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Pre-foundation Career Care Programmes (PCCP) Division

NTSE PATTERN PART TEST -01 (NPT-01)

CLASS –IX (PHASE–I)

SCHOLASTIC APTITUDE TEST (SAT)

Time : 2 Hrs. **Max. Marks : 100**

GENERAL INSTRUCTIONS

1. The booklet given in the examination hall is the Question Paper.
2. A student has to write his/her answers in the OMR sheet by darkening the appropriate bubble with the help of HB Pencil as the correct answer(s) of the question attempted.
3. **The question paper contains 100 questions, 40 Questions from Science (1-40) (Physics-1-13, Chemistry-14-26, Biology-27-40) , 20 Questions from Mathematics(41-60), 40 Question from Social Science (61-100), each carries one mark.**
4. Blank papers, clip boards, log tables, slide rule, calculators, mobile or any other electronic gadgets in any form is not allowed.
5. Write your **Name** & **Roll No.** in the space provided in the bottom of this booklet.
6. *There is **no negative marking**. Do not spend too much time on a particular question.*
7. Before answering the paper, fill up the required details in the blank space provided in the answer sheet.
8. In case of any dispute, the answer sheet available with the institute shall be final.

DO NOT BREAK THE SEALS WITHOUT BEING INSTRUCTED TO DO SO BY THE

NAME OF THE CANDIDATE : ……ROLL NO. : ……..…

I have read all the instructions and shall abide by them

- -

Signature of the Candidate

I have verified the identity, name and roll number of the candidate.

- -

Signature of the Invigilator

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SCIENCE

Straight Objective

This section contains 40 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

1. If $\tan\theta = \frac{1}{\sqrt{5}}$ and θ lies in the first quadrant, the value of $\cos\theta$ is :

(A) $\sqrt{\frac{5}{6}}$ (B) $-\sqrt{\frac{5}{6}}$ (C) $\frac{1}{\sqrt{6}}$ (D) $-\frac{1}{\sqrt{6}}$

2. Unit vector along $3\hat{i}+3\hat{j}$ is

(A) $\frac{\hat{i}+\hat{j}}{\sqrt{2}}$ (B) $\frac{3\hat{i}+3\hat{j}}{2}$ (C) $\hat{i}+\hat{j}$ (D) $\frac{\hat{i}+\hat{j}}{\sqrt{3}}$

3. Which of the following vector is equal as that of $\xrightarrow[1\text{ m}]{}$

(A) $\xleftarrow[1\text{ m}]{}$ (B) $\xrightarrow[2\text{ m}]{}$

(C) $\xrightarrow[1\text{ m}]{}$ (D) 

4. If $\sin\theta = \frac{3}{4}$, then find $\cos\theta$:

(A) $\frac{1}{6}$ (B) $\frac{\sqrt{7}}{4}$ (C) $\frac{4}{5}$ (D) $\frac{3}{5}$

5. If value of $\cos 60^o = \frac{1}{2}$ and $\sin 60^o = \frac{\sqrt{3}}{2}$ then what will be the value of $\tan 60^o$:

(A) $\frac{1}{\sqrt{3}}$ (B) 1 (C) $\sqrt{3}$ (D) 2

6. If $\tan\theta = \frac{m}{n}$, then value of $\sin\theta$ will be :

(A) $\frac{m}{\sqrt{m^2+n^2}}$. (B) $\frac{\sqrt{m^2+n^2}}{m}$ (C) 1 (D) Not defined

7. $\cos 30°$ is equal to :

(A) $\frac{\sqrt{3}}{2}$ (B) $\frac{1}{2}$ (C) $\frac{1}{\sqrt{2}}$ (D) None

8. For a vector $\vec{b}$, *if* $|\vec{b}|=1$, *then* $\vec{b}$ is :

(A) null vector (B) unit vector (C) position vector (D) scalar

9. Which of the following relation is correct ?
(A) $\vec{A}+B=C$ (B) $\vec{A}+\vec{B}=C$ (C) $\vec{A}+\vec{B}=\vec{C}$ (D) $A+\vec{B}=\vec{C}$

10. Among following scalar quantity is :
(A) Velocity (B) Force (C) Speed (D) Acceleration

11. For the resultant of the two vectors to be maximum, what must be the angle between them :
(A) 0° (B) 60° (C) 90° (D) 180°

12. Which of the following has value 0 :
(A) tan 45° (B) sin 90° (C) cos 90° (D) cos 0°

13. Which of following is a vector quantity :
(A) Mass (B) Distance (C) Pressure (D) Acceleration

14. The following which has definite shape and volume is
(A) Water. (B) Ice. (C) Oxygen. (D) Steam.

15. The following which diffuses faster is
(A) a drop of ink in water. (B) Oxygen in nitrogen.
(C) milk in water. (D) sugar in salt.

16. Ashutosh filled 1L of air in a jar of capacity 750 ml. Volume of air in the jar is
(A) 1000 mL. (B) 875 mL. (C) 750 mL. (D) 250 mL.

17. Rate of diffusion will be negligble when
(A) oxygen and fluorine are mixed.
(B) water and carbon dixide are mixed.
(C) sodium chloride and ammonium chloride are mixed.
(D) water and vinegar are mixed.

18. When we add few crystals of copper sulphate to water, after sometime the solution turns blue due to
(A) evaporation. (B) sublimation. (C) diffusion. (D) fusion.

19. The arrangement of particles is most ordered in
(A) colloids. (B) gases. (C) liquids. (D) solids.

20. The solid which is easily compressed is
(A) plastic (B) sponge. (C) sugar. (D) bakelite.

21. The melting point of solid indicates
(A) that it is a volatile solid. (B) its strength of force.
(C) the amount of heat liberated. (D) the particle nature.

22. The strongest intermolecular forces of attraction are in between the molecules of
(A) sodium chloride. (B) alcohol . (C) carbon dioxide. (D) glycerine .

23. The force of attraction between the particles is minimum in
(A) chalk . (B) water. (C) air. (D) glycerine.

24. Anything which we can see, touch, smell is called
(A) matter. (B) pain (C) temperature (D) plasma.

25. The increasing order of intermolecular force of attraction in the following is
(A) air, iron, milk, oil. (B) air, milk, oil, iron. (C) iron, milk, oil, air. (D) oil, air, iron, milk.

26. When the salt is dissolved in water, the volume
(A) remains the same. (B) increases.
(C) decreases. (D) salt remains undissolved.

27. Name the outer most boundary of animal cell ?
(A) Plasma membrane (B) Cytoplasm (C) Nuclear membrane (D) None of the above

28. Name the process in which the ingestion of material by the cells is done through the plasma membrane ?
(A) Egestion (B) Diffusion (C) Osmosis (D) Endocytosis

29. In cell membrane, lipids are arranged in a-
(A) Bilayer (B) Monolayer
(C) Multilayer (D) Unilayer at some places and bilayers at other

30. Which of the following best describes the cell membrane ?
(A) Non-selective (B) Selectively permeable
(C) Impermeable (D) Exclusively lipid soluble

31. Which is the exception of the cell theory in the following –
(A) Bacteria (B) Protozoa (C) Virus (D) Fungi

32. Cell wall of bacteria made up of –
(A) Peptidoglycan (B) Chitin (C) Silica (D) Cellulose

33. Spindle shape cell present in –
(A) Nervous system (B) Blood (C) Smooth muscle (D) None of these

34. What is the process in which water molecules moves from an area of higher concentration to an area of lower concentration through a semipermeable membrane ?
(A) Diffusion (B) Facilitated diffusion (C) Osmosis (D) Active transport

35. Cell theory expanded by –
(A) Shleiden and Schwann (B) Rudolf virchow
(C) Singer and Nicolson (D) Robert brown

36. Hen's egg is a –
(A) Tissue (B) Organ (C) Organ system (D) Cell

37. Shrinking of protoplasm in plant cell is called as –
(A) Phagocytosis (B) Crenation (C) Plasmolysis (D) Pinocytosis

38. Which one is false about osmosis?
(A) It is a specific form of diffusion
(B) It refers to the movement of water along its concentration gradient
(C) It is a passive movement of water
(D) It occurs through a carrier protein and needs ATP

39. Which of the following is present in the cell wall of fungi ?
(A) Peptidoglycan (B) Suberin (C) Chitin (D) Cellulose

40. The Fluid Mosaic Model of plasma membrane was given by –
(A) Singer and Nicolson (B) Robert Hooke
(C) Robert Brown (D) Fontana

MATHEMATICS

Straight Objective

This section contains 20 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

41. Which of the following pair is coprime.
(A) (7,8) (B) (13,7) (C) (8,15) (D) All of these

42. Decimal form of $\frac{37}{300}$ is :
(A) $0.\overline{123}$ (B) $0.1\overline{23}$ (C) $0.12\overline{3}$ (D) None of these

43. Solve : $4.\overline{26}+4.2\overline{6}=$

(A) $8.\overline{529}$ (B) $8.52\overline{9}$ (C) $8.5\overline{29}$ (D) 8.529

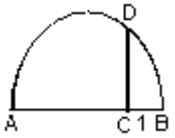
44. The decimal expansion of $\frac{6}{1250}$ will terminate after how many place of decimal?

(A) 3 (B) 4 (C) 5 (D) 1

45. Which of the following rational numbers have terminating decimal expansion ?

(A) $\frac{11}{7000}$ (B) $\frac{91}{21000}$ (C) $\frac{343}{2^3 5^3 7^3}$ (D) None of these

46. In the given figure AB is diameter and AC = 4 unit and BC = 1 unit and CD $\perp$ AB then find value of CD.



(A) 4 (B) 8 (C) 2 (D) 1

47. The sum of any two irrational numbers is

(A) always an irrational number (B) always a rational number

(C) always an integer (D) sometimes rational, sometimes irrational

48. Which of the following number is irrational ?

(A) $\sqrt{16}-4$ (B) $(3-\sqrt{3})(3+\sqrt{3})$

(C) $\sqrt{5}+3$ (D) $-\sqrt{25}$

49. If x is not a perfect square and $\sqrt{x}$ is an irrational number, then x is :

(A) rational (B) irrational (C) 0 (D) positive real

50. Between two rational numbers

(A) there is no rational number

(B) there is exactly one rational number

(C) there are infinitely many rational numbers

(D) there are only rational numbers and no irrational numbers

51. If m and n are two co-prime numbers, then HCF (m, n) is

(A) m (B) n (C) mn (D) 1

52. Which real number is between 2 and 2.5

(A) $\sqrt{3}$ (B) $\sqrt{8}$ (C) $\sqrt[3]{7}$ (D) $\sqrt[3]{11}$

53. An irrational number between $\sqrt{2}$ and $\sqrt{7}$ is:

(A) $\sqrt{5}$ (B) $\sqrt{10}$ (C) $\sqrt{11}$ (D) $\sqrt{4}$

54. Value of $0.\overline{3}+0.\overline{7}$ is:

(A) $1.\overline{1}$ (B) 1 (C) $1.\overline{12}$ (D) None of these

55. The sum of least and greatest number, if $\frac{-1}{3}, \frac{3}{7}, \frac{-8}{9}$ and $\frac{5}{8}$ are arranged in ascending order will be

(A) $\frac{-19}{72}$ (B) $\frac{-109}{72}$ (C) $\frac{109}{72}$ (D) $\frac{19}{72}$

56. Which of the following rational lies between 3.5 and $3.\overline{5}$

(A) 3.6 (B) 3.501 (C) 3.5000 (D) 3.56

57. Which of the following is a rational number ?

(A) $\sqrt{5}$ (B) π

(C) 0.101001000100001…… (D) 0.853853853…….

58. The rational number between $\frac{1}{2}$ and $\frac{1}{3}$ is

(A) $\frac{2}{5}$ (B) $\frac{1}{5}$ (C) $\frac{3}{5}$ (D) $\frac{4}{5}$

59. $\frac{13}{4}$, $\frac{27}{8}$ and $\frac{7}{2}$ are three possible rational numbers between

(A) 2 and 3 (B) 3 and 4 (C) 4 and 5 (D) 4 and 6.

60. The product of non- zero rational number with an irrational number is.

(A) Irrational number (B) Rational number (C) Whole number (D) Natural number

SOCIAL SCIENCE

Straight Objective

This section contains 40 questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONLY ONE** is correct.

61. The Eastern most longitude of India is-

(A) 97° 25'E (B) 68° 7'E (C) 77° 6'E (D) 82° 32'E

62. A neighbouring country but not a part of Indian subcontinent is

(A) Pakistan (B) Bangladesh (C) Nepal (D) China

63. Which of the following is a neighbouring state of China-

(A) Himachal Pradesh (B) Uttaranchal (C) Sikkim (D) All of the above

64. Match the following:

State	Neighbouring Country
A. Uttaranchal	i. Myanmar
B. Rajasthan	ii. Pakistan
C. Meghalaya	iii. China
D. Nagaland	iv. Bangladesh

(A) A-iv, B-iii, C-ii, D-i (B) A-ii, B-iv, C-i, D-iii (C) A-i, B-iii, C-ii, D-iv (D) A-iii, B-ii, C-iv, D-i

65. India shares longest international boundary with —

(A) China (B) Pakistan (C) Bangladesh (D) None of the above

66. The north south extent of India is

(A) 3214 km (B) 3211 km (C) 3200 km (D) 3215 km

67. What is the length of Indian coastline

(A) 7516.9 km (B) 7516.6 km (C) 7515.5 km (D) 7517.6 km

68. India's distance from Europe has been reduced by 7000 km with opening of ___ canal

(A) Panama (B) Suez canal (C) Both A & B (D) None of these

69. The country sharing international border with India is

(A) Bhutan (B) Tajikistan (C) Uzbekistan (D) Vietnam

70. Western most point in India is

(A) Rajasthan. (B) Gir range. (C) Ghuar Mota. (D) Lakhpal.

71. Surplus produce in the market is supplied by
(A) small and landless farmers (B) small and medium farmers
(C) farmers having land holdings (D) large and medium farmers

72. The major benefits of the Green Revolution were experienced mainly in
(A) northern India. (B) southern India. (C) western India. (D) eastern India.

73. People in Palampur mainly feed their buffaloes by
(A) Jowar. (B) gram. (C) grass. (D) leaves.

74. Small farmers borrow money for cultivation from
(A) traders. (B) family members. (C) banks. (D) moneylenders.

75. Wages are paid to the workers in the form of cash and
(A) benefits. (B) incentive. (C) bonus. (D) kind.

76. Most abundant factor of production is
(A) land. (B) labour. (C) capital. (D) enterpreneur.

77. Two crops that increased India's agriculture production in the era of Green Revolution were
(A) cereals and rice. (B) paddy and maize. (C) wheat and maize. (D) wheat and rice.

78. Resources used in production like, tools, machines and buildings are considered as
(A) human capital. (B) fixed capital. (C) working capital. (D) farming capital.

79. One of the crop of Rabi season is
(A) rice. (B) wheat. (C) jute. (D) cotton.

80. Green revolution encouraged
(A) plantation of more trees. (B) organic farming.
(C) use of HYV's seeds. (D) more use of machinery.

81. The number of members in the legislative council of the new constitution of 1794 was
(A) 1. (B) 4. (C) 5. (D) 2.

82. The word *Tithes* was related with
(A) Unit of currency in France (B) Tax levied by the Church
(C) Tax to be paid directly to the state (D) A county in France

83. The important figure who rose to power after the French revolution was
(A) Napolean Bonaparte (B) Tsar Nicholas II
(C) Louis XVI (D) Maximillian Robespierre

84. The ideas promoted by the French revolution were mainly those of
(A) Liberty and equality (B) Taxes and dues
(C) Constitutional monarchy (D) Independent government

85. The year in which the National Assembly completed the draft of the constitution was
(A) 1791 (B) 1789 (C) 1769 (D) 1782

86. The book *The Two Treatises of the Government* was written by
(A) Napoleon (B) Rousseau (C) John Locke (D) Montesquie

87. Under Louis XVI, France helped thirteen American colonies to gain their independence from
(A) Britain (B) Russia (C) Austria (D) Japan

88. The group that was described as 'passive citizen' by the Constitution of 1791 in France was
(A) Landed clergy. (B) Political philosophers
(C) Tax paying peasants. (D) women and peasants.

89. Hearing about the storming of Bastille, peasants in villages attacked the
(A) farm houses. (B) churches. (C) chateaux. (D) institutes.

90. On August 10 1792, King Louis VI was held hostage at the
(A) Bastille Prison. (B) Palace of the Tuileries.
(C) Palace of Versailles. (D) Place de la Concorde.

91. India's mainland extension lies between:
(A) 8° 4 N – 37° 6 N latitudes 68°7 E – 97° 25E longitude
(B) 8° 3 N – 38º 5 N latitudes 65°5 E – 97° 21 E longitude
(C) 7° 9 N – 37º 5 N latitudes 65°5 E – 97° 21 E longitude
(D) 8° 4 N – 37º 6 N latitudes 69°7 E – 97° 24 E longitude

92. The time lag between GMT to Indian Standard Time is
(A) five hour ten minutes. (B) five hours.
(C) five hours twenty minutes (D) five hours thirty minutes

93. The state with longest coast line is
(A) Gujarat. (B) Andhra Pradesh. (C) Tamil Nadu. (D) Maharashtra.

94. Human resources are superior to other resources because
(A) human resource can make use of land and capital
(B) human beings are gift of God
(C) Human resources make a firm profitable
(D) Human beings are more productive

95. Soil is loosing its fertility due to increased use of
(A) cow-dung. (B) HYV seeds. (C) irrigation. (D) chemical fertilizers.

96. One component of fixed capital is
(A) cash. (B) stock. (C) labour. (D) building.

97. Match the table I with table II and select the correct response from the options given thereafter :

Table-I	**Table-II**
a. Louis XVI became the king of France	i. 1792-93
b. Convocation of Estate General	ii. 1804
c. France became a republic, the king was beheaded	iii. 1774
d. Napoleon became emperor of France	iv. 1789

(A) a-i, b-ii, c-iii, d-iv (B) a-ii, b-iv, c-i, d-iii (C) a-iii, b-iv, c-i, d-ii (D) a-iv, b-iii, c-ii, d-i

98. Find out the correct explanation
(A) Livre: Unit of currency in France, discontinued in 1794
(B) Clergy: Building belonging to a community devoted to a religious life
(C) Tithe: Tax to be paid directly to the state
(D) Taille : A tax levied-by the church.

99. The great Indians who were influenced by the thoughts of French Revolution were
(A) Haider Ali & Tipu Sultan (B) Tipu Sultan & Raja Rammohan Roy
(C) Lala Lajpat Rai & Tilak (D) Bahadur Shah Jafar & Laxmibai

100. In the 1790's Martinique, Guadeloupe and San Domingo are names of places in the Caribbean, which were
(A) French plantations. (B) French colonies. (C) French capitals. (D) French states.

Space for Rough Work

NTSE PATTERN PART TEST-01
(NTSE PATTERN)
TARGET:
CLASS : IX [SAT]

HINTS & SOLUTIONS

SAT ANSWERKEY

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

14. Ice is a solid and only solids have definite volume and definite shape.

15. Due to high speed of particles and large spaces between them, gases show the property of getting diffused very fast into other gases.

16. Air is a gas and has no definite volume. In jar, the air that Anne pumped in was compressed from volume of 1000 mL to a volume of 750 mL.

17. The rate of diffusion will be negligible when sodium chloride and ammonium chloride are mixed because solids have least inter-molecular spaces.

18. The intermixing of particles of two different types of matter on their own is called diffusion. Particles of copper sulphate and water intermix due to diffusion.

19. The arrangement of particles is most ordered in the case of solids. In case of liquids, layers of particles can slip and slide over each other.

20. A sponge has minute holes, in which air is trapped, when we press it, the air is expelled out and we are able to compress it.

21. The melting point of a solid is an indication of the strength of the force of attraction between its particles.

22. Inter molecular forces of attraction are strongest in case of solids.

23. The particles of air are far apart from each other and have a weak force of attraction.

24. Matter is anything that has mass and takes up space.

25. Intermolecular forces of attraction follows the order gases < liquid < solid.

26. The salt particles, being very small, occupy the space between water molecules.

41. All are coprimes

42. $\frac{37}{300}$ = 0.123333.... = $0.12\bar{3}$

43. $\frac{426-4}{99} + \frac{426-42}{90} = \frac{8344}{990} = 8.5\overline{29}$

44. $\frac{6}{1250}$ = .0048 (after 4 decimal places)

45. $\frac{343}{2^3 5^3 7^3} = \frac{343}{2^3 5^3}$ = terminating

46. by repreasentation of $\sqrt{x}$

47. $(2+\sqrt{3}) + \left(2-\sqrt{3}\right) = 4$ (rational)
$(2+\sqrt{3}) - \left(2-\sqrt{3}\right) = 2\sqrt{3}$ (irrational)

48. $\sqrt{16} - 4 = 4 - 4 = 0$ which is rational
$(3 - \sqrt{3})(3 + \sqrt{3}) = 9 - 3 = 6$ which is rational
$\sqrt{5} + 3$ which is irrational
$-\sqrt{25} = -5$ which is rational.

49. $\sqrt{x}$ is defined when x is positive.

50. There are infinitely rational number between two rational numbers

51. HCFm of coprime numbers is 1

52. $\sqrt[3]{8} < \sqrt[3]{11} < \sqrt[3]{15.625}$ ($\because 2.5^3 = 15.625$)

53. $\sqrt{2} < \sqrt{5} < \sqrt{7}$

54. $\frac{3}{9} + \frac{7}{9} = \frac{10}{9} = 1.\bar{1}$

55. $\frac{5}{8} + \frac{-8}{9} = \frac{-19}{72}$

56. $3.5 < 3.501 < 3.\bar{5}$

57. 0.853853853.. . (digits are repeated, so its rational number)

58. .5 > .4 > .33
$\frac{1}{2} > \frac{2}{5} > \frac{1}{3}$

59. 3 < 3.25, 3.625, 3.5 < 4

60. product of non zero rational number with an irrational number is always irrational number.