

SRI GURU GOBIND SINGH SR. SEC. SCHOOL

POST: TGT (Math-Cum Science)

Question Booklet & Answer Key

19.08.2023 (MORNING)

1. 'ज्येष्ठ' का विलोम क्या है?
A) कनिष्ठ B) अवर C) अग्रज D) प्रवर
2. 'जंगल में लगने वाली आग' वाक्यांश का एक शब्द बताएँ:
A) जठरानल B) बड़वानल C) कामानल D) दावानल
3. 'दिक् + गज' की संधि है:
A) दिकगज B) दिग्गज C) दिगज D) इनमें से कोई नहीं
4. निम्न में से संयुक्त वाक्य का चयन कीजिए:
A) जो परिश्रम करता है, वही आगे बढ़ता है B) मैं पढ़ता हूँ और वह गाता है
C) क्या मेरे बिना वह पढ़ नहीं सकता है D) परिश्रमी व्यक्ति ही सफलता प्राप्त करता है
5. जिन शब्दों की उत्पत्ति का पता नहीं चलता, उन्हें कहा जाता है:
A) तत्सम B) तद्भव C) देशज D) संकर
6. 'सुन्दर' की भाववाचक संज्ञा है:
A) सुन्दरता B) सौन्दर्य C) केवल 'A' D) 'A' व 'B' दोनों
7. 'सभा' शब्द का प्रयोग किस संज्ञा के अन्तर्गत आता है?
A) व्यक्तिवाचक B) जातिवाचक C) भाववाचक D) द्रव्यवाचक
8. पुल्लिंग-स्त्रीलिंग के युग्म में से कौन सा युग्म सही नहीं है:
A) बालक-बालिका B) मिहतर-मिहतरी C) गूँगा-गूँगी D) नर-नारी
9. सही सन्धि-विच्छेद का चयन कीजिए:
A) महा + ऊदय B) महा + उदय C) महो+ दय D) महा+ ओदय
10. 'कलम तोड़ देना' मुहावरे का सही अर्थ है:
A) लिखना-पढ़ना त्याग देना B) अत्यन्त क्रोधित होना
C) अत्यन्त मार्मिक व प्रभावशाली रचना करना D) लिखने से घृणा करना

Directions (Q. 11-12) : Choose the correct opposite word out of the four options:

11. Jejune
A) Sophisticated B) Arrogant C) Delightful D) Indifferent
12. Jeopardy
A) Validity B) Piety C) Safety D) Tactfulness

Directions (Q. 13-14): Choose the correct synonyms of the following words out of the four given options:

13. Improvised
A) Imprudent B) Unstudied C) Incautious D) Oblivious
14. Maverick
A) Materialist B) Spiritualist C) Selfish D) Nonconformist

Directions (Q. 15 -16): Mark out of the four given choices, the correct meaning of the italicized idioms/ phrases:

15. *A fly on the wheel*
A) a person who overestimates her/his importance B) a person who cautions the people
C) a person who is hostile to all D) a person who entertains others
16. *To be under the harrow*
A) to work hard B) to be awarded for honesty
C) to be in distress D) to be in good health

Directions (Q. 17 - 18): Choose the correct preposition, out of four options, to be filled in the blanks of the following sentences:

17. His speech was appropriate _____ the occasion.
A) upon B) to C) about D) for
18. Radhika's aptitude _____ business cannot be doubted.
A) to B) about C) at D) for

Directions (Q. 19 - 20) : Choose the correct form of the following words as the given part of the speech out of given options:

19. Down as noun:
 A) Down went the "Titanic".
 B) Shyam has seen the ups and downs of life.
 C) The porter was killed by the down train.
 D) The engine came rushing down the hill.

20. But as adverb:
 A) It is but right to admit our faults.
 B) We tried hard but did not succeed.
 C) None but the brave deserve the honour.
 D) There is no one but likes him.

21. Who was the first women Governer of India?
 A) Sarojini Naidu
 B) Annie Besant
 C) Suchitra Kriplani
 D) Vijay Laxmi Pandit

22. India's rank in World Competitiveness Index 2022 is:-
 A) 59th
 B) 47th
 C) 43rd
 D) 37th

23. Which one of the following clouds is a rain-bearing cloud?
 A) Cumulus Cloud
 B) Stratus Cloud
 C) Cirrus Cloud
 D) Nimbus Cloud

24. Section 498 A of Indian Penal Code deals with
 A) Harassment for dowry
 B) Property rights to women
 C) Kidnap & Rape
 D) Reservation for women

25. Which of the following is the First Indian Women to win Olympic medal
 A) P.T. Usha
 B) P. V. Sindhu
 C) Karnam Malleswari
 D) Mary Kom

26. Identify the correct sequence of priority in the system of education?
 i) Student ii) Teaching method iii) Aims of Education iv) Teacher
 v) Teaching learning material
 A) i, ii, iii, iv, v B) iv, i, ii, iii, v C) iii, i, iv, v, ii D) v, iv, iii, ii, i

27. Match the following methods of teaching with their meaning.

List I	List II
1. Oral presentation of information, principles, concepts, ideas about a topic	a) Brainstorming
2. Sharing experiences, ideas and attitudes	b) Project
3. Generating as many ideas without judging them	c) Lecture
4. A whole-hearted purposeful activity proceeding in a social environment	d) Collaboration
	e) Discussion

- A) 1a, 2b, 3c, 4d B) 3a, 5b, 1c, 2d C) 5a, 4b, 3c, 2d D) 3a, 4b, 1c, 2d

28. Good teaching is best reflected by:
 A) Attendance of students
 B) Number of distinctions
 C) Meaningful question asked by students
 D) Pin- drop silence in the class

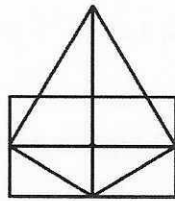
29. The most important indicator of quality of education in an educational institute is:-
 A) Infrastructural facilities of a school
 B) Student achievement level
 C) Textbook and teaching- learning material
 D) Classroom system

30. 'Spare the rod and spoil the child'- this assumption is related to the type of discipline which has been advocated:-
 A) By naturalist philosophy
 B) In Victorian Era
 C) By pragmatist philosophy
 D) In Democratic Era

43. Eleven students A, B, C, D, E, F, G, H, I, J and K are sitting in row of the class facing the teacher. D who is to the immediate left of F, is second to the right of C. A, is second to the right of E, who is at one of the ends. J is the immediate neighbour of A and B and third to the left of G. H is to the immediate left of D and third to the right of I.
Which of the following statements is true in the above sitting arrangement?
- A) There are three students sitting between D and G.
B) K is sitting between A and J.
C) B is sitting between J and I.
D) G and C are neighbours sitting to the immediate right of H.

44. Rajat is fifteenth from the front in a column of boys. There were thrice as many behind him as there were in front. How many boys are there between Rajat and the seventh boy from the end of the column
- A) 33 B) 34 C) 35 D) Data inadequate

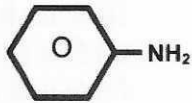
45. Find the number of triangles in the given figure:



- A) 11 B) 13 C) 15 D) 17
46. Which of the following statement(s) is/are true with regard to word processing software?
P: Word Art is set of images provided by Microsoft office, which can be used in the document.
Q: Clip Art is stylish text styles provided by Microsoft office.
- A) P only B) Q only C) Both P and Q D) Neither P nor Q
47. The value of the cell containing the formula =SUMIF(A1:A6, ">50", B1:B6) in the following Excel worksheet is:

	A	B	C
1	45	35	
2	30	85	
3	75	10	
4	15	55	
5	25	20	
6	65	15	
7			

- A) 45 B) 195 C) 25 D) 210
48. Microsoft Office PowerPoint comes with several categories of built-in transition effects. Which of the following is not a type of transition effect supported by Microsoft PowerPoint?
- A) Subtle B) Speed C) Exciting D) Dynamic content
49. In Windows Operating System, Disk Defragmenter utility:
- A) Regroups fragmented sectors on a hard drive.
B) Regroups pieces of files together on a hard drive.
C) Compresses fragmented files.
D) Both A) and C)
50. Which of the following lists memory types from highest to lowest speed?
- A) secondary storage, main memory, L2 cache, registers
B) registers, L1 cache, secondary storage, main memory
C) registers, L2 cache, main memory, secondary storage
D) L1 cache, registers, main memory, secondary storage

51. Propene reacts with HBr in the presence of peroxide to give:
 A) n-Propyl bromide B) Allyl bromide C) Isopropyl bromide D) Vinyl bromide
52. Which of the following compounds on treatment with NaHCO_3 will liberate CO_2 ?
 A) Acetic acid B) Ethylamine C) Acetone D) Ethyl alcohol
53. Which of the following is most basic?
 A) CH_3NH_2 B) $(\text{CH}_3)_3\text{N}$ C) $(\text{CH}_3)_2\text{NH}$ D) 
54. Natural rubber is a polymer of:
 A) Propene B) Isoprene C) Formaldehyde D) Phenol
55. LPG (Household cooking gas) is mainly a mixture of:
 A) Methane + Ethane B) Acetylene + O_2 C) Butane + Isobutene D) Acetylene + H_2
56. The bond order of O_2 is:
 A) Zero B) 2 C) 1 D) 3
57. The structure of XeF_4 is:
 A) Square planar B) Tetrahedral C) Square pyramidal D) Octahedral
58. For corrosion of iron to take place:
 A) Presence of moisture is sufficient B) Presence of moisture and oxygen is essential
 C) Hydrogen is required D) A strong acid is necessary
59. In which of the following compounds, the oxidation state of Xenon is **not** six?
 A) XeOF_2 and XeO_4 B) XeF_6 and XeO_3
 C) XeOF_4 and XeO_2F_2 D) XeO_3 and XeOF_4
60. Increasing concentration of CO_2 in atmosphere is responsible for:
 A) Acid rain B) Green house effect
 C) Lack of Photosynthesis D) Death of aquatic plants
61. The number of atoms per unit cell of a simple Cubic cell is:
 A) 1 B) 2 C) 4 D) none
62. The colloidal solution of a solid as the dispersed phase and a gas as the dispersion medium is called:
 A) Sol B) Aerosol C) Solid foam D) Gel
63. If water kept in an insulated vessel at -10°C suddenly freezes, the entropy change of the system _____
 A) Increases B) Is equal to the surroundings C) Decreases D) Is zero
64. Among the following pHs which solution contains a weak acid :
 A) 1.72 B) 2.0 C) 3.7 D) 6.27
65. The lowest boiling point of helium among all known elements is due to:
 A) Inertness B) Gaseous state
 C) High polarizability D) Weak Van der Waals forces between atoms
66. Specific conductance is the conductance of a solution of volume :
 A) 1 cm^3 B) 10 cm^3 C) 100 cm^3 D) 1000 cm^3

67. A particle moves along a circle path with constant speed. What is the nature of its acceleration?
 A) it is uniform B) it is zero C) its magnitude changes D) its direction changes
68. Passengers standing in a bus are thrown outwards when the bus takes a sudden turn. This happens because of:
 A) change in acceleration B) change in momentum
 C) inertia D) outwards pull on them
69. Barrier potential of a p-n junction diode does not depend on:
 A) Diode design B) forward bias C) temperature D) doping density
70. A particle is moving along a circular path with uniform speed. What is the angle between its instantaneous velocity and acceleration?
 A) 180° B) 90° C) 45° D) 0°
71. Which of the following is axial vector?
 A) Torque B) Acceleration C) Momentum D) Force
72. Which of the following cannot be used to measure time in a space ship orbiting around the earth?
 A) A watch using elastic vibrations B) A watch using electric oscillations
 C) Pendulum clock D) atomic watch
73. Moon has no atmosphere, because
 A) it is far away from the earth B) there is no vegetation
 C) it is not a planet D) the escape velocity on it, is small
74. Why the dam of water reservoir is thick at the bottom?
 A) Pressure of water increases with depth
 B) Density of water increases with depth
 C) Quantity of water increases with depth
 D) Because of some reason other than those mentioned above.
75. A metallic ball has spherical cavity at its centre. If the ball is heated, what happens to the cavity?
 A) its volume decreases
 B) its volume increases
 C) its volume may decrease or increase depending upon the nature of metal
 D) its volume remains unchanged
76. When a stone is dropped on the surface of the still water, the waves produced are:
 A) Transverse B) stationary C) longitudinal D) none of the above
77. The branch of Physics that deals with the generation, reception and propagation of sound is called:
 A) ultrasonics B) reverberation C) wave mechanics D) acoustics
78. How does the electric field strength vary when we enter a uniformly charged spherical cloud?
 A) Increases directly as the distance from the centre
 B) Increases directly as the square of the distance from the centre
 C) Decreases directly as the square of the distance from the surface
 D) Decreases inversely as the square of the distance from the surface

79. What are the essential requirements for the heater filament?
 A) High resistivity, low melting point
 B) Low resistivity, high melting point
 C) High resistivity, high melting point
 D) Low resistivity, low melting point
80. Out of the following of which colour the sensitivity of the human eye is the highest?
 A) Violet B) Green C) Blue D) Red
81. If an electron has an initial velocity perpendicular to direction of magnetic field, the path of the electron is:
 A) an ellipse B) a circle C) a straight line D) a parabola
82. Cosmic rays originate:
 A) in the centre of the universe B) on the sun
 C) outside the solar system D) in the solar system but not on the sun
83. Which of the following bonds gives a solid that transmits light in the visible region and has very low melting point?
 A) covalent bonding B) metallic bonding
 C) ionic bonding D) van der Waal's bonding
84. Find the value of k if the points $A(2, 3)$, $B(4, k)$ and $C(6, -3)$ are collinear.
 A) 2 B) 3 C) 1 D) 0
85. In what ratio of line $x - y - 2 = 0$ divides the line segment joining $(3, -1)$ and $(8, 9)$?
 A) 2 : 3 B) 2 : 1 C) 1 : 3 D) 1 : 2
86. Two cyclists start biking. The second cyclist travels at 10 miles per hour and starts 3 hours after the first cyclist who is traveling at 6 miles per hour. How much time will pass before the second cyclist catches up with the first from the time the second cyclist started biking?
 A) 2 hours B) 4 $\frac{1}{2}$ hours C) 5 $\frac{3}{4}$ hours D) 7 $\frac{1}{2}$ hours
87. The interval in which the function $f(x) = (x - 1)(x - 2)^2$ decreases is
 A) $(-\infty, \infty)$ B) $(-\infty, \frac{4}{3})$ C) $[\frac{4}{3}, 2]$ D) $(2, \infty)$
88. $\vec{V} \cdot (\vec{V} \times \vec{V})$ will be equal to
 A) 0 B) $\vec{V} \cdot (\vec{V} \cdot \vec{V})$ C) $\nabla^2 \vec{V}$ D) None of these
89. Which of the following is an AP?
 A) $-1, 3, -5, 7, \dots$ B) $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$
 C) $-2, 2, -2, 2, -2, \dots$ D) none of these
90. Which term of the AP: $3, 15, 27, 39, \dots$ will be 132 more than its 54th term?
 A) 60 B) 65 C) 75 D) 80
91. Let $T: \mathbb{R}^4 \rightarrow \mathbb{R}^4$ be the transformation $T(x_1, x_2, x_3, x_4) = (0, x_1, x_2, x_3)$. The null space $N(T)$ (or kernel) of T consists of all vectors of the form.
 A) $(0, x_1, x_2, x_3)$, x_1, x_2, x_3 are real numbers B) $(x_1, 0, 0, 0)$, x_1 is a real number
 C) $(1, 0, 0, 0)$ D) $(0, 0, 0, x_4)$, x_4 is a real number
92. Up to isomorphism, the number of distinct groups of order 8 are
 A) 2 B) 3 C) 5 D) 8
93. Let \mathbb{Z}_{10} denote the ring of integers modulo 10. Then the number of ideals in \mathbb{Z}_{10} are
 A) 4 B) 3 C) 1 D) 5

94. If m and n are relatively prime numbers then the number of onto homomorphisms from \mathbb{Z}_m to \mathbb{Z}_n are
 A) $gcd(m, n)$ B) $lcm(m, n)$ C) 2 D) 0
95. Let W be the subspace of \mathbb{R}^4 spanned by vectors $(1,3,5,10)$, $(1,0,2,4)$ and $(1,2,4,8)$. Then dimension of W is
 A) 1 B) 2 C) 3 D) 4
96. The value of the Wronskian of the functions x^2 , $3x + 2$ and $2x + 3$ is
 A) 0 B) -10 C) -5 D) 8
97. The limit of the sequence $\left(1 + \frac{1}{n}\right)^{n+1}$ is
 A) 1 B) 0 C) e D) None of these
98. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ be given by $f(x) = [x]$; the greatest integer less than or equal to x . Then
 A) The set of points at which f is not continuous is countable
 B) The set of points at which f is not continuous is \mathbb{R} .
 C) f is strictly decreasing
 D) f is strictly increasing
99. Value of the integral $\int_{-2}^2 x\sqrt{x+2} dx$
 A) $\frac{16}{15}$ B) 0 C) $\frac{32}{15}$ D) None of these
100. How many of the following have an Eigen value 1?
 $\begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}$, $\begin{bmatrix} -1 & 0 \\ 0 & 0 \end{bmatrix}$, $\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$ and $\begin{bmatrix} -1 & 0 \\ 1 & -1 \end{bmatrix}$
 A) none B) 3 C) 2 D) 1

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19-08-2023 Answer key- Maths-Cum Science

Q.No.	Ans	Q.No.	Ans	Q.No.	Ans	Q.No.	Ans
1	A	26	C	51	A	76	A
2	D	27	B	52	A	77	D
3	B	28	C	53	C	78	A
4	B	29	B	54	B	79	C
5	C	30	B	55	C	80	B
6	D	31	D	56	B	81	D
7	B	32	C	57	A	82	C
8	B	33	C	58	B	83	D
9	B	34	B	59	A	84	D
10	C	35	C	60	B	85	A
11	A	36	C	61	A	86	B
12	C	37	B	62	B	87	C
13	B	38	C	63	C	88	A
14	D	39	D	64	D	89	B
15	A	40	B	65	D	90	B
16	C	41	D	66	A	91	D
17	B	42	C	67	C	92	C
18	D	43	C	68	C	93	A
19	B	44	C	69	A	94	D
20	A	45	C	70	B	95	B
21	A	46	D	71	A	96	B
22	D	47	C	72	C	97	C
23	D	48	B	73	D	98	A
24	A	49	B	74	A	99	C
25	C	50	C	75	B	100	D