# SCHOLASTIC APTITUDE TEST (SAT) PAPER

**1.** Find the remainder when $x^4 - x^3 + 2x^2 - x - 1$ is divided by x +1 .
(A) 2 (B) -2 (C) 4 (D) 0

**Sol.** Using Remaindu theorem

$x+1=0 \Rightarrow x=-1$

Remaindu $= p(-1) = 1+1+2+1-1=4$

Ans. C

**2.** Number of zeros which are real numbers of the polynomial $p(x) = x^3 + 1$
(A) 1 (B) 0 (C) 3 (D) 2

**Sol.** $p(n) = x^3+1 = (x+1)(x^2-x+1)$

Only one real zeros i.e. -1

Ans. A

**3.** The radius of hemisphere _____ is whose total surface area is 4158 $cm^2$.
(A) 7 cm (B) 21 cm (C) 3.5 cm (D) 42 cm

**Sol.** $3\pi R^2 = 4158$

$\Rightarrow R^2 = \frac{4158}{22}\times\frac{7}{3}$

$\Rightarrow R = 21$

Ans. B

**4.** Median of data 3, 4, -5, -3, 0, 7 1, 5, 9 is _____.
(A) 3 (B) -3 (C) 0 (D) 5

**Sol.** Ascending order -5, -3, 0, 1, 3, 4, 5, 7, 9

3 is the median

Ans. A

**5.** As shown in figure If $\angle PQR : \angle ROQ$ =. 5 : 7 then m$\angle SOQ$ =____
(A) $105^o$ (B) $75^o$ (C) $90^o$ (D) $110^o$

**Sol.** $\angle POR : \angle ROQ = 5:7$

$5x + 7x = 180°$

$x = 15°$

$\angle POR = \angle SOQ = 5x = 5\times 15 = 75°$

Ans. Bonus

**6.** In the decimal expansion of a rational number $\frac{14580}{625\times3}$, there are _____ digits (nos) after decimal.

(A) 2 (B) 3 (C) 4 (D) 5

**Sol.** $\frac{14580}{625\times3}=\frac{972}{125}=\frac{972}{5^3}$

So, after 3 places of decimal

Ans. B

**7.** The HCF of 96 and 404 is 4 then their LCM is____ .

(A) 16016 (B) 9616 (C) 1250 (D) 9696

**Sol.** $96\times404=4\times LCM$

$LCM=9696$

Ans. D

**8.** For a quadratic polynomial $-x^2+2x+8$ sum of zeros is _____.

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

**Sol.** $\alpha+\beta=\frac{-b}{a}$

$=\frac{-2}{-1}=2$

Ans. B

**9.** Zeroes of quadratic polynomial $p(x) = 2x^2 - 3x + (K - 1) = 0$ are inverse of each other then K = ___.

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

**Sol.** $\alpha\times\frac{1}{\alpha}=\frac{k-1}{2}$

K - 1 = 2

K = 3

Ans. A

**10.** The pair of eq$^{ns}$ 5x - 8y + 1 = 0 , $3x-\frac{24}{5}y+\frac{3}{5}=0$ has _____.

(A) Unique Solution (B) Infinitely many solutions

(C) Two solutions (D) No solution

**Sol.** $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}=\frac{5}{3}$

Infinitely many solution

Ans. B

**11.** After five years the sum of ages of father and his son will 70. Then four years ago sum of their ages was _____ .

(A) 62 (B) 66 (C) 56 (D) 52

**Sol.** Let after five years

Sum of ages of father and son = x + y

x + y – 9 – 9 = 70 – 18 = 52

Ans. D

**12.** HCF of smallest prime number and smallest composite number is____.

(A) 1 (B) 2 (C) 3 (D) 4

**Sol.** HCF of (2, 4) = 2

Ans. B

**13.** 11th term of the A.P. $-3,-\frac{1}{2},2$ .... Is _____.

(A) 28 (B) 22 (C) -38 (D) $-48\frac{1}{2}$

**Sol.** $a_{11} = -3+(10)(2.5)$

$a_{11} = 22$

Ans. B

**14.** The sum of the first 1000 positive integers is _____

(A) 5050 (B) 50005 (C) 500500 (D) 50500

**Sol.** $\frac{1000\times1001}{2} = 500500$

Ans. C

**15.** Perpendicular distance of point (-2, -3) from y axis is_____

(A) 2 (B) 3 (C) $\sqrt{13}$ (D) 5

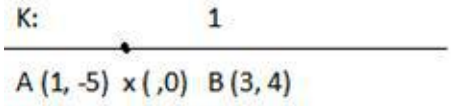
**Sol.** Distance is 2 unit

Ans. A

**16.** The ratio in which the line segment joining the points A(1,-5) and B (3,4) is divided by X axis from A, is _____.

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

**Sol.**



$$\frac{-5+4k}{k+1}=0$$

4k = 5

$$k=\frac{5}{4}$$

Ans. C

**17.** A die is thrown twice. The probability that 5 will come up, at least once is

(A) $\frac{1}{6}$ (B) $\frac{5}{36}$ (C) $\frac{10}{36}$ (D) $\frac{11}{36}$

**Sol.** (5, 1) (5, 2) (5, 3) (5, 4) (5, 5) (5, 6)
(1, 5) (2, 5) (3, 5) (4, 5) (6, 5)

Probability $=\frac{11}{36}$

Ans. D

**18.** Which of the following cannot be the probability of an event ?

(A) $\frac{2}{3}$ (B)15 % (C) $\frac{3}{2}$ (D) 0.7

**Sol.** Probability is always less than equal to 1
Ans. C

**19.** To draw' Less than - ogive we take _____ on X axis.

(A) Cumulative frequency (B) Upper Limits
(C) Lower Limits (D) Midpoints

**Sol.** Ans. B

**20.** $\sum_{i=1}^{9}(x_i-\bar{x})$ =_____

(A) $8\bar{x}$ (B) $9\bar{x}$ (C) 0 (D) 9

**Sol.** $\sum_{i=1}^{9}(x_i-\bar{x})$

=> $(x_1-\bar{x})+(x_2-\bar{x})+....+(x_9-\bar{x})$

$\because \bar{x}=\frac{x_1+x_2+x_3+....x_9}{9}$

So, $x_1+x_2+x_3+....x_9=9\bar{x}$

⇨ $(x_1+x_2+x_3+....x_9)-9\bar{x}$

⇨ $9\bar{x}-9\bar{x}=0$

**21.** The water kept in an earthen pot (matka) become cool during summer by which process?
(A) Diffusion (B) Sublimation (C) Evaporation (D) Osmosis
**Sol.** (C) evaporation (The cooling caused by evaporation is based on the fact that when a liquid evaporates, it draws (or takes) the latent heat of vaporisation from 'anything' which it touches.

**22.** Which of the following compound can not be sublimed ?
(A) Sodium Chloride (B) Ammonium Chloride (C) Anthracene (D) Camphor
**Sol.** (A) NaCl ( sodium chloride is non sublimable substance)

**23.** What is the molar mass of Nitric acid? [ H=1, N=14, 0=16 ]
(A) 31 u (B) 36 u (C) 47 u (D) 63 u
**Sol.** (D) 63u (HNO3 = 1+ 14 + 3 x 16 = 63 u)

**24.** An isotope of which element is used in the treatment of cancer ?
(A) Lead (B) Cobalt (C) Uranium (D) Iodine
**Sol.** (B) cobalt ( cobalt 60 is used for treatment of cancer)

**25.** Who discovered the nucleaus in the cell ?
(A) Robert Brown (B) Robert Hooke (C) Purkinje (D) Leeuwenhoek
**Sol.** Nucleus is the headquarter of the cell and it was discovered by Robert Brown in 1831

**26.** The lining of Kidney tubules and duct of Salivary glands are formed by which epithelium?
(A) Squamous (B) Ciliated (C) Columnar (D) Cuboidal
**Sol.** Lining of kidney tubules and duct of salivary glands are involved in secretions so they are formed by cuboidal epithelium.

**27.** Which of the following animal possesses jawless sucking mouth?
(A) Lamprey (B) Chameleon (C) Sting ray (D) Salamander
**Sol.** Lamprey (petromyzon) is a chordate animal from superclass cyclostomata which contains funnel-like jawless sucking mouth.

**28.** A train starting front rest attains velocity of 72 km $h^{-1}$ in 5 min, then find the acceleration. (Assuming that the acceleration is uniform)
(A) $\frac{1}{15} ms^{-2}$ (B) $\frac{1}{10} ms^{-2}$ (C) $5ms^{-2}$ (D) 10 $ms^{-2}$
**Sol.** Ans. (A)

Initial velocity u = 0

Final velocity v= 72 km/hr = 20 m/s

Time t = 5 min= 300 s

Acceleration a= (v-u)/t

= (20-0)/300 = 1/15 $m/s^2$

**29.** Which is the unit of force ?
(A) $Kgms^{-1}$ (B) N.m (C) kg $ms^{-2}$ (D) Pa

**Sol.** Ans. (C) Unit of force $kg.ms^{-2}$

**30.** What is the mass of 6 kg object on the moon ?
(A) 1 kg (B) 36 kg (C) $\frac{1}{6}kg$ (D) 6 kg

**Sol.** Ans. (D) Mass of an object on moon will remain same so it is 6 kg

**31.** 1 kwh = _____ J
(A) 36 x $10^5$ J (B) 3.6 x $10^5$ J (C) 36 x $10^6$J (D) 3.6 x $10^4$J

**Sol.** Ans. (A)

1 KWh = 3.6 x $10^6$ joule = = 36 x $10^5$ joule

**32.** Which of the following animal produce Ultrasound?
(A) Whale (B) Dolphin (C) Elephant (D) Rhinoceroses

**Sol.** Toothed whales and dolphins have no vocal chords, but produce the sound by structures in the nasal passage, Called "phonic lips". They use echolocation to navigate & locate prey.

**33.** Which of the following is not a bacterial disease?
(A) Anthrax (B) T.B. (C) Dengue (D) Typhoid.

**Sol.** Dengue virus is the cause of dengue fever.

**34.** Which is responsible for increase in global temperature ?
(A) Ozone layer depletion (B) Acide rain
(C) Green house effect (D) Lightning

**Sol.** The greenhouse effect is a process that occurs when gases in earth's atmosphere trap the Sun's heat. This process makes earth much warmer than it would be without an atmosphere.

**35.** Which fish foods In the middle zone of the pond?
(A) Cotta (B) Mrigal (C) Common Carp (D) Rohu

**Sol.** Fishes have different food habitats so that they do not complete for food rohu is middle fidder.

**36.** Which of the following gases can be used for storage of fresh sample of an oil for a long time ?
(A) Carbon dioxide or oxygen (B) Nitrogen or Oxygen
(C) Carbon dioxide or helium (D) Nitrogen or helium

**Sol.** (D) nitrogen or helium ( Both gases provides non reacting environment to the food material containing oils and fats)

**37.** Which of the following are combination reactions ?
(I) $2kclo_3 \xrightarrow{\Delta} 2kcl + 3O_2$ (ii) $Mgo + H_2O \longrightarrow Mg(OH)_2$
(Ili) $4Al + 3O_2 \longrightarrow 2Al_2O_3$ (iv) $Zn + FeSO_4 \longrightarrow ZnSO_4 + Fe$

(A) (i) and (iii) (B) (iii) and (iv) (C) (ii) and (iv) (D) (ii) and (iii)

**Sol.** (D) ii and iii (Combination reaction --It is a union of two or more than two substances to form a new substance)

**38.** Our tooth enamel Is made up of _____
(A) $Ca_3(PO_4)_2$ (B) $Ca_2(POP_4)_3$ (C) $Mg(OH)_2$ (D) $CaPO_4$
**Sol.** (A) $Ca_3(PO_4)_2$

**39.** Which acids is present in tomato ?
(A) Citric Acid (B) Acetic Acid (C) Oxalic Acid (D) Tartaric Acid
**Sol.** (C) oxalic acid (Tomatoes contain oxalic acid)

**40.** What is the common name of compound $CaOCl_2$ ?
(A) Quick lime (B) Bleaching powder (C) Slaked lime (D) Baking powder
**Sol.** (B) Bleaching powder ( calcium oxychloride is used as bleaching agent)

**41.** Cinnabar Is an ore of which metal ?
(A) Hg (B) Pb (C) Zn (D) Cu
**Sol.** (A) Hg ( the chemical formula of cinnabar is HgS)

**42.** Whit is the alloy of copper and tin ?
(A) Brass (B) Steel (C) Solder (D) Bronze
**Sol.** (D) Bronze ( copper and tin are components of bronze alloy)

**43.** Which of the following is an example of toasting?
(A) $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$ (B) $2ZnS + 3O_2 \longrightarrow 2ZnO + 2SO_2$
(C) $ZnO + C \longrightarrow Zn + CO$ (D) $HCl + NaOH \longrightarrow Nacl + H_2O$
**Sol.** (B) ( Roasting - It is the process of heating the concentrated ore strongly in the presence of excess air)

$2ZnS(s) + 3O_2(g) \longrightarrow 2ZnO(s) + 2SO_2(g)$

**44.** Which enzyme is Present in pancreatic juice for digestion of proteins ?
(A) Lipase (B) Trypsin (C) Amylase (D) Ptyalin
**Sol.** Pancreatic juice contains three enzymes-Trypsin, amylase and lipase. In which trypsin digests protein, amylase acts upon carbohydrates and lipase acts upon fats, so trypsin is protein digestive enzyme.

**45.** During the process of photosynthesis which of the following event does not occur ?
(A) Absorption of light energy by chlorophyll.
(B) Conversion of light energy to chemical energy.
(C) Oxidation of carbon dioxide to carbohydrates.
(D) Reduction of carbon dioxide to carbohydrates.
**Sol.** Raw materials for photosynthesis are water and carbon dioxide. So water is get oxidized and converted into oxygen and carbon dioxide is get reduced and converted into carbohydrate.

**46.** Which of the following is carried by lymph which is digested and absorbed from intestine?
(A) Fat (B) Protein (C) Minerals (D) Carbohydrates
**Sol.** Fat is not absorbed in blood so lymph capillaries which are known as lacteals are involved in aborption of fats & carry them to tissues.

**47.** In animals, control and co-ordination are provided by which tissues ?
(A) Skeletal and Muscular tissue (B) Nervous and Connective tissue
(C) Muscular and Epithelial tissue (D) Nervous and Muscular tissue
**Sol.** In animals coutrol and coordination are done by nervous tissue and muscular tissue. Nervous tissue generates impulses in response to stimuli and muscular tissue helps to coordinate with them.

**48.** Which is the main thinking part of the brain ?
(A) Forebrain (B) Midbrain (C) Hind Brain (D) Pons

**Sol.** The main thinking part of the brain is the forebrain or the cerebrum. Its functions are: Specialised for hearing, sight and smell.

**49.** Which hormone regulates metabolism for body growth?
(A) Adrenaline (B) Thyroxine (C) Growth hormone (D) Insulin

**Sol.** Thyroxine's principle function is to stimulate the consumption of oxygen & thus the metabolim of all cells & tissues in the body.

**50.** Find the power of a concave lens of focal length 2m ?
(A) -0.5 D (B) + 5.0 D (C) - 4.0 D (D) +4.0 D

**Sol.** ANS. (A)

Focal length f= -2 m (concave lens)

Power = 1/f

P= -(1/2) = - 0.5D

**51.** The central point of a lens is known as _____.
(A) Centre of curvature (B) Principal focus
(C) Optical centre (D) Pole

**Sol.** Ans. (C)Optical centre

**52.** For a young adult with normal vision, what is the value of least distance?
(A) 25 cm (B) 25 mm (C) 25 m (D) 50 mm

**Sol.** Ans. (A)25 cm

**53.** The idea that the sunlight is made up of seven colours was given by ?
(A) Einstein (B) Newton (C) Tyndall (D) Dalton

**Sol.** ANS. (B) Newton

**54.** Calculate the number of electrons constituting one coulomb of charge
(A) $6.25 \times 10^{19}$ (B) $1.6 \times 10^{19}$ (C) $6.25 \times 10^{20}$ (D) $6.25 \times 10^{18}$

**Sol.** ANS. (D)

No. of electrons n = ?

Q = ne

$n = Q/e = 1/(1.6 \times 10^{-19})$

$n = 6.25 \times 10^{18}$

**55.** If the value of resistance is doubled, the current gets _____.
(A) halved (B) doubled (C) four times (D) remains same

**Sol.** Ans (A)

Resistance is doubled then the current gets halved

**56.** An electric bulb is connected to a 220 v generator. current is 500 mA. What is the power of the bulb ?
(A) 120 w (B) 100W (C) 110 W (D) 500 w

**Sol.** Ans. (C)

Voltage V= 220 volt

Current i = 500mA

Power P = Vi = 220 x 500 x $10^{-3}$ = 110 Watt

**57.** What is the melting point of tungsten used for making bulb filaments ?
(A) 3350 $^{o}$C (B) 3380 $^{o}$C (C) 3550 $^{o}$C (D) 3580 $^{o}$C
**Sol.** Ans. (B)
Melting point of bulb filament is 3410 $^{o}$C
so the answer is 3380 $^{o}$C

**58.** A solar typical cell can produce about ____ watt of electricity.
(A) 0.4 W (B) 0.5 W (C) 0.6 W (D) 0.7 w
**Sol.** Ans. (D) 0.7 W

**59.** In which place of Gujarat, the nuclear power reactor is situated ?
(A) Kakrapar (B) Ukai (C) Wanak bori (D) Gandhinagar
**Sol.** Ans. (A) Kakrapur

**60.** Primary consumers form _____ trophic level.
(A) First (B Second (C) Third (D) Fourth
**Sol.** In trophic level first level is formed by producers and primary consumers form second trophic level, which are herbivores.

**61.** Who were the first to arrive in India for trade ?
(A) English (B) Dutch (C) Portuguese (D) Danish

**62.** In which treaty had the seed of World War - II been sown ?
(A) Frankfurt Treaty (B) Treaty of Versailles
(C) Treaty of France and Britain (D) Treaty of Germany and Hungary

**63.** Where is the head quarter of 'International Court of Justice' situated ?
(A) Washington (America) (B) Moscow (Russia)
(C) London (Britain) (D) Hague (Netherland)

**64.** Who sorted out the issue of merging the Princely States in the Union of India?
(A) Sardar Vallabhbhai Patel (B) Jawaharlal Nehru
(C) Mount Batten (D) Chakravarti C. Rajagopalachari

**65.** Where have the goals of the United nationals been explained ?
(A) In the manifesto of the united Nations
(B) In the human rights of the United Nations
(C) In the constitution of United Nations' Security Council
(D) In the preamble of the United Nations' Charter t.

**66.** What is the capital of Goa ?
(A) Puducherry (B) Mahe (C) Panaji (D) Karaikal

**67.** Who was the chairman of the Constituent Assembly ?
(A) Dr. Bhirnrao Arnbedkar (B) Dr. Rajendra Prasad
(C) Kanaiyalal Munshi (D) Jawaharlal Nehru

**68.** Who chairs the joint sitting of both the houses of the parliament ?
(A) Chairman of Loksabha (Speaker) (B) Chairman of Rajyasabha
(C) Vice – President (D) Prime Minister

**69.** Who appoints the Chief Justice of the Supreme Court ?
(A) Vice President (B) President (C) Prime Minister (D) Governor

**70.** What is India's rank in terms of area in the world ?
(A) Seventh (B) Fifth (C) Third (D) Second

**71.** Which type of soil is mostly found in Gujarat ?
(A) Red Soil (B) Laterite Soil (C) Black Soil (D) Mountain Soil

**72.** How many kilometers' distance is there between two successive latitudes ?
(A) 111 km (B) 120 km (C) 130 km (D) 100 km

**73.** Where are Asiatic Lions found ?
(A) Gir (Gujarat) (B) Kanha (Madhya Pradesh)
(C) Velavadar (Gujarat) (D) Kaziranga (Assam)

**74.** What is the well - known dance of Tamil Nadu ?
(A) Lavni Dance (B) Kuchipudi (C) Bhangda (D) Bharat Natyam

**75.** From where does the monsoon begin in India ?
(A) Mumbai (B) Karnataka (C) Kerala (D) Andhra Pradesh

**76.** Where is the Kartik Poornima Fair held ?
(A) Modhera (B) Somnath (C) Girnar (D) Bahucharaji

**77.** Which Gujarati poet wrote colourful and emotional Garbis of Lord Krishna's love ?
(A) Narsinh Mehta (B) Narrnad (C) Premanand (D) Dayaram

**78.** Which ancient book of India has mentioned the value of $\pi$ (Pie) ?
(A) Aryabhattiyam (B) Aryasiddhanta (C) Algebra (D) Lilawati Ganit

**79.** Between which two rivers is Lothal situated ?
(A) Narmada and Tapi (B) Shetrunji and Bhadar
(C) Bhogavo and Sabarmati (D) Aji and Nari

**80.** How many lions are there in the pillar of Sarnath ?
(A) Two (B) Three (C) Five (D) Four

**81.** Where is the famous ancient sun temple of Gujarat situated ?
(A) Siddhpur (B) Modhera (C) Vadnagar (D) Patan

**82.** Which is the most ancient book of Indian literature ?
(A) Samveda (B) Yajurveda (C) Rigveda (D) Atharvaveda

**83.** The ruler of which dynasty patronized Vallabhipith ?
(A) Maitrak Dynasty (B) Maurya Dynasty (C) Shrung Dynasty (D) Gupta Dynasty

**84.** Who is known as the 'Father of Mathematics of India ?
(A) Acharya Nagarjun (B) Maharshi Charak Aryabhatt
(D) Maharshi Patanjali (D) maharshi Patanjali

**85.** Which sculpture of Elephanta is considered as one of the best sculptures which sculpture of Elephants is considered as one the best sculptures in the world ?
(A) Smiling Lord Vishnu

(B) Trimurti (Brahma, Vishnu and Mahesh)
(C) Goddess Durga slaying Mahisasura
(D) Kailash Temple

**86.** Who built the step - well of Paten ?
(A) Queen Udaymati (B) Mayanalladevi (C) Siddhraj jaysingh (D) Bhimdev – I

**87.** Which department is responsible to look after the preservation of national monuments?
(A) Revenue Department (B) Police Department
(C) Public works Department (PWD) (D) Department of Archaeology

**88.** About how much area is covered by black soil out of total area of India?
(A) 43% (B) 29%. (C) 15% (D) 35%

**89.** Which wild animal has totally extincted from Gujarat?
(A) Tiger (B) Bear (C) Dear (D) Panther

**90.** In which area of Gujarat is dry farming carried out?
(A) North Gujarat (B) South Gujarat (C) Kutch (D) Bhal Region

**91.** What is the name of crop grown during summer ?
(A) Rabi Crops (B) Zaid Crops (C) Kharif Crops (D) Horticultural Crops

**92.** Which of the following oil seeds has the highest content of oil ?
(A) Soyabean (B) Groundnut (C) Sesam / Til (D) Castor

**93.** From which state of India is the maximum Iron obtained ?
(A) Karnataka (B) Orissa (C) Jharkhand (D) Chhattisgarh

**94.** What is the average rate of population growth in India ?
(A) 2.1 % (B) 2.3 % (C) 2.4.% (D) 1.9 %

**95.** The price of which products are fixed by the government ?
(A) Cotton (B) Petroleum Product (C) Edible oil (D) Tea

**96.** Who propounded the concept of Human Development Index ?
(A) Amartya Sen (B) Boyd Orr (C) Arun Jaitley (D) Dr.Hansaben Mehta

**97.** How many percentages' reservation provision has Gujarat government made for women in government job ?
(A) 30% (B) 35% (C) 38% (D) 33%

**98.** Who built the Red Fort of Delhi ?
(A) Babar (B) Akbar (C) Shahjahan (D) Jahangir

**99.** The index of which article of the constitution includes scheduled tribes ?
(A) Article - 340 (B) Article - 342 (C) Article - 330 (D) Article - 335

**100.** Who wrote 'Sangeet Makrand'?
(A) Pt. Narad (B)Pt.Saarang Dev (C) Pt.Ahobale (D) Taansen