(B)$
c) $P(A \mid B) = P(A)$
d) All of the above

32. Who was the first woman to win a Nobel Prize?
a) Marie Curie
b) Jane Addams
c) Rosalind Franklin
d) Malala Yousafzai

33. Which planet is known as the Red Planet?
a) Venus
b) Mars
c) Jupiter
d) Mercury

34. The Great Wall of China was primarily built for which purpose?
a) Trade
b) Architectural beauty
c) Defense
d) Tourism

35. The unit of electric charge is:
a) Coulomb
b) Volt
c) Ampere
d) Ohm

36. The electric field due to a point charge is:
a) Uniform
b) Radially outward
c) Radially inward
d) None of the above

B.Tech. Model Test Paper

37. If the distance between two point charges is doubled, the force between them will:
a) Remain the same
b) Double
c) Halve
d) Become one-fourth

38. The electric potential energy of a system of two charges is minimum when:
a) Both charges are like
b) Both charges are unlike
c) One charge is zero
d) They are at infinity

39. The equivalent resistance of resistors in series is given by:
a) R1 + R2 + R3
b) 1/(1/R1 + 1/R2 + 1/R3)
c) R1 - R2
d) R1 × R2/R1 + R2

40. Which of the following phenomena occurs when light passes from air into water?
a) Reflection
b) Refraction
c) Diffraction
d) Dispersion

41. The critical angle for total internal reflection occurs when light travels from:
a) Water to air
b) Glass to water
c) Air to glass
d) Air to diamond

42. A concave lens:
a) Always produces a real image
b) Always produces a virtual image
c) Can produce both real and virtual images
d) Produces no image

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43. In the context of quantum mechanics, a particle can be described by:

a) A single trajectory

b) An energy level

c) A wave function

d) A fixed position

44. What is the lifetime of a muon, which is a heavier cousin of the electron?

a) 2.2 microseconds

B) 0.1 seconds

C) 1 hour

D) 10 seconds

45. The enthalpy change for an endothermic reaction is:

a) Greater than zero

b) Less than zero

c) Equal to zero

d) Uncertain

46. The Van der Waals equation is a modification of which of the following laws?

a) Ideal gas law

b) Graham's law

c) Raoult's law

d) Dalton's law

47. At absolute zero, the entropy of a perfect crystalline substance is:

a) Zero

b) Positive

c) Infinite

d) Undefined

48. Which of the following compounds is a strong acid?

a) Acetic acid

b) Sulfuric acid

c) Benzoic acid

d) Formic acid

B.Tech. Model Test Paper

49. What is the main product of the reaction between benzene and chloromethane (CH_3Cl) in the presence of $AlCl_3$?

a) Toluene

b) Chlorobenzene

c) Benzyl chloride

d) Ethylbenzene

50. Which of the following reactions is characteristic of alcohols?

a) Dehydration

b) Nitration

c) Hydrolysis

d) Halogenation

51. Which functional group is present in carboxylic acids?

a) –OH

b) –COOH

c) –NH$_2$

d) –CHO

52. Which of the following compounds is a strong nucleophile?

a) H_2O

b) CH_3OH

c) CH_4

d) OH

53. What is the primary goal of a firewall?

a) To encrypt data

b) To protect against malware

c) To monitor internet traffic

d) To prevent unauthorized access

54. What type of malware is designed to replicate itself and spread to other computers?

a) Virus

b) Worm

c) Trojan

d) Spyware

B.Tech. Model Test Paper

55. Choose the correct form of the verb:
The committee _____ its decision yesterday.
a) has made
b) have made
c) made
d) makes

56. Identify the error in the following sentence:
Each of the students have submitted their assignment.
a) Each
b) have
c) submitted
d) their

57. Which of the following sentences is correct?
a) She don't like coffee.
b) She doesn't like coffee.
c) She isn't liking coffee.
d) She is not liking coffee.

58. Choose the correct preposition:
She is very good _____ mathematics.
a) for
b) at
c) in
d) on

59. Neither of the girls forgot _____ homework.
a) their
b) her
c) its
d) his

60. Synonyms:Benevolent
a) Malevolent
b) Kind
c) Indifferent
d) Hostile

B.Tech. Model Test Paper

61. What is the value of xxx in the equation 3x+7=223x + 7 = 223x+7=22?
a) 3
b) 5
c) 7
d) 6

62. The unit of power is:
a) Joule
b) Watt
c) Newton
d) Pascal

63. What is the chemical formula for water?
a) H_2O_2
b) H_2O
c) CO_2
d) O_2

64. Which of the following elements is a noble gas?
a) Oxygen
b) Nitrogen
c) Helium
d) Florine

65. Which of the following is a valid HTML element?
a) <header>
b) <body>
c) <footer>
d) All of the above

66. Which of the following is a synonym for "benevolent"?
a) Malevolent
b) Kind
c) Indifferent
d) Hostile

B.Tech. Model Test Paper

67. Choose the correct sentence:
a) She don't like to play cricket.
b) She doesn't likes to play cricket.
c) She doesn't like to play cricket.
d) She not likes to play cricket.

68. If all roses are flowers and some flowers fade quickly, which of the following can be logically concluded?
a) All roses fade quickly
b) Some roses fade quickly
c) No flowers are roses
d) Some flowers are not roses

69. Who is known as the "Father of Modern Physics"?
a) Isaac Newton
b) Albert Einstein
c) Niels Bohr
d) Galileo Galilei

70. Synonyms: Candid
a) Secretive
b) Honest
c) Deceitful
d) Reserved

71. Antonyms:Innovate
a) Invent
b) Imitate
c) Create
d) Develop

72. Antonyms: Frugal
a) Economical
b) Extravagant
c) Thrifty
d) Cautious

B.Tech. Model Test Paper

73. The scientist's theories were often _ _ _ _ _ _ _ _ _ _, challenging the traditional views held by her colleagues.
a) Conventional
b) Innovative
c) Routine
d) Tedious

74. His _ _ _ _ _ _ _ _ _ _ manner made it difficult for others to approach him.
a) Amiable
b) Gracious
c) Abrasive
d) Friendly

75. All cats are animals. All animals are living beings. Therefore:
a) All cats are living beings
b) Some cats are living beings
c) No cats are living beings
d) Some living beings are not cats

76. What is the next number in the series: 2, 6, 12, 20, 30, ...?
a) 42
b) 40
c) 50
d) 36

77. John is facing east. He turns 90° to the right and then 180°. In which direction is he now facing?
a) North
b) South
c) West
d) East

78. If 'CAT' is coded as '3120' and 'DOG' is coded as '715', how is 'FISH' coded?
a) 91284
b) 62184
c) 63988
d) 31268

B.Tech. Model Test Paper

79. In a family of six members A, B, C, D, E, and F, there are two males and four females. A is the mother of C. D is the brother of E. E is the daughter of B. F is a female. Who is the father?
a) A
b) B
c) C
d) D

80. If it rains on Tuesday and Thursday, and today is Wednesday, what can be inferred?
a) It rained yesterday
b) It will rain tomorrow
c) It won't rain today
d) All of the above

81. Identify the odd one out:
a) Apple
b) Banana
c) Carrot
d) Grape

82. Complete the sequence: A, C, E, G, ...
a) I
b) J
c) H
d) K

83. A is B's sister. B is C's brother. D is C's mother. What is the relationship between D and A?
a) Mother
b) Aunt
c) Sister
d) Grandmother

84. If '5' is 'A', '10' is 'B', and '15' is 'C', then '20' corresponds to:
a) A
b) B
c) C
d) D

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85. In a survey of 100 people, 60 like tea, 40 like coffee, and 20 like both. How many like only tea?
a) 40
b) 20
c) 60
d) 80

86. Some dogs are pets. All pets are friendly. Therefore:
a) Some dogs are friendly
b) All dogs are friendly
c) Some pets are dogs
d) No dogs are friendly

87.What is the angle between the hour hand and the minute hand when the time is 3:30?
a) 90 degrees
b) 135 degrees
c) 180 degrees
d) 150 degrees

88. If R is T's father and S is T's sister, then R is:
a) Father
b) Uncle
c) Grandfather
d) Brother

89. How many ways can the letters of the word "BOOK" be arranged?
a) 12
b) 24
c) 6
d) 8

90. In a true statement, if one part is false:
a) The entire statement is false
b) The statement is true
c) It cannot be determined
d) The statement remains true

B.Tech. Model Test Paper

91. A box contains 5 red balls and 3 blue balls. What is the probability of drawing a blue ball?
   a) 1/8
   b) 1/3
   c) 2/8
   d) 3/8

92. Conclusion: A rose is a flower. Therefore, a rose is beautiful.
   a) True
   b) False
   c) Uncertain
   d) Cannot determine

93. Complete the analogy:
   2:4 :: 3: ?
   a) 6
   b) 8
   c) 7
   d) 9

94. In which year did India gain independence from British rule?
A) 1942
B) 1945
C) 1947
D) 1950

95. The currency used in the European Union is called:
A) Dollar
B) Pound
C) Euro
D) Franc

96. Which planet is known as the Red Planet?
A) Venus
B) Mars
C) Jupiter
D) Saturn

B.Tech. Model Test Paper

97. The Great Wall of China was primarily built to:
A) Promote trade
B) Protect against invasions
C) Facilitate transportation
D) Serve as a tourist attraction

98. Who was the first President of the United States?
A) Thomas Jefferson
B) Abraham Lincoln
C) George Washington
D) Benjamin Franklin

99. The Taj Mahal is located in which Indian city?
A) Mumbai
B) Agra
C) Jaipur
D) Delhi

100. Which organ is responsible for pumping blood in the human body?
A) Brain
B) Liver
C) Lungs
D) Heart