Time: 11.30 a.m. to 1.30 p.m.

CENTRE CODE:				

DATE:	0	3	1	1	2	0	1	9

EXAM SEAT NO.	3	6	2	0	0	0					

EXAM SEAT NO. (in words)	three	six	two	zero	zero	zero					

NATIONAL TALENT SEARCH EXAMINATION 2019-20 (STD. X)
Scholastic Aptitude Test (SAT)

Instructions to the Candidates:

1) PART II Scholastic Aptitude Test Time 120 Minutes Maximum Marks 100

2) Write your Seat No. both in figures and in words on this Question Booklet (above) as Well as on the Answer Sheet (OMR Sheet) supplied to you.

3) Each question carries one Mark.

4) All questions are compulsory.

5) You have to mark your answers on Answer sheet provided with the Question Booklet. Each question is provided with four alternatives. Answer to each question is to be indicated by **making a dark circle on** the number of the correct alternative in the Answer sheet from amongst those given against the corresponding question in the Question Booklet.

6) Rough work can be done any where in the question booklet.

7) Extra time of 30 minutes will be allotted to the Physically Handicapped candidate with Defects of vision only.

Please Note the Centre Codes:

1.	Bicholim	0001
2.	Bardez	0002
3.	Pernem	0003
4.	Sattari	0004
5.	Tiswadi	0005
6.	Ponda	0006
7.	Salcete	0007
8.	Sanguem	0008
9.	Canacona	0009
10.	Quepem	0010
11.	Dharbandora	0011
12.	Mormugao	0012

SCHOLASTIC APTITUDE TEST

Part II **Std. X** **Time: 11.30 am to 1.30 pm**

(For question no. 1 to 13 ,Answers are rounded off to the nearest number)

Q. 1. Two electromagnets are made by wrapping a few turns of wire on similar types of nails and passing through them. The number of turns of the wire wrapped over the two iron nails are in the ratio 4:3.The strength of

(1) The first electromagnet will be greater

(2) The second electro magnet will be greater

(3) Both the electromagnets will be equal

(4) Electromagnet does not depend on the number of turns

Q. 2. Two cars P and Q of same mass start from the same location at the same time but on different straight roads. Car P travels on a road that has greater angle of inclination with horizontal compared to the road on which Q travels. At any instant both cars P and Q have the same height above the starting point. If E P and E Q are total energies of cars P and Q respectively, then

(1) $E_P > E_Q$ (2) $E_Q = E_P$ (3) $E_Q > E_P$ (4) Insufficient data

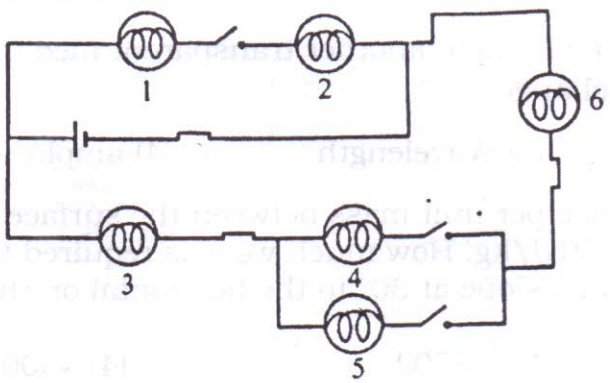
Q. 3. Temperature of a body can be measured on different scales. The following table shows the temperatures of the various materials measured in X and Y

Materials	X	Y
A	0	32
B	-40	-40
C	30	P
D	80	176

The value of p is

(1) 76 (2) 86 (3) -138 (4) 119

Q.4. In the electric circuit shown below



(1) All the bulbs will glow

(2) Only bulbs 2 and 6 will glow

(3) Only bulbs 1,3,4 and 5 will glow

(4) None of the bulb will glow

Q. 5. Two plane mirrors are placed perpendicular to each other with their reflecting faces inward. A candle is placed between the two mirrors, then the number of images formed will be _____

(1) 1 (2) 2 (3) 3 (4) infinite

Q. 6. Which of the following is not a vector quantity?

(1) Acceleration (2) Momentum (3) Weight (4) pressure

Q. 7. A body is thrown vertically upward with a velocity V. It returns earth after reaching a height H. The ratio of displacement to the distance covered by a body is _____

(1) 2H (2) 4H (3) 0 (4) Infinite

Q.8. An electron moving with uniform velocity in x-direction enters a region of uniform magnetic field along y-direction. Which of the following physical quantity/quantities is/are non-zero and remains constant?

I. Velocity of the electron
II. Magnitude of momentum of the electron
III. Force on the electron
IV. The kinetic energy of the electron

(1) Only I and II (2) Only III and IV (3) Only II and IV (4) All four

Q. 9. A convex lens of focal length of 25cm is combined with a second lens such that combination has a power of 2.5 Diopter. Which of the following could be the second lens?

(1) A concave lens of power 3D (2) A concave lens of power 1.5D

(3) A convex lens of power 3D (4) A convex lens of power 1.5D

Q.10. A wire of resistance 20 is stretched by four times its length. The new resistance of the wire is _____

(1) 500 (2) 320 (3) 250 (4) 640

Q.11. A stone is dropped into a lake from a tower 490m height. Assuming the speed of the sound in air is 350 m/s. The sound of a flash will be heard by a man on the tower after

(1) 20s (2) 150s (3) 11.4s (4) 17.6s

Q.12. When light travels from one transparent medium to another transparent medium which of the following quantity does not change?

(1) Frequency (2) Velocity (3) Wavelength (4) amplitude

Q.13. The gravitational potential energy difference per unit mass between the surface of a planet and a point 100 m above it is 1000 J/kg. How much work is required to be done in moving a 10kg object 100 m on a slope at 30° to the horizontal on this planet?

(1) 1250J (2) 2500J (3) 4350J (4) 4900J

Q.14. Prediction of properties of elements with more precision could be made, when elements are arranged on the basis of _____

1) Atomic masses 2) Atomic weights 3) Atomic numbers 4) Atomic sizes

Q.15. Oxides of non-metals are generally _____ in nature.

1) basic 2) acidic 3) amphoteric 4) neutral

Q.16. During electrolytic refining the insoluble impurities settle down at the bottom is known as _____

1) cathode mud 2) ore 3) anode mud 4) gangue

Q.17. Stainless steel is obtained by alloying iron with _____

1) Nickel & Aluminium 2) Nickel & Chromium
3) Aluminium & Nickel 4) Chromium & Aluminium

Q.18. An atom has electronic configuration 2,8,8 to which of the following element would it be chemically similar ?

1) F (9) 2) Ne (10) 3) Na (11) 4) Mg (12)

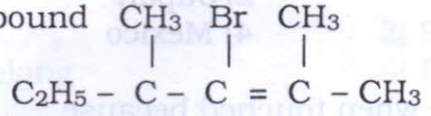
(Atomic numbers are given in parenthesis)

Q.19. Total number of neutrons in five moles of water molecules is _____

1) 3.011×10^{24} 2) $2.409nx\ 10^{25}$ 3) 3.111×10^{25} 4) 2.711×10^{25}

Q.20. _____ is widely used as a fuel and is a major component of biogas and compressed natural gas

1) Hydrogen 2) Methane 3) Oxygen 4) Ethane

Q.21. The name of the compound  is

1) 3 – Bromo – 2 – Ethyl – 4 – methyl pentane
2) 3 – Bromo – 2,4 – dimethyl hexene
3) 3 – Bromo – 2 – Ethyl – 4 – methyl pentene
4) 3 – Bromo – 2,4 – dimethyl hexane

Q.22. When ethanol is heated at 443 K with excess of concentrated sulphuric acid produces _____

1) Ether 2) Ethene 3) Sodium ethoxide 4) Ester

Q.23. Sweet smelling compound used in making perfumes and flavouring agent on treatment with Sodium hydroxide produces _____

1) Carboxylic acid 2) Alcohol 3) Benzene 4) Ester

Q.24. The reaction commonly used in the hydrogenation of vegetable oils using a catalyst belongs to _____

1) substitution reaction 2) addition reaction
3) oxidation reaction 4) combustion reaction

Q.25. A compound 'X' reacts with a compound 'Y' to produce a colourless and odourless gas. The gas turns lime water milky. When 'X' reacts with Methanol in presence of Conc. Sulphuric acid, a sweet smelling substance is produced. The molecular formula of the compound 'X' is _____

1) C_2H_4O 2) $C_2H_4O_2$ 3) C_2H_6O 4) $C_2H_6O_2$

Q.26. Propanol is a three carbon compound with the functional group _____

1) carboxylic acid 2) aldehyde 3) ketone 4) alcohol

Q.27. The initial glomerular filtrate is 180 litres, but the urine excreted is 1 litre, this is due to

1) Reabsorption 2) Refiltration 3) Secretion 4) Retention

Q.28. This plant belongs to Cryptogamae because its reproduction is not exposed or visible

1) Fern 2) Neem 3) Tulsi 4) Coconut

Q.29. Frogs are Vertebrates because

1) their notochord is rudimentary
2) they have no notochord in their embryonic stage
3) their notochord is replaced by vertebral column in adults
4) The notochord is present in larval form.

Q.30. When you add salt to slices of Onion , they lose their freshness after some time, due to.

1) Osmosis 2) Oxidation
3) Saltation 4) Wilting

Q.31. The country richer in diverse forms of life is

1) England 2) Japan
3) Saudi Arabia 4) Mexico

Q.32. Mimosa pudica leaves close when touched because

1) Their leaves sense danger 2) The cells at the leaf base lose water
3) Leaf cells have sensory receptors 4) The leaves need less sunlight

Q.33. The cell wall of Rhizopus is made up of

1) Cellulose 2) Suberin
3)Chitin 4) Glycans

Q.34. The brain sends messages to your hands to place a coverslip on the slide through the

1) Reflex arc 2) Peripheral nerves
3) Autonomic nerves 4) Sympathetic nerves

Q.35. The Medulla is present in the

1) Fore brain 2) Mid brain
3) Hind brain 4) Temporal brain

Q.36. Which type of Microscope will you use to observe internal parts of the Mitochondria .

1) Electron microscope 2) Electric microscope
3) Binocular microscope 4) Compound microscope

Q.37. When you chew bread it taste sweet due to the action of

1) Protease 2) Nuclease
3) Amylase 4) Lypase

Q.38. Name the process by which cellular waste product like CO_2 gets transported out of the cell.

1) Osmosis 2)Diffusion
3) Pressure 4) Flow

Q.39. DNA in a non dividing resting cell, is present in the form of

1) Genes 2) Proteins
3) Chromatin 4) Chromosomes

Q.40. Four cells undergo three consecutive (i.e one after another) Mitotic division. The total number of daughter cells formed at the end of the division is

1) 16 2) 8
3) 32 4) 64

Q .41. The Kingdom of Kublai khan in China was visited in 13th century by a foreign traveller from the Western state is _____.

1) Marco Polo 2) Ibn Battuta
3) Al-Biruni 4) François Bernier

Q.42. On 19 th October 1781, in the battle of Yorktown, George Washington accepted the surrender on the side of British forces from _____.

1) Lord Cornwallis 2) Lord Dalhousie
3) Lord Wellesley 4) Lord Canning

Q.43. Name a Goan, who was the first Secretary of Indian National Congress established in 1885.

1) Allan Octavian Hume 2) Peter Alvares
3) Kashinath Trimbak Telang 4) Dr.Ram Hegde

Q.44. 'Young Italy' was founded by _____.

1) Giuseppe Garibaldi 2) Pope Pius IX
3) Count Camillo Cavour 4) Joseph Mazzini

Q.45. Hitler took over the German Workers Party and renamed it as _____.

1) National workers of Germany 2) Socialist workers of Germany
3) Nationalist Socialist Party 4) Secular German Workers

Q.46. What is the dry forested area of Kumaon and Garhwal called?

1) Bhabar 2) Bugyal
3) Desert forest 4) Arid Zone

Q.47. Slavery was finally abolished in French colonies in_____.

1) 1748 2) 1749
3) 1848 4) 1794

Q.48. In 1848, which community founded the first Indian Cricket club in Bombay ?

1) The Hindus 2) The Muslims
3) The Christians 4) The Parsis

Q.49. The first printing Press was invented by John Guttenberg in _____.

1) France 2) Germany
3) Italy 4) India

Q.50. Who published the journal 'Samwad Kaumudi' ?
1) Raja Ram Mohun Roy
2) Subhash Chandra Bose
3) Bipin Chandra Pal
4) Ishwar Chandra Vidyasagar

Q.51. Which European country became famous as the 'Workshop of the World'?
1) England
2) Spain
3) Italy
4) France

Q.52. The Southern tip of Africa was called the 'Cape of Storm' by _____.
1) Bartholomew Dias
2) Christopher Columbus
3) Prince Henry
4) Vasco da Gama

Q.53. Why railway network is very scarcely spread in Jammu and Kashmir as compared to other parts of the country?
1) Less population
2) People are reluctant to use train transport
3) The climatic conditions are very harsh which restricts the construction of railway tracks.
4) Economically not feasible due to less business

Q.54. India does not shares its land boundaries with ----------
1) Pakistan and Afghanistan in the northwest
2) China (Tibet), Nepal and Bhutan in the north
3) Myanmar and Bangladesh in the east
4) Sri lanka in the South

Q.55. The northern plain in India is formed of ---------- .
1) Alluvial soil
2) Arid soil
3) Black soil
4) Laterite soil

Q.56. The largest consumer of steel is ----------
1) Russia
2) Japan
3) USA
4) China

Q.57. Which of the following is not the tributaries which join the river Ganga.
1) Kosi
2) Ghaghara
3) Kabini
4) Gandak

Q.58. An example of endangered species is ----------
1) Indian rhino
2) Asiatic elephant
3) Asiatic buffalo
4) Hornbill

Q.59. One of the statement is not the true reason for activists demanding for sustainable Mining activity?
1) Increase in Deforestation
2) Increase in Pollution
3) The price of minerals in international market has gone down
4) Mineral resources are finite and non-renewable

Q.60. Coffee plantation is done in this state:
1) West Bengal
2) Karnataka
3) Rajasthan
4) Uttar Pradesh

Q.61. An example of Tropical Rain Forests in India is ----------

1) the Eastern ghats
2) the Western Ghats
3) the central plateau
4) the desert region

Q.62. In this following state, cotton is grown because of Black soil.

1) Punjab 2) Kerala 3) Maharashtra 4) Assam

Q.63. The following one is NOT the true cause of social movements against multi-purpose projects and dams:

1) Threat of leakages and water scarcity
2) Rehabilitation of large number of people
3) Deforestation of vast area
4) Large number of displacement

Q.64. India is ---------- extension of the Asian Continent..

1) Northward
2) Eastward
3) Southward
4) Westward

Q.65 Name the organ of the UN that is responsible for maintaining peace and security among countries.

1) The UN safety council
2) The UN security council
3) The UN surety council
4) The UN security camp

Q.66 How may amendments were considered while drafting the constitution ?

1) More than one thousand
2) More than two hundred
3) More than two thousand
4) More than one hundred

Q.67 Who appoints Chief Election Commissioner in India ?

1) The Governor
2) The President of India
3) The Chief Justice
4) The Prime Minister

Q.68 What is known as the Lower House ?

1) Rajya Sabha
2) Public Sabha
3) Lok Sabha
4) Gyan Sabha

Q.69 The right to freedom is a cluster of how many freedoms ?

1) Seven
2) Six
3) Five
4) Eight

Q.70 The system of Panchayati Raj involves _____.

1) The village, block and district levels
2) The village and state levels
3) The village, district and state level
4) The village, state and Union levels

Q.71 Women in India are discriminated against in _____.

1) Political life
2) Social life
3) Economic life
4) All of these

RESEARCH &

Q.72 A democratic Government is _____

1) An accountable Government 2) A responsive Government
3) A Legitimate Government 4) All the above

Q. 73. Which is the most abundant factor of production ?

1) Machinery 2) Business
3) Labour 4) Landlord

Q. 74. Economic activities have two parts-market activities and _____

1) Non market activities 2) Same activities
3) Post activities 4) Profit activities

Q. 75.The term 'NSSO' stands for _____.

1) New sample survey organization 2) National sample survey organization
3) National simple survey organization 4) National sample survey organization

Q.76. Public distribution system (PDS) is the most important step taken by the Government of India towards _____.

1) Ensuring food security 2) Ensuring water security
3) Ensuring milk security 4) Ensuring fans security

Q.77. Average income is also called _____

1) Per capita income 2) Per capita incentive
3) Per capita information 4) Percent capital income

Q.78.Production of a commodity mostly through the natural process is an activity in ____.

1) Last 2) Primary 3) Final 4) Second

Q.79. Reserve Bank of India issues currency notes on behalf of _____ Government

1) Local Government 2) Central Government
3) State Government 4) District Government

Q.80. Rapid integration between countries is called _____

1) Nationalization 2) Mutual share
3) Open share 4) Globalization

Q. 81. If two positive integers are written as $a = x^3y^3$ and $b = xy^3$ such that x *and* y are prime numbers then HCF(a , b) is

(1) xy (2) xy^2 (3)x^3y^3 (4)x^2y

Q. 82. If one of the zeroes of a cubic polynomial $x^3 + ax^2 + bx + c$ *is* -1 then the product of other two zeroes is

(1) b-a+1 (2) a+b+1 (3) a-b-1 (4) b-a-1

Q.83. If $\sin\theta + \cos\theta = \sqrt{3}$ then the sum of $\tan\theta$ *and* $\cot\theta$ is

(1) 0 (2) $\sqrt{3}$ (3) 1 (4) $\frac{1}{\sqrt{2}}$

Q. 84. A ladder rests against a vertical wall at an inclination to the horizontal. Its foot is pulled away from the wall through a distance 'd' so that its upper end slides a distance 'h' down the wall and then the ladder makes an *angle* β to the horizontal .The ratio $\frac{d}{h}$ is

(1) $\frac{\cos\beta-\cos\alpha}{\sin\alpha-\sin\beta}$ (2) $\frac{\cos\beta+\cos\alpha}{\sin\alpha+\sin\beta}$ (3) $\frac{\cos\beta-\cos\alpha}{\sin\alpha+\sin\beta}$ (4) $\frac{\cos\beta+\cos\alpha}{\sin\alpha-\sin\beta}$

Q. 85. Vandana sold a table and a chair for ₹1050 with a profit of 10% on the table and 25% on the chair. If she had taken a profit of 25% on a table and 10% on a chair she would have got ₹15 more profit. What is the total price of a table and a chair?

(1) ₹800 (2) ₹1000 (3) ₹1200 (4) ₹900

Q. 86. If every side of a triangle is doubled then area of triangle increases by k times then the value of K is

(1) 2 (2) 1 (3) 3 (4) 4

Q. 87. If $y = 3 + \sqrt{8}$ then the value of $y^3 + \frac{1}{y^3}$ is

(1) 216 (2) 198 (3) 192 (4) 261

Q. 88. ABCD is a quadrilateral whose diagonals intersect each other at O, such that $OA = OB = OD$. If $\angle OAB = 30^0$ *then* $\angle ODA$ *is*

(1) 30^0 (2) 45^0 (3) 60^0 (4) 90^0

Q. 89. Four pipes of each of 5cm in diameter are to be replaced by a single pipe o discharging the same quantity of water. If the speed of water remains same in both the cases then the diameter of the single pipe is _____

(1) 10cm (2) 20cm (3) 15cm (4) 30cm

Q.90. In what ratio of line x – y –2 =0 divides the line segment joining (3, –1) and (8, 9) ?

(1) 1 : 2 (2) 2 : 1 (3) 2 : 3 (4) 1 : 3

Q.91. If the sum of first 'n' terms of AP is $2n + 3n^2$ then the r^{th} term is

(1) 6r - 1 (2) 2r + 1 (3) 3r - 1 (4)9r -1

Q. 92. $\frac{LCM\ (1,2,3,4,\ldots\ldots,200)}{LCM(105,106,107,\ldots\ldots,200)}$ is _____

(1) 1 (2) 101 (3) 101 x 103 (4) 101 x 102x 103x 104

Q.93. A right triangle whose sides are 15cm and 20cm is made to revolve about its hypotenuse. The volume of the double cone so formed is

(1) 1200 π cm ^{3} (2) 1500 π cm ^{3} (3) 1800 π cm ^{3} (4) 1600 π cm

Q.94. If $a = b^2 - b$ where b is an integer then $a^2 - 2a$ is divisible by

(1) 24 (2) 36 (3) 48 (4) 60

Q.95. Two circles having equal diametres 2m touch each other and each of them touches internally a circle of diameter 4m.Then the diameter of the circle which touches all the three circles is

(1) m (2) $\frac{4m}{3}$ (3) $\frac{3m}{2}$ (4) $\frac{m}{2}$

Q.96. Which of the following represents the decimal number 1257 ?

(1) 132011 (2) 321022 (3) 120331 (4) 103221

Q.97. Two dice are thrown simultaneously, the probability that the difference of the numbers appearing on them is a prime number

(1) $\frac{7}{18}$ (2) $\frac{11}{36}$ (3) $\frac{4}{9}$ (4) $\frac{1}{3}$

Q.98. The distance between the points $(a\cos\delta + b\ \sin\delta, 0)$ and $(0, a\sin\delta - b\cos\delta)$ is

(1) $a^2 + b^2$ (2) $\sqrt{a+b}$ (3) $a^2 - b^2$ (4) $\sqrt{a^2+b^2}$

Q.99. A dice is thrown once. If the probability of getting a number less than 4 is x and the probability of getting a number greater than 4 is y *then* $x - y$ is

(1) $\frac{5}{6}$ (2) $\frac{1}{6}$ (3) $\frac{2}{3}$ (4) $\frac{1}{3}$

Q.100. If $p(x) = ax^2 + bx + c$ *and* $q(x) = ax^2 - dx - c$ *than* $p(x)q(x) = 0$ has

(1) at least three roots (2) no real roots

(3) at least two real roots (4) two real and two imaginary roots

THE END

STATE COUNCIL OF EDUCATIONAL RESEARCH & TRAINING ★ GOVT. OF GOA ★

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NATIONAL TALENT SEARCH EXAM (NTSE) 2019-20

SCHOLASTIC APTITUDE TEST (SAT)

ANSWER KEY

D.O.E. 03/11/2019

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