



CAREER POINT

NATIONAL TALENT SEARCH EXAMINATION(FIRST LEVEL)-2019

(For Students of Class X)

Scholastic Aptitude Test

04-11-2018

Time : 120 minutes

Max. Marks: 100

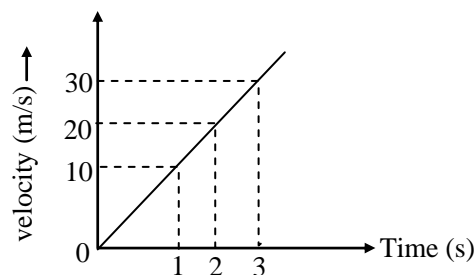
1. The inertia of a body depends upon

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

Ans. [4]

Sol. Inertia of a body is the measure of mass of the body.

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



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

Ans. [2]

Sol. Distance travelled is the area under the graph of v-t graph.

The shape of the graph is triangle

$$\begin{aligned} \therefore \text{Area} = \text{distance} &= \frac{1}{2} \times b \times h \\ &= \frac{1}{2} \times 3 \times 30 \\ &= 45 \text{ cm} \end{aligned}$$

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. $F = \frac{GM_1M_2}{R^2}$

$$R' = \frac{R}{2}$$

$$\text{Then } F' = \frac{GM_1M_2}{(R')^2} = \frac{GM_1M_2}{(R/2)^2} = \frac{4GM_1M_2}{R^2}$$

$$\Rightarrow F' = 4F$$

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. The value of g is more at poles than at equatorial circle because $R_p < R_e$ and $g \propto \frac{1}{R^2}$.

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 are used for "SONAR".

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

$$\lambda = 70 \text{ cm} = \frac{70}{100} = 0.7 \text{ m}$$

$$v = f\lambda$$

$$350 = f \times 0.7$$

$$f = \frac{3500}{0.7} = 500 \text{ Hz}$$

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 short sightedness (4) Astigmatism

Ans. [4]

Sol. The symptom is deterioration of vision due to irregular astigmatism caused by the changing corneal curvature.

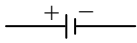
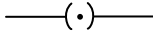


8. Focal length of a convex lens is +40 cm. The power of this lens will be
- (1) + 4 dioptre (2) + 2.5 dioptre (3) + 40 dioptre (4) + 25 dioptre

Ans. [2]

Sol. $f = 40 \text{ cm} = 0.4 \text{ m}$

$$P = \frac{1}{f} = \frac{10}{0.4} = + 2.5 \text{ dioptre}$$

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

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

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

Ans. [4]

Sol. (a) – (iii)

(b) – (iv)

(c) – (i)

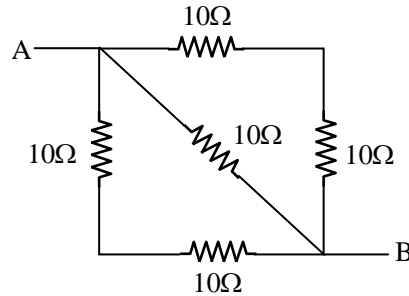
(d) – (ii)

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

Ans. [4]

Sol. Split rings are used in DC generator in place of sliprings

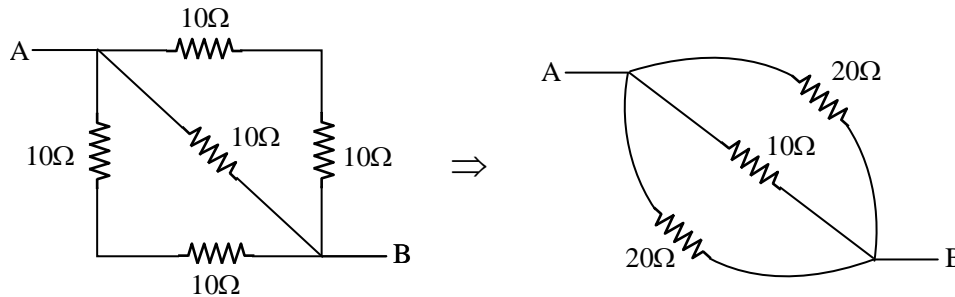
11. The equivalent resistance of the given circuit between points A and B is



- (1) $40\ \Omega$ (2) $4\ \Omega$ (3) $5\ \Omega$ (4) $0.2\ \Omega$

Ans. [3]

Sol.



$$\frac{1}{R_p} = \frac{1}{20} + \frac{1}{10} + \frac{1}{20}$$

$$= \frac{1+2+1}{20} = \frac{4}{20}$$

$$R_p = \frac{20}{4} = 5\ \Omega$$

12. If 4 joule work is to be done in stretching a spring by 4 cm then spring constant of the spring is

- (1) $5 \times 10^3\ \text{N/m}$ (2) $5 \times 10^4\ \text{N/m}$ (3) $2 \times 10^3\ \text{N/m}$ (4) $2 \times 10^4\ \text{N/m}$

Ans. [1]

Sol. $W = 4\text{J}$

$$x = 4\ \text{cm} = 0.04\ \text{m}$$

$$k = ?$$

$$W = \text{P.E.} = \frac{1}{2} kx^2$$

$$4 = \frac{1}{2} \times k \times \left(\frac{4}{100}\right)^2$$

$$k = \frac{8 \times (100)^2}{(4)^2} = \frac{8 \times 10^4}{16} = 0.5 \times 10^4\ \text{N/m} = 5 \times 10^3\ \text{N/m}$$

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

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

Ans. [4]

Sol. Air is a homogeneous mixture of nitrogen, oxygen, carbon dioxide and various other gases.

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 sublimates on heating i.e. it changes directly from solid to gas.

16. Number of molecules present in 32g of O_2 is
 (1) 6.022×10^{23} (2) 3.011×10^{23} (3) 1.51×10^{23} (4) 6.022×10^{22}

Ans. [1]

Sol. Given mass of oxygen = 32 gm

$$\text{Number of moles} = \frac{\text{given mass}}{\text{molar mass}} = \frac{32}{32} = 1 \text{ mole}$$

Number of molecules in 1 mole of oxygen are 6.022×10^{23} .

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

Ans. [3]

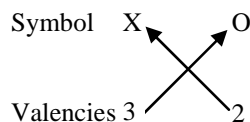
Sol. Tritium is ${}^3_1\text{H}$

$$\begin{aligned} \text{Number of neutrons} &= \text{Atomic mass} - \text{Atomic number} \\ &= 3 - 1 \\ &= 2 \end{aligned}$$

18. The formula of chloride of an element X is XCl_3 . The formula of its oxide will be -
 (1) XO_2 (2) XO_3 (3) X_2O_3 (4) X_3O_2

Ans. [3]

Sol. An element X forms a chloride having the formula MCl_3 , i.e. the valency of element is 3. Valency of oxygen is 2

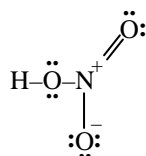


Formula of oxide will be X_2O_3

19. Molecule containing coordinate covalent bond among the following is -
 (1) H_2O (2) HNO_3 (3) BaCl_2 (4) CaO

Ans. [2]

Sol. The nitrogen atom is bonded directly to three oxygen atoms. It is bonded to one via a single covalent bond, another via a double covalent bond and another by a coordinate covalent bond



20. Concentration of hydrogen and hydroxyl ions in mole/litre for pure water is -

- (1) 1×10^{-7} (2) 2×10^{-7} (3) 1×10^{-14} (4) 1×10^{-6}

Ans. [1]

Sol. pH is a measure of the number of H^+ ions in water. Pure water contains of an equal number of hydrogen ions and hydroxyl ions (1×10^{-7} moles per liter).

21. The compound used for removal of acidity in stomach is -

- (1) NaCl (2) $MgCl_2$ (3) $Mg(OH)_2$ (4) $CaCl_2$

Ans. [3]

Sol. $Mg(OH)_2$ magnesium hydroxide is also used as an antacid.

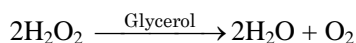
22. The chemical formula of dead burnt plaster is

- (1) $CaSO_4 \cdot \frac{1}{2} H_2O$ (2) $CaSO_4 \cdot 2H_2O$ (3) $CaSO_4 \cdot H_2O$ (4) $CaSO_4$

Ans. [4]

Sol. When plaster of paris is heated above 373 K, it turns into dead burnt plaster whose chemical formula is $CaSO_4$.

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



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

Ans. [2]

Sol. $2H_2O_2 \xrightarrow{\text{Glycerol}} 2H_2O + O_2$

The decomposition of H_2O_2 is suppressed by adding glycerol to the solution of H_2O_2 . Here glycerol acts as a negative catalyst.

24. Element having largest atomic radius among the following is

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

Ans. [1]

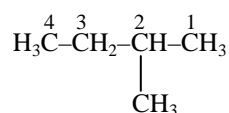
Sol. Along a period, atomic radius decreases on moving left to right hence among Li, Be, B and C, Li would have the largest atomic radius.

25. IUPAC name of isopentane is

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

Ans. [3]

Sol.

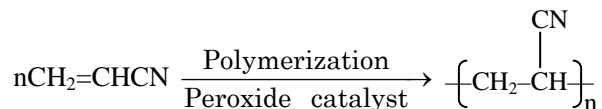


IUPAC name is 2-methyl butane

26. The polymer of acrylonitrile is
 (1) Polythene (2) Polyvinyl chloride (3) Polyvinyl cyanide (4) Polystyrene

Ans. [3]

Sol. The polymer of acrylonitrile is polyvinyl cyanide



27. The cell organelle discovered by de Duve is
 (1) Plastid (2) Ribosome (3) Lysosome (4) Centrosome

Ans. [3]

Sol. Christian de Duve discovered Lysosomes in the year 1955

28. The example of hydrophytes are
 (1) Hydrilla, Calotropis (2) Lotus, Salsola (3) Moss, Lichen (4) Segetaria, Trapa

Ans. [4]

Sol. Segetaria, Trapa are both examples of hydrophytes.

29. Number of male gametes in the growing pollen tube is
 (1) One (2) Two (3) Three (4) Seven

Ans. [2]

Sol. Every pollen grain forms a pollen tube which carries two male gametes.

30. The main method of reproduction in yeast is
 (1) Budding (2) Sporogenesis (3) Cutting (4) Grafting

Ans. [1]

Sol. Yeast reproduces asexually by the method of budding. Chain budding is seen in yeast.

31. The number of biosphere reserves established in India is
 (1) 18 (2) 118 (3) 142 (4) 669

Ans. [1]

Sol. There are 18 biosphere reserves in India.

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. The bark of *Terminalia arjuna* is used as medicine to treat heart problems

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. In the year 1969 Indian Space Research Committee changed into Indian Space Research Organisation

34. Bacterial disease is
 (1) Dengue (2) Polio myelitis (3) Tuberculosis (4) Chicken pox

Ans. [3]

Sol. Out of these only Tuberculosis is bacterial disease others are viral diseases.

35. Honeybee culture is known as
 (1) Silviculture (2) Apiculture (3) Sericulture (4) Pisciculture

Ans. [2]

Sol. Honey bee culture is called as Apiculture. The word arises from the name of genus of Honey bee i.e. "Apis".

36. Disease caused by deficiency of vitamin-D is
 (1) Night blindness (2) Beri-beri (3) Scurvy (4) Rickets

Ans. [4]

Sol. The deficiency of vitamin D causes Rickets in which softening of bones occur.

37. Universal donor blood group is
 (1) A (2) O (3) AB (4) B

Ans. [2]

Sol. Universal donor blood group is "O" due to the absence of any antigen.

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 voluntary meaning they can be operated according to our will, structurally these muscles are striated.

39. Water vascular system is found in
 (1) Cnidaria (2) Echinodermata (3) Mollusca (4) Annelida

Ans. [2]

Sol. Water vascular system is a special type of water driven tube system that Echinoderms use for moving around.

40. Which of the following is not a secondary reproductive organ ?
 (1) Fallopian tube (2) Uterus (3) Ovary (4) Vagina

Ans. [3]

Sol. Ovary is not a secondary reproductive organ but a primary reproductive organ which is directly involved in gamete production.

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. $\frac{2\sqrt{11}}{7\sqrt{11}} = \frac{2}{7}$

42. In 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. $P(1) = (1)^4 - 4(1)^2 + (1)^3 + 2 \times 1 + 1$
 $= 1 - 4 + 1 + 2 + 1 = 1$

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 unit place is x

Ten place is $14 - x$

ATP $x + (14 - x) \times 10 - 18 = x \times 10 + 14 - x$

$$x + 140 - 10x - 18 = 10x + 14 - x$$

$$-9x + 122 = 9x + 14$$

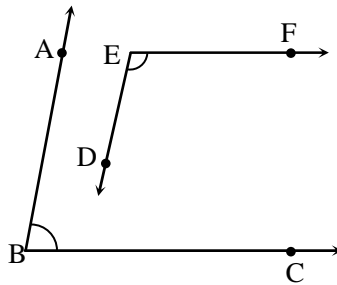
$$+18x = -108$$

$$x = 6$$

No = $-9x + 140$

$$\Rightarrow -9 \times 6 + 140 = 86$$

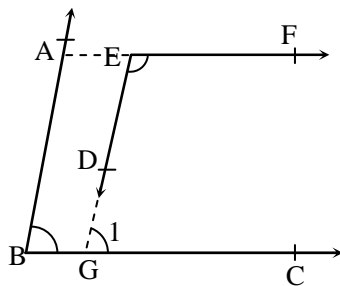
44. In the given figure, $AB \parallel ED$ and $BC \parallel EF$, then the value of $\angle ABC + \angle DEF$ is



- (1) 90° (2) 180° (3) 120° (4) 360°

Ans. [2]

Sol.



$$\angle FED + \angle 1 = 180^\circ \text{ (co-interior angle)} \quad \dots (1)$$

Also

$$\angle 1 = \angle ABC \quad \dots (2) \text{ (corresponding angles)}$$

So by (1) & (2)

$$\angle DEF + \angle ABC = 180^\circ$$

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

Ans. [3]

Sol. 1 Litre = 1000 cm^3
 $1000 \text{ Litre} = 1000000 = 10^6 \text{ cm}^3$
 $100 \text{ kilolitre} = 100 \times 10^6 \text{ cm}^3 = 10^8 \text{ cm}^3$

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

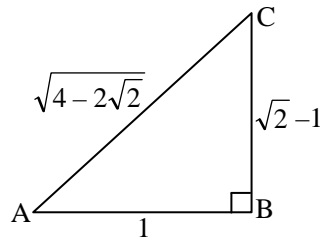
Ans. [1]

Sol. $a_5 = a_3 + 10$
 $a + 4d = a + 2d + 10$
 $2d = 10 \Rightarrow d = 5$
 Now $a_9 - a_6$
 $a + 8d - a - 5d$
 $3d = 3 \times 5 = 15$

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.



$$\begin{aligned} \tan A &= \sqrt{2} - 1 & AC &= \sqrt{(\sqrt{2} - 1)^2 + 1} \\ \sin A \cdot \cos A & & &= \sqrt{2 - 2\sqrt{2} + 1 + 1} \\ \frac{\sqrt{2} - 1}{\sqrt{4 - 2\sqrt{2}}} \times \frac{1}{\sqrt{4 - 2\sqrt{2}}} & & &= \sqrt{4.2\sqrt{2}} \\ & & &= \frac{\sqrt{2} - 1}{4 - 2\sqrt{2}} = \frac{\sqrt{2} - 1}{2\sqrt{2} - (\sqrt{2} - 1)} = \frac{1}{2\sqrt{2}} \end{aligned}$$

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

Ans. [3]

Sol. Prime number between 1 to 10 are 2, 3, 5, 7
 Product = $2 \times 3 \times 5 \times 7 = 210$

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. $b^2 - 4ac = 0$

$$(c - a)^2 - 4(b - c)(a - b) = 0$$

$$c^2 - 2ac + a^2 - 4(ab - b^2 - ac) = 0$$

$$c^2 - 2ac + a^2 - 4ab + 4b^2 + 4ac - 4bc = 0$$

$$c^2 + a^2 + 4b^2 - 4ab + 2ac - 4bc = 0$$

$$(c + a - 2b)^2 = 0$$

$$c + a - 2b = 0$$

$$c + a = 2b$$

50. For which value of k , a pair of equation $x + y - 4 = 0$, $2x + ky - 3 = 0$ has no solution ?

- (1) 0 (2) 2 (3) 6 (4) 8

Ans. [2]

Sol. $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

$$\Rightarrow \frac{1}{2} = \frac{1}{k} \neq \frac{-4}{-3}$$

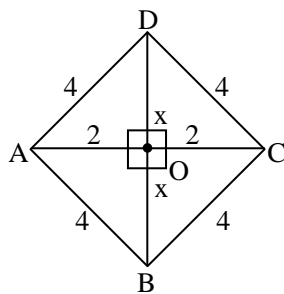
$$\Rightarrow \frac{1}{2} = \frac{1}{k} \Rightarrow k = 2$$

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.



Let $AC = 4\text{cm}$ & $BD = 2x$

$AO = OC$ {Diagonals bisect each other}

In ΔAOD ,

$$(AD)^2 = (OA)^2 + (OD)^2$$

$$(4)^2 = (2)^2 + x^2$$

$$16 - 4 + x^2$$

$$x^2 = 12$$

$$x = 2\sqrt{3}$$

$$\therefore BD = 2x = 4\sqrt{3}$$

52. The mean of first seventeen whole numbers is

(1) 8

(2) 7.5

(3) 8.5

(4) 18

Ans. [1]

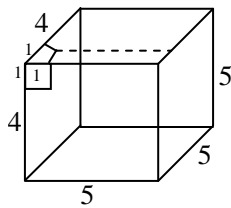
Sol.
$$\frac{0+1+2+\dots+16}{17} = \frac{16 \times 17}{2 \times 17} = 8$$

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

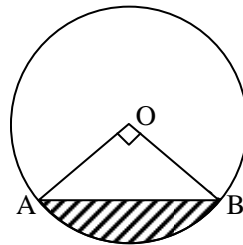
Ans. [1]

Sol.



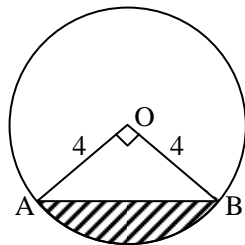
Req. area = $6 \times (5)^2 - 3 \times (1)^2 + 3(1)^2$
 $= 150 - 3 + 3$
 $= 150 \text{ cm}^2$

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) $(\pi - 2) \text{ cm}^2$

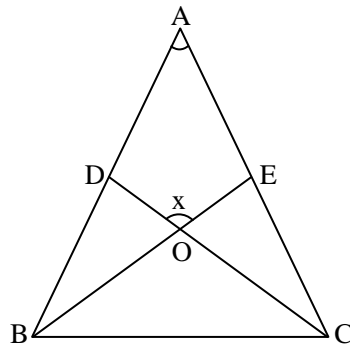
Ans. [2]

Sol.



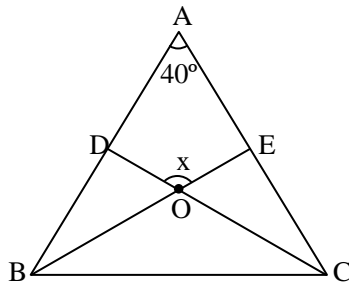
Req. area = $\frac{\pi r^2}{4} - \text{area of } \triangle AOB$
 $= \frac{\pi \times 4 \times 4}{4} - \frac{1}{2} \times 4 \times 4$
 $= 4\pi - 8$
 $= 4(\pi - 2) \text{ cm}^2$

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.

As, $AB = AC$

$$\Rightarrow \angle ABC = \angle ACB \quad \dots(1)$$

Now, In $\triangle ABC$

$$\angle A + \angle B + \angle C = 180^\circ$$

$$40^\circ + \angle B + \angle C = 180^\circ$$

$$\angle B + \angle C = 140^\circ$$

$$\Rightarrow \angle B = \angle C = 70^\circ \quad \{\text{using (1)}\}$$

$$\left. \begin{aligned} \text{Now, } \angle OBC &= \frac{1}{2} \angle B \\ \angle OCB &= \frac{1}{2} \angle C \end{aligned} \right\}$$

$$\Rightarrow \angle OBC = \frac{70^\circ}{2} = 35^\circ$$

$$\angle OCB = \frac{70^\circ}{2} = 35^\circ$$

Now, In $\triangle BOC$,

$$\angle OBC + \angle OCB + \angle BOC = 180^\circ$$

$$35^\circ + 35^\circ + \angle BOC = 180^\circ$$

$$\angle BOC = 180^\circ - 70^\circ = 110^\circ$$

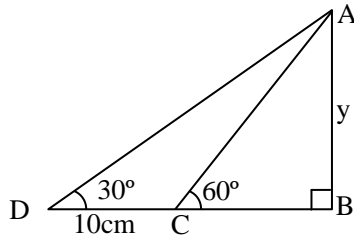
Also, $\angle BOC = x$ {vert. opp is}

$$\Rightarrow \angle BOC = 110^\circ$$

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) $5\sqrt{3}$ m (2) $5(\sqrt{3} - 1)$ m (3) $5(\sqrt{3} + 1)$ m (4) $3\sqrt{5}$ m

Ans. [1]

Sol.



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

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

$$x = \frac{y}{\sqrt{3}} \quad \dots(1)$$

$$\text{And } \tan 30^\circ = \frac{y}{x+10}$$

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

$$x+10 = y\sqrt{3}$$

$$\frac{y}{\sqrt{3}} + 10 = y\sqrt{3} \Rightarrow 10 = y\sqrt{3} - \frac{y}{\sqrt{3}}$$

$$\Rightarrow 10 = \frac{3y-y}{\sqrt{3}}$$

$$10\sqrt{3} = 2y \Rightarrow y = 5\sqrt{3}\text{m}$$

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

$$y = \frac{2}{6} = \frac{1}{3}$$

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

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]

Sol. Distance from x-axis is 5

Distance from y-axis is 3

$$\text{Sum} = 5 + 3 = 8$$

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. $x^2 + 4y^2 + 9z^2 - 4xy - 12yz + 6xz = 0$

$$(x)^2 + (-2y)^2 + (3z)^2 + 2xy(-2y) + 2(-2y)3z + 2 \times x \times 3z$$

$$(x - 2y + 3z)^2 = 0$$

$$x - 2y + 3z = 0 \Rightarrow x = 2y - 3z$$

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. $AB + BC + CD + DA < 2AC$

61. Match List-I with List-II and select the correct answer by choosing from the given code :

List-I

(A) Magadha

(B) Kashi

(C) Surasena

(D) Gandhara

List-II

(i) Mathura

(ii) Varansi

(iii) Taxila

(iv) Rajgriha

Code :

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

Ans. [3]

Sol. This is the correct match.

62. In which of the following forts was the coronation of Chhatrapati Shivaji held ?

(1) Raygarh Fort

(2) Kumbhalgarh Fort

(3) Pune Fort

(4) Surat Fort

Ans. [1]

Sol. Raygarh Fort in 1674.

63. The founder of 'Abhinav Bharat' was

(1) Chandrashekhar Azad

(2) Vasudev Hari Chapekar

(3) Mahatama Gandhi

(4) Vinayak Damodar Savarkar

Ans. [4]

Sol. 'Abhinav Bharat' was founded by Vinayak Damodar Savarkar in 1904.

71. Who was the publisher of Hindu Patriot ?

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

Ans. [4]

Sol. Harishchandra Mukherjee

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

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

Ans. [3]

Sol. Narmada

Rivers flow on the eastern coastal plain are Krishna, Godavari, Mahanadi, Kaveri.

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

- (1) Bhorat (2) Uparmaal (3) Malwa (4) Royalseema

Ans. [2]

Sol. Uparmaal

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

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

Ans. [4]

Sol. Dal

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]

Sol. March to mid-June

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

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

Ans. [1]

Sol. Jodhpur

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. [3]

Sol. Chambal Valley Project

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

List-I (District)	List-II (Lake)
(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]

Sol. This is the correct match.

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

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

Ans. [4]

Sol. 70% - 80%

80. Which one of the following is cement city of Rajasthan ?

- | | | | |
|-----------------|-----------|---------------|------------|
| (1) Chittorgarh | (2) Bundi | (3) Nimbahera | (4) Nagaur |
|-----------------|-----------|---------------|------------|

Ans. [1]

Sol. Chittorgarh

81. The district having lowest population growth rate in Rajasthan during 2001-2011 is

- | | | | |
|------------|-------------|--------------|----------------|
| (1) Nagaur | (2) Bikaner | (3) Bhilwara | (4) Ganganagar |
|------------|-------------|--------------|----------------|

Ans. [1]

Sol. Nagaur

82. 'Uni Gauge Project' by Indian Railway was started in

- | | | | |
|----------|----------|----------|----------|
| (1) 1982 | (2) 1992 | (3) 2002 | (4) 2012 |
|----------|----------|----------|----------|

Ans. [2]

Sol. 1990-1991

83. In which country is direct democracy found ?

- | | | | |
|-----------|-----------|-----------------|-----------|
| (1) Italy | (2) Japan | (3) Switzerland | (4) India |
|-----------|-----------|-----------------|-----------|

Ans. [3]

Sol. Switzerland

- 84.** Who has the right to promulgate an ordinance when the Parliament is not in session ?
(1) Supreme Court (2) Chief Minister
(3) President (4) Lok Sabha Speaker
Ans. [3]
Sol. President
- 85.** From whose pleasure does the governor hold office ?
(1) Prime Minister (2) Chief Minister (3) President (4) Vice-President
Ans. [3]
Sol. President
Governor is allowed to hold office in the presence of President.
- 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]
Sol. 65 years
- 87.** The term of the President of India is
(1) 4 years (2) 5 years (3) 2 years (4) 3 years
Ans. [2]
Sol. 5 years
- 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]
Sol. 26th November, 1949
- 89.** Forced labour is prohibited in which Fundamental Right of India ?
(1) Right to equality (2) Right of freedom
(3) Right against Exploitation (4) Right of Freedom of Religion
Ans. [3]
Sol. Right against Exploitation
- 90.** By which constitutional amendment Fundamental Duties are added in the Constitution of India ?
(1) 42nd (2) 40th (3) 43rd (4) 45th
Ans. [1]
Sol. 42nd
- 91.** Where is the only Cantonment Board established in Rajasthan at present ?
(1) Nasirabad (2) Jaipur (3) Chittorgarh (4) Jodhpur
Ans. [1]
Sol. Nasirabad

92. Panchsheel is based on which philosophy ?

- (1) Buddhist philosophy (2) Jain philosophy
(3) Islamic philosophy (4) Hindu philosophy

Ans. [1]

Sol. Buddhist philosophy

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

List-I

- (A) Nagar Nigam
(B) Zilla parishad
(C) Panchayat Samiti
(D) Gram Panchayat

List-II

- (i) Zilla Pramukh
(ii) Pradhan
(iii) Sarpanch
(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]

Sol. This is the correct match.

94. The nation of socialist economy is

- (1) Japan (2) China
(3) France (4) United States of America

Ans. [2]

Sol. China

95. The Kharif crop is

- (1) Wheat (2) Barley (3) Maize (4) Gram

Ans. [3]

Sol. Maize

Wheat, Barley and Gram are Rabi Crops.

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]

Sol. Acceptance of people's deposits

97. The formula of measuring per capita income is

$$(1) \text{ Per capita income} = \frac{\text{National income}}{\text{Population}}$$

$$(2) \text{ Per capita income} = \frac{\text{Population}}{\text{National income}}$$

$$(3) \text{ Per capita income} = \frac{\text{Total consumption}}{\text{Population}}$$

$$(4) \text{ Per capita income} = \frac{\text{Population}}{\text{Total consumption}}$$

Ans. [1]

Sol. $\text{Per capita income} = \frac{\text{National income}}{\text{Population}}$

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]

Sol. Low per capita income

99. In India the first effort to measure poverty was done by

(1) Dadabhai Naoroji

(2) D.T. Lakdawala

(3) Prof. Robbins

(4) Prof. Keynes

Ans. [1]

Sol. Dadabhai Naoroji

100. In India the Consumer Day is celebrated on

(1) 2nd October

(2) 15th August

(3) 24th December

(4) 26nd January

Ans. [3]

Sol. 24th December