

SAT-2

NTSE(I)/19

NATIONAL TALENT SEARCH EXAMINATION (FIRST LEVEL) 2019

Roll No.

411-B

SCHOLASTIC APTITUDE TEST (For Students of Class X)

Time : 120 Minutes

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you open the question booklet.

1. Answers are to be given on a **separate answer sheet (OMR sheet)**.
2. Please write your **Roll Number** as allotted to you in the admission card very clearly on the **test-booklet** and darken the appropriate circles on the **answer sheet** as per instructions given.
3. There are 100 questions in this test. All are compulsory. The question numbers 1 to 13 belong to Physics, 14 to 26 Chemistry, 27 to 33 Botany, 34 to 40 Zoology, 41 to 60 Mathematics, 61 to 71 History, 72 to 82 Geography, 83 to 93 Political Science and 94 to 100 are on Economics subjects.
4. Please follow the the instructions given on the answer sheet for marking the answers.
5. If you do not know the answer to any question, do not waste time on it and pass on to the next one. Time permitting, you can come back to the questions, which you have left in the first instance and attempt them.
6. Since the time allotted for this question paper is very limited, you should make the best use of it by not spending too much time on any one questions.
7. **Rough work** can be done **on the given blank pages at the back of the booklet** but not on the answer sheet/loose paper.
8. Every correct answer will be awarded one mark. There will be no negative marking.
9. **Please return the Answer sheet (OMR) only to the invigilator after the test.**

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Corporate Office :

SARVOTTAM CAREER INSTITUTE PVT. LTD.

638, CAD Circle, Kota (Rajasthan)- 324009

☎ : 0744-2501464, 2502464, 2503464, ✉ Info@sarottamcareerinstitute.com

—●—
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PHYSICS

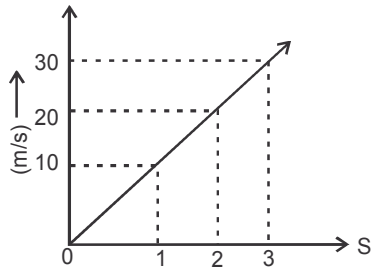
Q.1 The inertia of a body depends upon

- (1) gravitational acceleration
- (2) centre of gravity of body
- (3) shape of body
- (4) mass of body

Ans. [4]

Sol. Inertia depends on mass of body.

Q.2 Velocity-time graph of a body moving with uniform acceleration is shown in the diagram. The distance travelled by the body in 3 seconds is



- (1) 90 m
- (2) 45 m
- (3) zero
- (4) 10 m.

Ans. [2]

Sol. Area of velocity-time graph gives distance

$$= \frac{1}{2} \times 3 \times 30 = 45 \text{ m}$$

Q.3 The distance between two masses is to be halved. The gravitational force between them will be

- (1) double
- (2) one-fourth
- (3) quadruple
- (4) half

Ans. [3]

Sol. The gravitational force depends inversely on the square of distance between the centres of two bodies, so if the distance is halved then the force becomes quadrupled.

Q.4 Which statement is correct among the following for gravitational acceleration (g) due to earth ?

- (1) The value of g is equal at poles and equatorial circle
- (2) The value of g is more at poles than at equatorial circle
- (3) The value of g is more at equatorial circle than at poles
- (4) None of these.

Ans. [2]

Sol. As $g \propto \frac{1}{R^2}$

as, $R_{\text{equator}} > R_{\text{poles}}$

So $g_{\text{poles}} > g_{\text{equator}}$

Q.5 Which waves are used in the device 'SONAR' ?

- (1) Audible waves (2) Ultrasound waves
(3) Infrasound waves (4) Light waves.

Ans. [2]

Sol. Ultrasound waves

Q.6 The speed of a wave is 350 m/s and wavelength is 70 cm. The frequency of wave is

- (1) 500 Hz (2) 700 Hz (3) 50 Hz. (4) 200 Hz.

Ans. [1]

Sol. $v = 350 \text{ m/s}$

$$\lambda = 70 \text{ cm or } \frac{70}{100} \text{ m}$$

$$v = \frac{v}{\lambda}$$

$$v = \frac{(350)}{\left(\frac{70}{100}\right)}$$

$$v = 500 \text{ Hz}$$

Q.7 Which defect in human eye arises due to the irregularities in spherical shape of cornea ?

- (1) Cataract (2) Hypermetropia or long sightedness
(3) Myopia or shor sightedness (4) Astigmatism

Ans. [4]

Sol. Astigmatism

Q.8 Focal length of a convex lens is +40 cm. The power of this lens will be

- (1) +4 dioptre (2) +2.5 dioptre
(3) + 40 dioptre (4) +25 dioptre

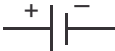



Ans. [2]

Sol. $f = + 40 \text{ cm}$

$$P = \frac{1}{f}$$

$$P = +2.5 \text{ dioptries}$$

Q.9 Match the electric devices given in **Column-A** with their symbols shown in **Column-B**

	Column-A		Column-B
(a)	Volmeter	(i)	
(b)	Rheostat	(ii)	
(c)	Electric cell	(iii)	
(d)	Plug key	(iv)	

(1) (a) - (iii), (b) - (i), (c) - (iv), (d) - (ii)

(3) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv)

(2) (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)

(4) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

Ans. [4]

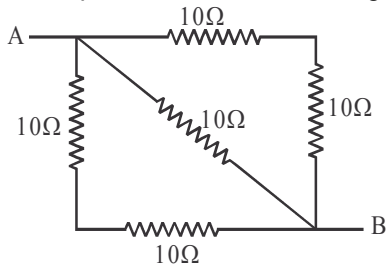
Sol. (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

- Q.10 Which one of the following is not a part of Direct current generator ?
 (1) Commutator (2) Sliprings (3) Armature (4) Carbon brushes

Ans. [2]

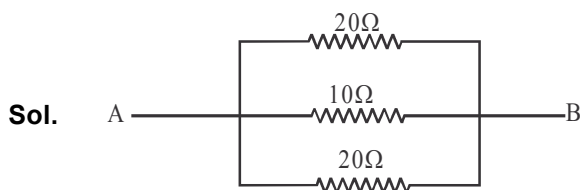
Sol. Sliprings

- Q.11 The equivalentl reistance of the given circuit between points A and B is



- (1) 40 Ω (2) 4 Ω (3) 5 Ω (4) 0.2 Ω

Ans. [3]



$$\frac{1}{R_{AB}} = \frac{1}{20} + \frac{1}{10} + \frac{1}{20}$$

$$R_{AB} = 5\Omega$$

- Q.12 If 4 joule work is to be done in stretching a spring by 4 cm then spring constant of the spring is
 (1) 5×10^3 N/m. (2) 5×10^4 N/m. (3) 2×10^3 N/m. (4) 2×10^4 N/m.

Ans. [1]

Sol. $W = 4$ J.
 $x = 4$ cm.

$$W = \frac{1}{2} kx^2$$

$$k = 5 \times 10^3 \text{ N/m}$$

- Q.13 The electric device which is having more use time and less electricity consumption is
 (1) Incandescent Bulb (2) CFL (3) LED (4) Tubelight

Ans. [3]

Sol. LED

CHEMISTRY

- Q.14 Homogeneous mixture among the following is
 (1) milk (2) cloud (3) smoke (4) air

Ans. [4]

Sol. Air consist of only one phase & there are no separate boundaries between its constituents.

- Q.15 The substance showing sublimation property among the following is
 (1) common salt (2) copper sulphate (3) potassium nitrate (4) camphor

Ans. [4]

Sol. Camphor is the only sublimable substance among the following.

- Q.16 Number of molecules present in 32g of O₂ is
 (1) 6.022 x 10²³ (2) 3.011 x 10²³ (3) 1.51 x 10²³ (4) 6.022 x 10²²

Ans. [1]

Sol. The GMM of all the molecules contains 1 mole molecules.

$$\text{No. of moles} = \frac{\text{given mass in gram}}{\text{molecular mass}} = \frac{32}{32} = 1$$

and 1 mole contains 6.022 x 10²³

- Q.17 Number of neutrons in isotope of hydrogen, tritium is
 (1) 0 (2) 1 (3) 2 (4) 3

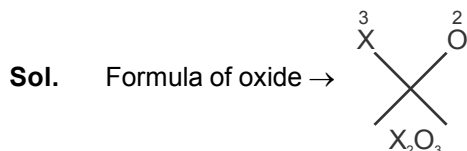
Ans. [3]

Sol. Tritium → ³₁H

No. of neutron = 3 – 1 = 2

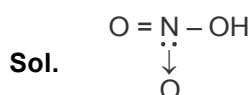
- Q.18 The formula of chloride of an element X is XCl₃. The formula of its oxide will be
 (1) XO₂ (2) XO₃ (3) X₂O₃ (4) X₃O₂

Ans. [3]



- Q.19 Molecule containing coordinate covalent bond among the following is
 (1) H₂O (2) HNO₃ (3) BaCl₂ (4) CaO

Ans. [2]



- Q.20 Concentration of hydrogen and hydroxyl ions in mole/ litre for pure water is
 (1) 1 x 10⁻⁷ (2) 2 x 10⁻⁷ (3) 1 x 10⁻¹⁴ (4) 1 x 10⁻⁶

Ans. [1]

Sol. At 25°C, pK_w = 14
 Thus, K_w (Ionic Product of water) = 10⁻¹⁴
 Thus, pH & pOH respectively are 7.
 Thus, [H⁺] & [OH⁻] are 10⁻⁷ M (mol/litre)

- Q.21 The compound used for removal of acidity in stomach is.
 (1) NaCl (2) MgCl₂ (3) Mg(OH)₂ (4) CaCl₂

Ans. [3]

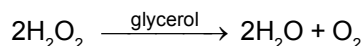
Sol. Milk of magnesia [Mg(OH)₂] is used as an antacid to relieve acidity in stomach.

- Q.22 The chemical formula of dead burnt plaster is
 (1) CaSO₄ · $\frac{1}{2}$ H₂O (2) CaSO₄ · 2H₂O (3) CaSO₄ · H₂O (4) CaSO₄

Ans. [4]

Sol. Gypsum when heated at high temperature, loses all water of crystallisation & leads to formation of Dead burnt plaster (CaSO₄)

Q.23 Which type of catalyst is glycerol in the following reaction ?



- (1) Positive catalyst (2) Negative catalyst (3) Biocatalyst (4) Autocatalyst

Ans. [2]

Sol. Glycerol inhibits the decomposition of H_2O_2 .

Q.24 Element having largest atomic radius among the following is

- (1) Li (2) Be (3) B (4) C

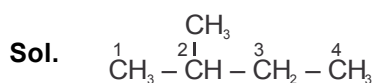
Ans. [1]

Sol. In a period, on moving left to right, atomic size decreases.

Q.25 IUPAC name of isopentane is

- (1) 2 - ethyl propane (2) pentane (3) 2 - methyl butane (4) 2, 2- dimethyl propane.

Ans. [3]



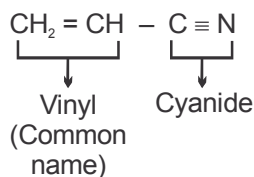
2 - methyl butane.

Q.26 The polymer of acrylonitrile is

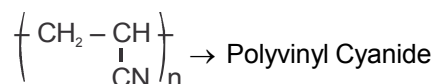
- (1) Polythene (2) Polyvinyl chloride (3) Polyvinyl cyanide (4) Polystyrene

Ans. [3]

Sol. Acrylonitrile.



It is the monomer. It polymerises to form polyvinyl cyanide;



BIOLOGY

Q.27 The cell organelle discovered by de Duve is

- (1) Plastid (2) Ribosome (3) Lysosome (4) Centrosome.

Ans. [3]

Sol. Cell organelle discovered by de Duve is Lysosome.

Q.28 The examples of hydrophytes are

- (1) Hydrilla, Calotropis (2) Lotus, Salsola (3) Moss, Lichen (4) Segetaria, Trapa

Ans. [4]

Sol. Sagittaria and trapa are aquatic plants.

Q.29 Number of male gametes in the growing pollen tube is

- (1) one (2) two (3) three (4) seven

Ans. [2]

Sol. Number of male gametes in the growing pollen tube is two.

- Q.30 The main method of reproduction in Yeast is
(1) Budding (2) Sporogenesis (3) Cutting (4) Grafting.
Ans. [1]
Sol. The main method of reproduction in Yeast is budding.
- Q.31 The number of biosphere reserves established in India is
(1) 18 (2) 118 (3) 142 (4) 669
Ans. [1]
Sol. The number of biosphere reserves established in India is 18 according to IUCN.
- Q.32 The bark of which plant is used as medicine ?
(1) *Aloe vera* (2) *Terminalia arjuna* (3) *Curcuma longa* (4) *Papaver somniferum*
Ans. [2]
Sol. *Terminalia arjuna*, bark is used mainly for cardiovascular diseases.
- Q.33 In which year was Indian Space Research Committee changed into Indian Space Research Organisation ?
(1) 1965 (2) 1969 (3) 1975 (4) 1981
Ans. [2]
Sol. The Indian Space Research Organisation in its modern form was created by Vikram Sarabhai in 1969.
- Q.34 Bacterial disease is
(1) Dengue (2) Polio myelitis (3) Tuberculosis (4) Chicken pox.
Ans. [3]
Sol. All are viral diseases except Tuberculosis.
- Q.35 Honeybee culture is known as
(1) Silviculture (2) Apiculture (3) Sericulture (4) Pisciculture
Ans. [2]
Sol. Honeybee culture is known as apiculture.
- Q.36 Disease caused by deficiency of Vitamin - D is
(1) Night blindness (2) Beri - beri (3) Scurvy (4) Rickets
Ans. [4]
Sol. Disease caused by deficiency of Vitamin - D is rickets in children.
- Q.37 Universal donor blood group is
(1) A (2) O (3) AB (4) B
Ans. [2]
Sol. Universal donor blood group is O as it does not have any antigen.
- Q.38 Skeletal muscles are
(1) striated and voluntary (2) unstriated and voluntary
(3) striated and involuntary (4) unstriated and involuntary
Ans. [1]
Sol. Skeletal muscles are striated and voluntary.
- Q.39 Water vascular system is found in
(1) Cnidaria (2) Echinodermata (3) Mollusca (4) Annelida
Ans. [2]
Sol. Water vascular system is found in echinodermata.
- Q.40 Which of the following is not a secondary reproductive organ ?
(1) Fallopian tube (2) Uterus (3) Ovary (4) Vagina
Ans. [3]
Sol. All are secondary reproductive organs except ovary.

MATHEMATICS

Q.41 Which of the following is not an irrational number?

- (1) $2 + \sqrt{5}$ (2) $\sqrt{2}$ (3) $\frac{7}{\sqrt{5}}$ (4) $\frac{2\sqrt{11}}{7\sqrt{11}}$

Ans. [4]

Sol. $\frac{2\sqrt{11}}{7\sqrt{11}} = \frac{2}{7}$ which is not an irrational number.

Q.42 If a polynomial $x^4 - 4x^2 + x^3 + 2x + 1$ is divided by $x - 1$, then remainder will be

- (1) 0 (2) 1 (3) 9 (4) -1

Ans. [2]

Sol. $f(x) = x^4 - 4x^2 + x^3 + 2x + 1$
 using remainder theorem, put $x - 1 = 0$; $x = 1$
 $f(1) = (1)^4 - 4(1)^2 + (1)^3 + 2(1) + 1$
 $= 1 - 4 + 1 + 2 + 1$
 $\therefore f(1) = 1$

Q.43 The sum of the digits of a two-digit number is 14. If 18 is subtracted from the number, digits are reversed. Find the number.

- (1) 86 (2) 77 (3) 68 (4) 76

Ans. [1]

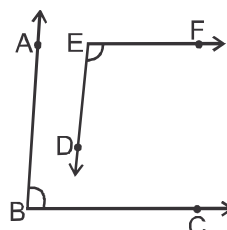
Sol. Let the two digit number be xy
 Number formed will be $10x + y$
 $\therefore x + y = 14$... (1)
 $10x + y - 18 = 10y + x$
 $10x - x = 10y - y + 18$
 $9x = 9y + 18$
 $x = y + 2$... (2)

Equating both (1) and (2) we get:

$$\begin{array}{r} x + y = 14 \\ x - y = 2 \\ \hline 2x = 16 \end{array} ; x = 8$$

Put value of x in (1) ; $8 + y = 14$; $y = 6$
 \therefore Number is 86.

Q.44 In the given figure, $AB \parallel ED$ and $BC \parallel EF$, then the value of $\angle ABC + \angle DEF$ is



- (1) 90° (2) 180° (3) 120° (4) 360°

Ans. [2]

Sol. Given $AB \parallel ED$
 and $BC \parallel EF$
 $\angle 1 = \angle 3$ (corresponding angles)
 and $\angle 2 + \angle 3 = 180^\circ$ (Co-int. \angle 's)
 So, $\angle 1 + \angle 2 = 180^\circ$ [$\because \angle 1 = \angle 3$]

- Q.45 How many cubic centimetres make 100 kilolitre?
 (1) 10^{10} (2) 10^5 (3) 10^8 (4) 10^6

Ans. [3]

Sol. 1 kilolitre = 1000000 cubic cm
 100 kilolitre = 10^8 cubic cm

- Q.46 5th term of an A.P. is 10 more than its 3rd term. What is the difference of its 9th and 6th terms?
 (1) 15 (2) 3 (3) 6 (4) 10

Ans. [1]

Sol. $a_5 = a_3 + 10$
 $a + 4d = a + 2d + 10$
 $4d - 2d = 10$
 $2d = 10 ; d = 5$
 $\therefore a_9 - a_6 = (a + 8d) - (a + 5d)$
 $= a + 8d - a - 5d$
 $= 3d = 3 \times 5 = 15$

- Q.47 If $\tan A = \sqrt{2} - 1$ where A is an acute angle then the value of $\sin A \cdot \cos A$ will be

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

Ans. [3]

Sol. Give : $\tan A = \frac{\sqrt{2}-1}{1}$

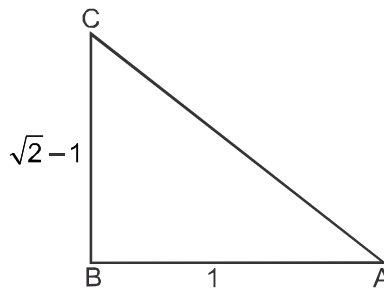
Using pythagoras theorem:

$$(\sqrt{2}-1)^2 + (1)^2 = AC^2$$

$$2 + 1 - 2\sqrt{2} + 1 = AC^2$$

$$AC^2 = 4 - 2\sqrt{2}$$

$$AC = \sqrt{4 - 2\sqrt{2}}$$



$$\therefore \sin A \cdot \cos A = \frac{\sqrt{2}-1}{\sqrt{4-2\sqrt{2}}} \times \frac{1}{\sqrt{4-2\sqrt{2}}} = \frac{\sqrt{2}-1}{4-2\sqrt{2}} \times \frac{4+2\sqrt{2}}{4+2\sqrt{2}}$$

$$= \frac{4\sqrt{2}-4+4-2\sqrt{2}}{16-8} = \frac{2\sqrt{2}}{8} = \frac{1}{2\sqrt{2}}$$

- Q.48 The multiplication of all prime numbers between 1 and 10 is
 (1) 105 (2) 945 (3) 210 (4) 1890

Ans. [3]

Sol. 2, 3, 5, 7 $\Rightarrow 2 \times 3 \times 5 \times 7 = 210$

- Q.49 If the roots of $(b-c)x^2 + (c-a)x + (a-b) = 0$ are real and equal, then which of the following is true?
 (1) $2b = a + c$ (2) $2a = b + c$ (3) $2c = a + b$ (4) $2b = a - c$

Ans. [1]

Sol. $\therefore D = b^2 - 4ac = 0$
 $\Rightarrow (c-a)^2 - 4(b-c)(a-b)$
 $\Rightarrow (c^2 + a^2 - 2ac) - 4(ab - ac - b^2 + bc) = 0$
 $\Rightarrow c^2 + a^2 - 2ac - 4ab + 4ac + 4b^2 - 4bc = 0$
 $\Rightarrow (a - 2b + c)^2 = 0$
 $\Rightarrow a - 2b + c = 0$ $a + c = 2b$

Q.50 For which value of k, a pair of equations $x + y - 4 = 0$, $2x + ky - 3 = 0$ has no solution?
 (1) 0 (2) 2 (3) 6 (4) 8

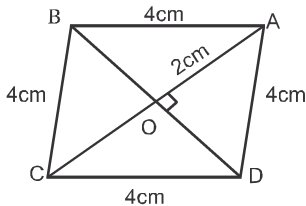
Ans. [2]

Sol. For no solution: $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$; $\frac{1}{2} = \frac{1}{K} \neq \frac{-4}{-3}$; $K = 2, K \neq \frac{4}{3}$

Q.51 The length of the side of a rhombus is 4 cm. If one of the diagonals is equal to the side of rhombus. then the length of other diagonal in cm will be

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

Ans. [4]



Sol.

Q one side = one diagonal of rhombus
 applying pythagoras theorem,
 $AO^2 + OD^2 = AD^2$
 $(2)^2 + OD^2 = (4)^2$
 $OD^2 = 16 - 4$
 $OD^2 = 12$
 $OD = 2\sqrt{3}$ cm
 $\therefore OB + OD = BD$ i.e $4\sqrt{3}$ cm

Q.52 The mean of first seventeen whole numbers is
 (1) 8 (2) 7.5 (3) 8.5 (4) 18

Ans. [1]

Sol. First seventeen whole numbers are :-

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

$$\therefore \bar{x} = \frac{0 + 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15 + 16}{17}$$

$$\therefore \bar{x} \Rightarrow \frac{136}{17} = 8.$$

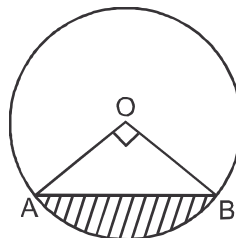
Q.53 A cube of edge 1 cm is cut from a corner of a solid cube of edge 5 cm. What is the total surface area of the solid remained?

- (1) 150 cm^2 (2) 149 cm^2 (3) 151 cm^2 (4) 147 cm^2

Ans. [1]

Sol. 150 cm^2

Q.54 In the given figure, chord AB subtends an angle 90° at centre O of the circle having radius 4 cm. Area of the shaded region will be

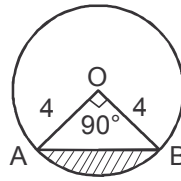


- (1) $(4\pi - 2) \text{ cm}^2$ (2) $4(\pi - 2) \text{ cm}^2$ (3) $(\pi - 8) \text{ cm}^2$ (4) $(\pi - 2) \text{ cm}^2$

Ans. [2]

Sol. Applying pythagorus theorem :

In $\triangle AOB$
 $(4)^2 + (4)^2 = AB^2$
 $16 + 16 = AB^2$
 $32 = AB^2$
 $4\sqrt{2} = AB$

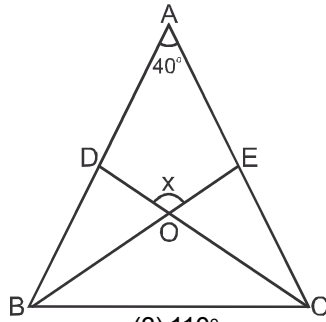


Area of sector AOB = $\frac{\theta}{360} \times \pi r^2 = \frac{90}{360} \times \pi (4)^2 = 4\pi$

Area of $\triangle AOB = \frac{1}{2} \times 4 \times 4 = 8$

\therefore Area of shaded region = $(4\pi - 8) \text{ cm}^2$
 $= 4(\pi - 2) \text{ cm}^2$

Q.55 In the given figure, $AB = AC$, $\angle BAC = 40^\circ$, BE and CD are angle bisectors of $\angle B$ and $\angle C$ respectively. If $\angle DOE = x$, the value of x is



(1) 140°

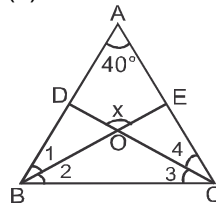
(2) 70°

(3) 110°

(4) 40°

Ans. [3]

Sol. $\because AB = AC$
 $\therefore \angle ABC = \angle ACB$
 $\angle ABC + \angle ACB + 40^\circ = 180^\circ$
 $2\angle ABC = 140^\circ$
 $\angle ABC = 70^\circ = \angle ACB$
 \therefore BE and DC are bisectors of $\angle B$ & $\angle C$
 $\therefore \angle 1 = \angle 2 = 35^\circ$ and $\angle 3 = \angle 4 = 35^\circ$
 So in $\triangle BOC$; $\angle 2 + \angle 3 + \angle BOC = 180^\circ$
 $35^\circ + 35^\circ + \angle BOC = 180^\circ$
 $\angle BOC = 180^\circ - 70^\circ$
 $\angle BOC = 110^\circ$
 $\therefore \angle BOC = \angle DOE$ (vertically opp. \angle 's)
 $\therefore \angle BOC = \angle DOE = 110^\circ$



Q.56 The shadow of a tower, when the angle of elevation of the sun is 30° is found to be 10 metre longer than when it was 60° . The height of the tower will be

(1) $5\sqrt{3} \text{ m}$

(2) $5(\sqrt{3} - 1) \text{ m}$

(3) $5(\sqrt{3} + 1) \text{ m}$

(4) $3\sqrt{5} \text{ m}$

Ans. [1]

Sol. In $\triangle ABC$,

$\tan 60^\circ = \frac{x}{y}$

$$\sqrt{3} = \frac{x}{y}$$

$$x = y\sqrt{3} \dots\dots\dots(i)$$

$$\text{In } \triangle ABD; \tan 30^\circ = \frac{x}{10+y}; \frac{1}{\sqrt{3}} = \frac{x}{10+y}$$

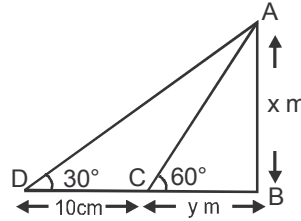
$$\therefore \frac{y\sqrt{3}}{10+y} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow y\sqrt{3} \times \sqrt{3} = 10+y$$

$$3y = 10+y$$

$$2y = 10$$

$$y = 5; x = 5\sqrt{3} \text{ m.}$$



Q.57 A die 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) $\frac{1}{3}$

Ans. [2]

Sol. $x = \frac{3}{6} = \frac{1}{2}$

$$y = \frac{2}{6} = \frac{1}{3} \qquad \therefore x - y = \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$$

Q.58 The sum of distances from x-axis and y-axis measured from the point (3, 5) will be

- (1) -1 (2) 0 (3) 2 (4) 8

Ans. [4]

Q.59 If $x^2 + 4y^2 + 9z^2 - 4xy - 12yz + 6xz = 0$, then

- (1) $x = 2y - 3z$ (2) $x = y - 3z$ (3) $2x = y - 3z$ (4) $x = 3y - 2z$

Ans. [1]

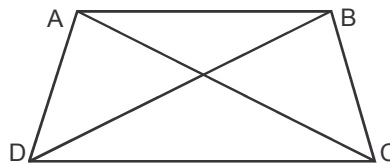
Sol. $x^2 + 4y^2 + 9z^2 - 4xy - 12yz + 6xz = 0$
 $(x - 2y + 3z)^2 = 0$
 $\therefore x - 2y + 3z = 0$
 $x = 2y - 3z$

Q.60 Which of the following statements is false for the quadrilateral ABCD?

- (1) $AB + BC + CD + DA > AC$
 (2) $AB + BC + CD + DA > AB + AC$
 (3) $AB + BC + CD + DA > AC + BD$
 (4) $AB + BC + CD + DA < 2AC$

Ans. [4]

Sol. $AB + BC > AC \dots(1)$
 $DA + AB > BD \dots(2)$
 $BC + CD > BD \dots(3)$
 $CD + DA > AC \dots(4)$
 $2(AB + BC + CD + DA) > 2(AC + BD)$
 $AB + BC + CD + DA > AC + BD$
 $\therefore AB + BC + CD + DA < 2AC$ is false



Q.70 Who was the king of Russia at the time of the Russian revolution of 1917 ?

- (1) Czar Nicholas First (2) Louis 14th
(3) Czar Nicholas Second (4) Louis 16th.

Ans. [3]

Q.71 Who was the publisher of Hindu Patriot ?

- (1) Bal Gangadhar Tilak (2) Dayanand Saraswati
(3) Lala Lajpat Rai (4) Harishchandra Mukherjee.

Ans. [4]

Q.72 Which one of the following rivers does not flow on the eastern coastal plain ?

- (1) Krishna (2) Godavari (3) Narmada (4) Kaveri

Ans. [3]

Q.73 The plateau between Bhainsrorgarh and Bijauliya in Rajasthan is known as

- (1) Borhat (2) Uparmaal (3) Malwa (4) Royalseema.

Ans. [2]

Q.74 Which one of the following is not a Lagoon Lake ?

- (1) Chilika (2) Pulicat (3) Kolleru (4) Dall

Ans. [4]

Q.75 The duration of summer season according to Indian Meteorological Department is

- (1) mid - September to mid - December (2) December to February
(3) March to mid - June (4) mid - June to mid - September.

Ans. [3]

Q.76 In which district of Rajasthan is Amrita Devi Black Deer Sanctuary Developed ?

- (1) Jodhpur (2) Bikaner (3) Barmer (4) Ganganagar.

Ans. [1]

Q.77 The joint project of Gujarat, Madhya Pradesh and Rajasthan states is

- (1) Bhakhra Nangal Project (2) Mahi Bajaj Sagar Project
(3) Chambal Valley Project (4) Sardar Sarovar Project

Ans. [4]

Q.78 Match List - I with List - II and select the correct answer using codes given below :

- | List - I | List II |
|-----------|-------------------|
| (A) Ajmer | (i) Sardar Samand |
| (B) Tonk | (ii) Ana Sagar |
| (C) Pali | (iii) navalakha |
| (D) Bundi | (iv) Tordi Sagar. |

Code :

- | A | B | C | D |
|-----------|-------|-------|-------|
| (1) (iii) | (ii) | (iv) | (i) |
| (2) (ii) | (iv) | (i) | (iii) |
| (3) (i) | (iii) | (ii) | (iv) |
| (4) (iv) | (i) | (iii) | (ii) |

Ans. [2]

Q.79 The percentage of iron content in magnetite iron - ore is

- (1) 40 - 50% (2) 50 - 60% (3) 60-70% (4) 70-80%

Ans. [3]

- Q.80 Which one of the following is cement city of Rajasthan ?
(1) Chittorgarh (2) Bundi (3) Nimbahera (4) Nagaur
Ans. [3]
- Q.81 The district having lowest population growth rate in Rajasthan during 2001-2011 is
(1) Nagaur (2) Bikaner (3) Bhilwara (4) Ganganagar
Ans. [4]
- Q.82 'Uni Gauge Project' by Indian Railway was started in
(1) 1982 (2) 1992 (3) 2002 (4) 2012.
Ans. [2]
- Q.83 In which country is direct democracy found ?
(1) Italy (2) Japan (3) Switzerland (4) India.
Ans. [3]
- Q.84 Who has the right to promulgate an ordinance when the Parliament is not in session ?
(1) Supreme Court (2) President (3) Prime Minister (4) Lok Subha Speaker
Ans. [2]
- Q.85 From whose pleasure does the governor hold office ?
(1) Prime Minister (2) Chief Minister (3) President (4) Vice - President.
Ans. [3]
- Q.86 What is the maximum age of retirement for judges of Supreme Court ?
(1) 62 years (2) 65 years (3) 60 years (4) 70 years
Ans. [2]
- Q.87 The term of the President of India is
(1) 4 years (2) 5 years (3) 2 years (4) 3 years
Ans. [2]
- Q.88 On which day was the Constitution of India adopted ?
(1) 15th August, 1947 (2) 9th December, 1946 (3) 26th January, 1950 (4) 26th November, 1949
Ans. [4]
- Q.89 Forced labour is prohibited in which Fundamental Right of India ?
(1) Right to equality (2) Right to freedom
(3) Right against Exploitation (4) Right to Freedom of Religion
Ans. [3]
- Q.90 By which constitutional amendment Fundamental Duties are added in the Constitution of India ?
(1) 42nd (2) 40th (3) 43rd (4) 45th.
Ans. [1]
- Q.91 Where is the only Cantonment Board established in Rajasthan at present ?
(1) Nasirabad (2) Jaipur (3) Chittorgarh (4) Jodhpur
Ans. [1]
- Q.92 Panchsheel is based on which philosophy ?
(1) Buddhist philosophy (2) Jain philosophy
(3) Islamic philosophy (4) Hindu philosophy.
Ans. [1]

Q.93 Match List - I with List - II and choose the correct code from the given code.

List - I	List II
(A) Nagar Nigam	(i) Zilla pramukh
(B) Zilla Parishad	(ii) Pradhan
(C) Panchayat Samiti	(iii) Sarpanch
(D) Gram Panchayat	(iv) Mayor (Mahapoura)

Code :

	A	B	C	D
(1)	(i)	(ii)	(iii)	(iv)
(2)	(iii)	(i)	(ii)	(iv)
(3)	(iv)	(iii)	(ii)	(i)
(4)	(iv)	(i)	(ii)	(iii)

Ans. [4]

Q.94 The nation of socialist economy is
 (1) Japan (2) China (3) France (4) United states of America

Ans. [2]

Q.95 The Kharif crop is
 (1) Wheat (2) Barley (3) Maize (4) Gram

Ans. [3]

Q.96 The function of commercial banks is
 (1) Issue of currency (2) Credit control
 (3) Lender of last resort (4) Acceptance of people's deposits

Ans. [4]

Q.97 The formula of measuring per capita income is
 (1) Per capita income = $\frac{\text{National income}}{\text{Population}}$ (2) Per capita income = $\frac{\text{Population}}{\text{National income}}$
 (3) Per capita income = $\frac{\text{Total consumption}}{\text{Population}}$ (4) Per capita income = $\frac{\text{Population}}{\text{Total consumption}}$

Ans. [1]

Q.98 The characteristic of Indian economy is
 (1) Equality of income (2) Lack of poverty
 (3) Lack of unemployment (4) Low per capita income.

Ans. [4]

Q.99 In India the first effort to measure poverty was done by
 (1) Dadabhai naorji (2) D.T. Lakdawala
 (3) Prof. Robbins (4) Prof. Keynes.

Ans. [1]

Q.100 In Indian the Consumer Day is celebrated on
 (1) 2nd October (2) 15th August (3) 24th December (4) 26th January

Ans. [3]

