NATIONAL SCHOOL OF SCIENCES

Lainchour, Kathmandu

Model Test – IV

QUESTION SHEET

GENERAL INSTRUCTION

1. **Write your information (Name, Roll. Number, Date etc.) on your Answer Sheet.**
2. **Do not write anything on your Question Sheet**
3. **Use given extra loose sheet for rough work.**
4. **Mark your correct answers by blackening the appropriate bubble against each question on your Answer Sheet.**
5. **No negative marks will be given for wrong answers.**
6. **All pages (Question, Answer Sheet) must be submitted after the examination.**
7. **Duration of Examination is 2 hours.**

Read the following passage and answer the following question (1-5) given below.

One of the most intriguing stories of the Russian Revolution concerns the identity of Anastasia, the youngest daughter of Czar Nicholas II. During his reign over Russia, the Czar had planned to revoke many of the harsh laws established by previous czars. Some workers and peasants, however, clamored for more rapid social reform. In 1918 a group of these people, known as Bolsheviks, overthrew the government. On July 17 or 18, they murdered the Czar and what was thought to be his entire family. Although witnesses vouched that all the members of the Czar's family had been executed, rumors were suggesting that Anastasia had survived) Over the years, several women claimed to be Grand Duchess Anastasia) Perhaps the best–known claimant was Anastasia Tschaikovsky, who was also known as Anna Anderson. In 1920, eighteen months after the Czar's execution, this terrified young woman was rescued from drowning in a Berlin River. She spent two years in a hospital, where she attempted to reclaim her health and shattered mind) The doctors and nurses thought that she resembled Anastasia and questioned her about her background) She disclaimed any connection with the Czar's family. Eight years later, though, she claimed that she was Anastasia) She said that she had been rescued by two Russian soldiers after the Czar and the rest of her family had been killed) Two brothers named Tschaikovsky had carried her into Romania) She had married one of the brothers, who had taken her to Berlin and left her there, penniless and without a vocation. Unable to invoke the aid of her mother's family in Germany, she had tried to drown herself. During the next few years, scores of the Czar's relatives, ex-servants, and acquaintances interviewed her. Many of these people said that her looks and mannerisms were evocative of the Anastasia that they had known. Her grandmother and other relatives denied that she was the real Anastasia, however. Tired of being accused of fraud, Anastasia immigrated to the United States in 1928 and took the name Anna Anderson. She still wished to prove that she was Anastasia, though, and returned to Germany in 1933 to file a lawsuit against her mother's family. There she declaimed to the court, asserting that she was indeed Anastasia and deserved her inheritance. In 1957, the court decided that it could neither confirm nor deny Anastasia's identity. Although we will probably never know whether this woman was the Grand Duchess Anastasia, her search to establish her identity has been the subject of numerous books, plays, and movies.

1. Some Russian peasants and workers for social reform.
   a) longed b) cried out c) begged d) hoped
2. Witnesses ___ that all members of the Czar's family had been executed.
   a) gave assurance b) thought c) hoped d) convinced some
3. Tschaikovsky ____any connection with the Czar's family.
   a) denied b) stopped c) noted d) justified
4. She was unable to ___the aid of her relative.
   a) locate b) speak about c) call upon d) identify
5. In court, she ___ maintaining that she was Anastasia and deserved her inheritance.
   a) finally appeared b) spoke forcefully c) testified d) gave evidence
6. Find the word classes of the underlined word in the given sentence. "Ann drove a car safely."
   a) Noun and adjective b) Pronoun and adverb
   c) Subject and adverb d) Noun and adverb

7. Find the word classes of the underlined word in the given sentence. "Nobody has claimed it.
   a) Noun and pronoun b) Adjective and pronoun
   c) Pronoun and pronoun d) Adverb and preposition
8. Which sentence is not correct?
   a) Occasionally we drink wine. b) We drink wine occasionally.
   c) We drink occasionally wine. d) We occasionally drink wine.
9. Prem drove Milan …… the airport.
   a) into b) towards c) to d) at
10. I will arrive sometime……..…..three and four in the afternoon.
   a) from b) among c) between d) during
11. If you don't stop bullying her, I…….the teacher.
   a) would tell b) would have told c) will tell d) tell
12. Oh no! Look at those huge black clouds. It …….! That means we can't play tennis.
   a) will rain b) is going to rain c) rains d) would
13. Mother, with her daughters and sons, ……..gone to Pokhara.
   a) has b) have c) were d) is
14. _____ they'd only known each other for two months, they got engaged.
   a) In spite of b) Despite c) Although d) However
15. We went out..... the rain.
   a) even though b) despite c) although d) however
16. My parents …… me to be a teacher.
   a) advice b) advise c) has adviced d) will advice
17. The storm continued for ---- of the days when we were in New Orleans, but fortunately there wasn't ---- damage in the city.
   a) a few / many b) several / a lot c) all / a little d) most / much
18. The orchestra members should ……. their musical instruments……and be ready to begin.
   a) make/tuned b) let/to be tuned c) have/tuned d) make/ tune
19. When did you ……..your bank accounts…….?
   a) have/check b) get/to check c) make/ checked d) have/ checked
20. At the doctorate level, you will explore new ground untouched____others.
   a) from b) with c) by d) to
21. The volume occupied by 17 g of Ammonia gas at NTP is:
   a) 1 L b) 17 L c) 22.4 L d) 88.2 L
22. Number of molecules present in180 g of water are:
   a) 3.011×10^{23} b) 6.023×10^{23} c) 6.023×10^{24} d) 6.023×10^{25}
23. Polyethene is an example of:
   a) natural polymer b) synthetic monomer c) synthetic polymer d) non polymer
24. Which of the following is an unsaturated compound?
   a) CH_4 b) C_2H_6 c) C_3H_8 d) C_2H_2
25. If phenolphthalein is added to basic solution the color of the solution appears:
   a) pink b) yellow c) orange d) colourless
26. Which one of the acids is tribasic acid?
   a) Hydrochloric acid b) Nitric acid c) phosphoric acid d) sulphuric acid
27. Which of the following elements is the most electronegative element in periodic table?
   a) Fluorine b) Chlorine c) Bromine d) Oxygen
28. Name the gas obtained by heating copper with conc. H_2SO_4:
   a) H_2 b) SO_2 c) H_2S d) O_2
29. Which of the following elements does not belong to group VII A of the periodic table?
   a) F b) I c) Na d) Cl
30. Atoms of same element having different mass numbers are called:
   a) isotones b) isobars c) allotrops d) iostopes
31. Which of the following element is found in solid state:
   a) hydrogen b) chlorine c) bromine d) iodine
32. In Modern periodic table, elements are arranged on the basis of:
   a) atomic number b) atomic mass c) equivalent mass d) molecular mass
33. All non-metals are generally:
   a) s-block elements b) p-block element c) d-block element d) f-block element

34. Which of the following pair of elements is an example of metalloid?
a) Na & K b) F & Cl c) As & Sb d) Cu & Au
35. Nucleus of an atom was discovered by:
a) Bohr b) Rutherford c) Mosley d) Thomson
36. The dimensions of calories are:
a) $[ML^2T^{-2}]$ b) $[MLT^{-2}]$ c) $[ML^{-1}T^{-1}]$ d) $[M^0L^0T^0]$
37. Which of the following is a vector?
a) Energy b) power c) force d) mass
38. If the velocity $v = at + bt^2$, what is the dimensional formula of b?
a) $[LT^{-3}]$ b) $[LT^{-2}]$ c) $[LT^{-1}]$ d) $[L^{-1}T^{-3}]$
39. Which of the following has different dimensions than the others?
a) Work b) Energy c) Power d) Heat
40. If a displacement of a body is proportional to square of time, then body has
a) uniform velocity b) uniform acceleration
c) decreasing acceleration d) increasing acceleration
41. A particle is thrown vertically upward with speed 100m/s. The time to reach the body back on earth is
a) 10 s b) 20 s c) 15 s d) 5 s
42. The area of velocity time graph gives
a) instantaneous velocity b) average velocity
c) displacement d) average acceleration
43. A body is thrown upward and reaches the maximum height. At maximum height
a) its velocity and acceleration both are zero
b) its velocity is zero and acceleration is maximum
c) its velocity is maximum and acceleration is minimum
d) its velocity is zero and acceleration is equal to acceleration due to gravity
44. What are the major things to be considered for the construction of thermometers?
a) Thermometric substance b) Calibration
c) sensitivity d) All
45. The specific heat capacity of a substance is defined as:
a) Heat required to raise temperature of the substance by 1°C
b) Heat required to raise temperature of 1 kg of substance by 1°C
c) Heat required to melt 1 kg of solid
d) Heat required to boil 1 kg of liquid
46. Two bodies are in thermal equilibrium then they must have same
a) Heat b) Mass c) Temperature d) All
47. When a metal rod is heated it expands because
a) the size of its atom increases b) the distance between its atoms increases
c) the speed of vibration of its atom increases d) atmospheric pressure increases
48. Which of the following state of the matters has less thermal expansion?
a) solid b) liquid
c) gas d) all have equal expansion
49. Two resistors of 5 Ω and 10 Ω are connected in parallel. Their equivalent resistance is:
a) 3.33 Ω b) 5 Ω c) 7.5 Ω d) 15 Ω
50. An electric current of 10 A is the same as
a) 10 J/C b) 10 V/C c) 10C/s d)10 W/s
51. For any two vectors $\vec{a}$ and $\vec{b}$ which of the following statements is not true?
a) If $\vec{a}.\vec{b} = 0$ then $\vec{a}$ and $\vec{b}$ are perpendicular b) If $\vec{a}.\vec{b} = 0$ then $\vec{a}$ and $\vec{b}$ are parallel
c) If $\vec{a} = k\vec{b}$, then $\vec{a}$ and $\vec{b}$ are parallel d) If $\vec{a} - \vec{b} = 0$ then they are parallel
52. Which of the following matrix does not have its inverse?
a) $\begin{pmatrix} 3 & 4 \\ 2 & 6 \end{pmatrix}$ b) $\begin{pmatrix} 2 & 3 \\ 6 & 4 \end{pmatrix}$ c) $\begin{pmatrix} 2 & 4 \\ 6 & 3 \end{pmatrix}$ d) $\begin{pmatrix} 2 & 4 \\ 3 & 6 \end{pmatrix}$
53. If $sin\theta + \sin^2\theta = 1$, then the value of $\cos^2\theta + \cos^4\theta$ is equal to
a) -1 b) 0 c) 1 d) -2
54. X, Y, and Z together can do a piece of work in 20 days. If X alone can do the same piece of work in 40 days and Y alone in 60 days. In how many days Z alone can do the same work.:
a) 120 b) 130 c) 40 d) 160

55. The marked price of an article is 25% above its selling price then its discount percentage is:
a) 10% b) 12% c) 25% d) 20%
56. If A x B = {(1, 1), (1, 3), (2, 5), (2, 7)}, then B =
a) {1, 3, 5, 7} b) {1, 2} c) {1, 3, 7} d) {1, 2, 3, 5, 7}
57. If the sides of square are increased by 10% by what percentage is the area increased?
a) 20% b) 21% c) 100% d) 10%
58. The general equation of second degree $ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0$ represents a circle if
a) $a \neq b, h = 0$ b) $a = b = h$ c) $a = b, h = 0$ d) $a = b = h = 0$
59. The distance between two parallel lines $4x + 3y = 6$ and $8x + 6y = 52$ is
a) 2 units b) 3 units c) 4 units d) 5 units
60. If the product of three consecutive integers is 120, the sum of the numbers is:
a) 18 b) 9 c) 15 d) 12
61. If three points (a, 0), (0, b) and (1, 1) are collinear then which of the following is true?
a) a + b = 1 b) a = 0 and b = 0 c) a + b = ab d) a = b
62. The first row of a (4×3) matrix whose elements are given by $a_{ij} = 2i + 3j$ is:
a) (5 7 9) b) (5 10 15) c) (4 3 5) d) (5 8 11)
63. If $X = [0,4]$ and $Y = [2,5]$ then $X \cap Y$ is equal to
a) $(0,4)$ b) $(-2,5)$ c) $(-2,0]$ d) $[2,4]$
64. Which of the following is equivalent to $\frac{3x^2-12}{x^2-4x+4}$?
a) $\frac{3(x+2)}{x-2}$ b) $\frac{3(x+4)}{x-4}$ c) $\frac{3x+2}{x-2}$ d) $\frac{6}{4x-4}$
65. How many terms are there in the expansion of $(x + y)^4$?
a) 2 b) 4 c) 5 d) 6
66. If α and β are the slopes of straight lines represented by the homogeneous equation of second degree $ax^2 + 2hxy + by^2 = 0$, then $(\alpha\beta)$ is:
a) $\frac{a}{h}$ b) $\frac{-2h}{b}$ c) $\frac{a}{b}$ d) $\frac{b}{a}$
67. If $A + B + C = \pi$ then $\tan A + \tan B + \tan C$ is equal to
a) $1 + \tan A \tan B \tan C$ b) $1 - \tan A \tan B \tan C$
c) $\tan A \tan B \tan C$ d) 1
68. If -7 ≤ x ≤ 7 and 0 ≤ y ≤ 15, what is the greatest possible value of y-x?
a) 8 b) 15 c) 22 d) 25
69. The area of a triangle with vertices at $(1,0)$, $(0,-1)$, and $(2,-2)$ is
a) 0 b) 6 c) $\frac{1}{2}$ d) $\frac{3}{2}$
70. The sum of numbers in a clock is:
a) 78 b) 60 c) 30 d) 12
71. What is the basic unit of a computer's storage?
a) Byte b) Pixel c) Bit d) Gigabyte
72. Which component of the computer is responsible for executing instructions?
a) RAM b) Hard Drive c) CPU d) GPU
73. What does URL stand for?
a) Uniform Resource Locator b) Universal Reference Link
c) Unified Resource Locator d) Unilateral Reference Link
74. Which of the following is NOT an example of a web browser?
a) Chrome b) Firefox c) Microsoft word d) Safari
75. How many digits are there in the octal number system?
a) 8 b) 10 c) 16 d) 2
76. What is the decimal equivalent of the binary number 11011?
a) 25 b) 27 c) 29 d) 31
77. Which of the following is an example of system software?
a) Microsoft Word b) Adobe Photoshop
c) Windows Operating System d) Google Chrome
78. What type of software is primarily responsible for detecting and removing malicious programs from a computer?
a) Word processor b) Antivirus software
c) Spreadsheet software d) Web browser

79. Which type of software is designed to help users perform specific tasks, such as word processing or spreadsheet management?
    a) System software b) Utility software
    c) Application software d) Embedded software
80. Which component of a computer is responsible for storing data permanently?
    a) CPU b) RAM c) HDD d) GPU
81. Which component of a computer is responsible for processing graphics and images?
    a) CPU b) RAM c) GPU d) HDD
82. Which of the following is NOT a peripheral device?
    a) Keyboard b) Monitor c) CPU d) Printer
83. Which component of a computer is responsible for providing power to all other components?
    a) Power Supply Unit (PSU) b) Power Distribution Unit (PDU)
    c) Central Processing Unit (CPU) d) Graphics Processing Unit (GPU)
84. Who is the CEO of Google?
    a) Tim Cook b) Jeff Bezos c) Sundar Pichai d) Elon Musk
85. What is the binary equivalent of the decimal number 25?
    a) 10101 b) 11001 c) 11111 d) 1001
86. BOD stands for
    a) Biosphere oxygen demand b) Biochemical oxygen demand
    c) Biological oxygen demand d) Biotic oxygen demand
87. The ecosystem consists of
    a) Population b) Population and its non-living environment
    c) Biotic community d) Biotic community and its non-living environment
88. Which one is not a factor of the abiotic environment?
    a) Sunlight b) Decomposers c) water d) Temperature
89. The founder of Binomial nomenclature was...
    a) Behtham b) Hutchinsom c) Linnaeus d) Theophrastus
90. Earthworm is...
    a) Unisexual b) Dioecious c) Monosexual d) Hermaphrodite
91. Frog belongs to class...
    a) Reptilia b) Amphibia c) Suctoria d) Sporozoa
92. Bacteria are...
    a) Unicellular, Prokaryotic b) Unicellular, Eukaryotic
    c) Multicellular, Prokaryotic d) Multicellular, Eukaryotic
93. Who coined the term 'Biology'?
    a) Ernst Haeckel b) Lamarck and Treviranus
    c) Leeuwenhoek d) Reiter
94. Locomotary organelles are absent in...
    a) *Paramaceum* b) Amoeba c) *Plasmodium* d) *Leishmania*
95. Mechanism to change skin color according to the surrounding is called…
    a) Camouflage b) Hibernation c) Aestivation d) Rejuvination
96. The life of organisms begins in the form of...
    a) Male gamete b) Female gamete c) Zygote d) All of the above
97. What is true about Prokaryotic cells?
    a) Cell wall absent b) Incipient nucleus
    c) Ribosomes present d) Nuclear membrane is thick
98. Which of the following is an example of living cell?
    a) Cork cell b) Tracheid c) Vessel d) Parenchyma
99. The term Osteology refers to...
    a) Study of Ocean b) Study of life c) Study of Blood d) Study of bones
100. Hibernation refers to....
    a) Winter sleep b) Summer sleep c) Spring sleep d) Autumn sleep

- The End -

Answer Key

QN	ANS	QN	ANS	QN	ANS	QN	ANS
1	B	26	C	51	B	76	B
2	A	27	A	52	D	77	C
3	A	28	B	53	C	78	B
4	C	29	C	54	A	79	C
5	B	30	D	55	B	80	C
6	D	31	D	56	A	81	C
7	C	32	A	57	B	82	C
8	C	33	B	58	C	83	A
9	C	34	C	59	C	84	C
10	C	35	B	60	C	85	D
11	C	36	A	61	C	86	C
12	B	37	C	62	D	87	D
13	A	38	A	63	D	88	B
14	C	39	C	64	A	89	C
15	B	40	B	65	C	90	D
16	B	41	B	66	C	91	B
17	D	42	C	67	C	92	A
18	C	43	D	68	C	93	B
19	D	44	D	69	D	94	C
20	C	45	B	70	A	95	A
21	C	46	C	71	C	96	C
22	C	47	B	72	C	97	B
23	C	48	A	73	A	98	D
24	D	49	A	74	C	99	D
25	A	50	C	75	A	100	A