Max. Marks: 100   **SOLUTIONS**   Time allowed: 120 mins

1. The energy comsumed in 10 hours by 4 devices each of power 500 W:

(a) 20 Jole   (b) 20 Watt   (c) 20 kwh   (d) 5 kwh

Ans. (c)

Sol. Energy = Power × Time

$$= \frac{500}{1000} KW \times 10$$

= 5 KWh

Since total devices are 4

= 5 KWh × 4

$$= \boxed{20 KWh}$$

2. The radius of curvature of concave mirror is 20cm. An object of length 5cm is placed at a distance of 15cm infront of that mirror. Then position, nature and length of image will be......

(a) 30 cm, virtual 10cm   (b) 60 cm, virtual, 20cm   (c) 60 cm, real, 20 cm

(d) 30 cm, real, 10 cm

Ans. (d)

Sol. R = – 20 cm ; f = $\frac{R}{2}$ = –10 cm; u = –15 cm ; h_o = + 5 cm
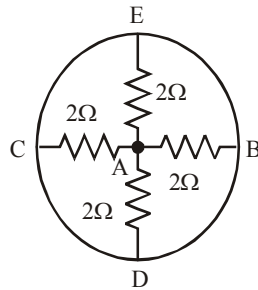
v = ? ; h_i = ?

Using Mirror formula

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

$$\frac{1}{-10} = \frac{1}{v} + \frac{1}{-15}$$

$$\boxed{v = -30 cm}$$

3. The equivalent resistance between A and B in below figure.

(a) 0.5Ω   (b) 8Ω   (c) 2Ω   (d) 2.66Ω

Ans. (a)

Sol. Equivalent resistance of all the combinations are parallel

$$\frac{1}{R} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$$

$$\frac{1}{R} = \frac{4}{2}$$

$$R = \frac{2}{4}$$

$$\boxed{R = 0.5\Omega}$$

4. An artifical satellite is moving in a circular orbit of radius 42250 km. If it takes 24 hours to revolve around the earth then its speed will be....

(a) 3·07 km/h   (b) 3·07 km/s   (c) 3·01 km/h   (d) 3·01 km/s

Ans. (b)

Sol. R = 42250 km

t = 24 hrs

v = (?)

$$\text{Speed} = \frac{2\pi r}{t}$$

$$= \frac{2 \times 3.14 \times 42250}{24 \times 60 \times 60}$$

$$\boxed{3.07 \text{km} / \text{s}}$$

5. Acid rain happens because

(a) Earth atmosphere contains acid.

(b) Electric charges are produced due to friction amongst clouds

(c) Sun leads to heating of uper layer of atmosphere.

(d) Burning of fossil fuels releases the oxides of carbon.

Ans. (d)

Sol. Acid rain is caused by chemical reaction that begins when compounds like sulphur dioxide and nitrogen oxides are released into the air. These substances can rise very high into the atmosphere, where they mix and react with water, oxygen and other chemicals to form more acidic pollutants.

6. You have given water, musturd oil, glycerine and kerosene oil. In which of these media a ray of light incident obliquely at same angle would bend the in most

(a) Kerosene oil   (b) Musturd oil   (c) Glycerine   (d) Water

Ans. (c)

**Sol.** It is because among all the other media refractive index of glycerine is highest.

7. An object is put one by one in three fluids having different densities the object floats with $\frac{1}{9}, \frac{2}{11}$ and $\frac{3}{7}$ parts of their volumes outside the fluid surface in fluids of densities d_1, d_2, d_3 respectively which of the following statement is correct....

(a) $d_1 < d_2 < d_3$ (b) $d_1 > d_2 > d_3$ (c) $d_1 > d_2 < d_3$ (d) $d_1 < d_2 > d_3$

Ans. (a)

Sol. Since $\frac{3}{7}^{th}$ part is more as compared to $\frac{2}{11}^{th}$ then $\frac{1}{9}^{th}$

8. According to below figure, a uniform magnetic filed exists in the plane of paper point from left to right. In this field the force experienced by electron and proton will be–
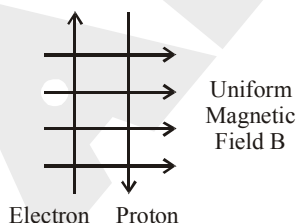
(a) Both pointing into the plane of paper perpendicularly

(b) Both pointing outside the plane of paper perpendicularly.

(c) Electron pointing into the plane of paper and proton outside of the plane of paper perpendicularly.

(d) Electron ponting out side of the paper and proton into the plane of paper perpendicularly.

Ans. (b)

Sol. Using q $\left(\vec{v} \times \vec{B}\right)$

Both pointing outside the plane of paper perpendicularly.

9. The escape velocity from earth is 11 km/s. Then the escape velocity on other planer whose density is same as of eath and radius is double of the radius of earth will be.....

(a) 22 km/s   (b) 5.5 km/s   (c) 15.56 km/s   (d) 11 km.s

Ans. (a)

Sol. $v_e = \sqrt{\dfrac{2GM}{r}}$

Where G = 6.67 × 10^{-11}

M = mass of planet

r = distance of object from centre of mass of body

M = density × $\dfrac{4}{3}\pi r^3$

r = 2R (R = radius of earth)

d = D (D = density of earth)

Let M$_e$ = masss of earth

M = 8 M$_e$

On putting the above values in escape velocity formula we get

v$_e$ = 2 × escape velocity of earth

$\boxed{V_e = 22 km/s}$

10. An optician while testing the eyes of patients finds his vision to be 6/12, it means that....

(a) A person can read the letter of 6 inch from distance of 12m.

(b) The person can read the letter of 12 inch from a distance of 6m

(c) The person can read the letters from 6m which the normal eye can read from 12m.

(d) The focal length of eye lens had become half that of the normal eye.

Ans. (c)

Sol. $\dfrac{6}{12}$ vision means that the letters in the chart should be read at 12m, but the patient will be able to read at 6 m.

11. The specific resistance of metallic conductor is depend on the metallic conductor's....

(a) Length   (b) Temperature   (c) Area   (d) All of these

Ans. (b)

Sol. Specific resistance only depends upon the nature of material and temperature.

12. A tuning fork of frequency 256 Hz will resonate with another tuning fork of frequency .....

(a) 512 Hz   (b) 348 Hz   (c) 128 Hz   (d) 256 Hz

Ans. (d)

Sol. For resonance frequency matching is required.

13. Water can be made to boil at 115°C by its surface pressure....

(a) Slowly decreases   (b) Keep unchanged   (c) Rapidly decreases   (d) Increases

Ans. (d)

Sol. Boiling temperature can be increased by increasing pressure.

14. Sugar is.....

(a) An element   (b) A compound

(c) A homogeneous mixture   (d) A heterogeneous mixture.

Ans. (b)

In sugar carbon, hydrogen and oxygen are combined chemically in a fixed ratio to form molecule of sugar.
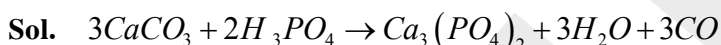
15. Which of the following is a main constituent of natural gas and is also a green house gas .....

(a) Sulphur dioxide   (b) Oxygen   (c) Methane   (d) Nitrogen

Ans. (c)

Sol. Natural gas contains about 85% of methane and it is also a green house gas.

16. The value of x and y in the following reaction is....

$$xCaCO_3 + yH_3PO_4 \rightarrow Ca_3(PO_4)_2 + xH_2O + xCO_2$$

(a) 2,3   (b) 3,3   (c) 3,2   (d) 1,3

Ans. (c)

Sol. $3CaCO_3 + 2H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 3H_2O + 3CO$

The reaction is balanced as above

So x → 3

     y → 2

17. The pH value of the three solutions X, Y and Z are 6, 4 and 8 respectively. Which of the following is the correct order of increasing acidic strength ?

(a) X > Y > Z   (b) Z > Y > X   (c) Z > X > Y   (d) Y > X > Z

Ans. (d)

As pH increases the acidic strength decreases

Y → pH = 4

X → pH = 6

Z → pH = 8

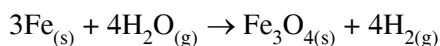Y > X > Z

18. The mass of 0.2 mole oxygen atom will be :

(a) 3.2 g   (b) 3.4g   (c) 6.4g   (d) 1.6g

Ans. (a)

Sol. 1 mole o – atoms = 16 g

= 2 mole o - atoms = 16 × 0.2

= 3.2 g

19. Which of the following statements about the given reaction are correct ?

$3Fe_{(s)} + 4H_2O_{(g)} \rightarrow Fe_3O_{4(s)} + 4H_{2(g)}$

(i) Iron metal is getting oxidised.

(ii) Water is getting reduced.

(iii) Water is acting as reducing agent.

(iv) Water is acting as oxidising agent.

(a) (i), (ii) and (iii)   (b) (ii) and (iv)   (c) (i), (ii) and (iv)   (d) (ii) and (iii)

Ans. (c)

Sol. (i) Oxygen is added to Fe to give Fe_3O_4

(ii) Oxygen is removed from H_2O to give H_2

(iv) H_2O oxidises Fe to Fe_3O_4 and itself gets reduced to H_2

20. The electronic configuration of two elements X and Y are as follows :

X = 2, 8, 8,2   Y = 2, 8, 7

The formula of the ionic compound formed by the combination of these two elements will be:

(a) XY   (b) XY_2 (c) X_2Y (d) X_2Y_3

Ans. (b)

Sol. $X \rightarrow 2,8,8,2$ $Y \rightarrow 2,8,7$

X   Y
2   1

XY_2

21. In which of the following pair both the substances are chemically same ?

(a) Gypsum and plaster of paris   (b) Potash alum and gypsum

(c) Dead burnt plaster and gypsum   (d) Milk of lime and lime water

Ans. (d)

Sol. lime water is $Ca(OH)_2$

When $Ca(OH)_2$ is added in excess to water it produces a milky aspect, which is called milk of lime.

22. Increasing order of atomic radius of Na, Rb, K and Mg will be:

(a) Mg < Na < K < Rb   (b) Na < Mg < K < Rb   (c) K < Na < Mg < Rb   (d) Rb < K < Mg < Na

Ans. (a)

Sol. As we move from top to bottom size increases so Na < K < Rb

and as we move from left to right in period size decreases i.e. Na > Mg

So, final conclusion Mg < Na < K < Rb

23. Isomer of ethanol is .....

(a) Di ethyl ether   (b) Di methyl ether   (c) Ethelene glycol   (d) Ethanoic acid

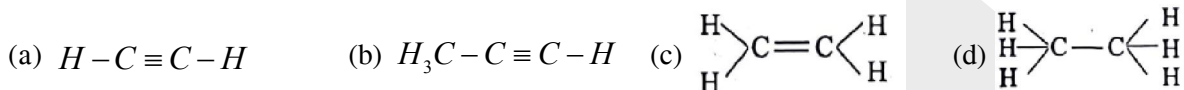**Ans.** (b)

Sol. As ethanol and dimethyl ether both have same molecular formula i.e. C_2H_6O

$$CH_3 - CH_2 - OH \qquad\qquad CH_3 - O - CH_3$$

Ethanol   Dimethyl ether

24. Structural formula of ethyne is

(a) $H - C \equiv C - H$ (b) $H_3C - C \equiv C - H$ (c) $\overset{H}{\underset{H}{}}{>}C = C{<}\overset{H}{\underset{H}{}}$ (d) $\overset{H}{\underset{H}{H}}{>}C - C{<}\overset{H}{\underset{H}{H}}$

Ans. (a)

Sol. The general formula of Alkynes is C_nH_{2n-2} and for n = 2 it becomes C_2H_2

25. Al_2O_3 reacts with –

(a) Only acids   (b) Only alkalies

(c) With both acids and alkalies   (d) Do not react with

acids and alkalies both

Ans. (c)

As Al_2O_3 is Amphoteric in nature it reacts with both acids and base.

26. If K and L shells of an atom are completely filled, then the total number of electrons in it are–

(a) 6   (b) 8   (c) 18   (d) 10

Ans. (d)

Sol. K shell (1st shell) $\rightarrow 2e^-$s (Max)

L Shell (2nd shell) $\rightarrow 8e^-$s (Max)

When both are completely filled. $\rightarrow 10e^-$s

27. Which of the follwing plant store food in their root :

(a) Radish   (b) Potato   (c) Tomato   (d) Maize

Ans. (a)

Sol. Radish is actually root part of plant which stores food. Tomato is fruit part, Potato is underground stem which stores food.

28. Which of the following animal is a reptile....

(a) Frog   (b) Turtle   (c) Spider   (d) Eathworm

Ans. (b)

Sol. Turtles are reptiles because like all reptiles they have scales on the body and are cold blooded.

29. Potato Tuber is an underground stem because it bears–

(a) Buds and nodes   (b) Abundant food reserve   (c) Adventitious Root

(d) Chlorophyll is not found

Ans. (a)

Sol. The potato tuber has all the parts of a normal stem, including nodes and internodes. The nodes are eyes and each has leaf scar. Potato is underground stem used as vegetable.

30. The symbiotic micro-organism present in the roots of pea plant is –

(a) Virus   (b) Bacteria   (c) Protozoa   (d) Fungus.

Ans. (b)

Sol. Rhizobium bacteria which is found in roots of the pea plant help these plants in atmospheric nitrogen fixation.

31. Which is not a method to maintain the fertility of the soil?

(a) Crop rotation   (b) Mixed cropping

(c) Weeding   (d) Leaving the land uncultivated for sometime

Ans. (c)

Sol. Weeding is method of removal of unwanted, fast growing plants, which compete with crop plants. So it is required for better crop production and it would not increase soil fertility.

32. Reena has a burning sensation in her stomach due to acidity she needs to eat.

(a) Tomato   (b) Apple   (c) Tamarind   (d) Baking soda

Ans. (d)

Sol. Acid is produced in stomach for digestion of food. Sometimes extra amount of acid is produced which causes burning sensation. Baking soda neutralizes acid on contact. So it would help to relieve burning sensation due to acidity.

33. Which of the following organism is a saprophyte....

(a) Penicillium   (b) Malaria parasite   (c) Leech   (d) Ant.

Ans. (a)

Sol. Penicillium is fungi, which get nourishment from dead organisms or decaying organic material. So mode of nutrition of fungi is saprophytic. Malaria parasite and leech are examples of parasites.

34. Lichens are organisms in which algal cells are found with ....

(a) Moss   (b) Protozoa   (c) Fungi   (d) Bacteria

Ans. (c)

Sol. A lichen is an organism that is formed by mutualistic relationship between a fungus and photosynthetic organisms like algae. Fungus provide minerals and water to algae, in return algal cells provide food to fungi.

35. Which of the following pair includes only Endocrine glands....

(a) Pituitary gland and Thymus gland

(b) Thymus gland and Parotid gland

(c) Thymus gland and Kidney

(d) Pituitary gland and Parotid gland

Ans. (a)

Sol. Endocrine glands secrete their products (hormones) directly into the blood rather than through a duct. Pituitary gland and Thymus gland release hormones directly into blood.

36. Milk, Soyabeen, Eggs are related to which of the following group.

(a) Energy giving foods   (b) Body building foods (c) Protective foods   (d) Weight gaining foods.

Ans. (b)

Sol. Milk, soyabeen and eggs are rich source of protein, which is required for building muscles and new cells. So help in body building.

37. International day for preservation of ozone layer is celebrated on.....

(a) 16 September   (b) 18 September   (c) 01 December   (d) 04 Devember

Ans. (a)

Sol. September 16 was designated by the United Nations General Assembly as international day for preservation of Ozone layer.

38. Which is a Prokaryotic cell amongst the following....

(a) Amoeba   (b) Yeast   (c) Euglena   (d) Bacteria

Ans. (d)

Sol. Bacteria are type of prokaryotic cells because they lack (true nucleus) membrane surrounding genetic material as well as membrane bound organelles like mitochondria, chloroplast, endoplasmic reticulum and Golgi bodies.

39. In our body which organ is responsible for conversion of ammonia into urea.

(a) Kidney   (b) Liver   (c) Lungs   (d) Heart.

Ans. (b)

Sol. The liver contains a system of carrier molecules and enzymes which quickly convert ammonia into urea. Urea is nontoxic compound which can be safely transported through blood from liver to kidneys, where it is eliminated in urine.

40. This is not a part of the structure of a Nerve cell–

(a) Dendrite   (b) Nucleus   (c) Axon   (d) Cellulosic cell wall

Ans. (d)

Sol. Cellulosic cell wall is part of plant cell. Nerve cells are animal cells and do not contain cell wall. Dendrite, nucleus and axon are part of nerve cell.

41. A polynomial which divided by x + 2, the quotient is $2x^2 - 3x + 1$, and reminder is 5.

The polynomial will be–

(a) $2x^3 + x^2 - 5x + 7$ (b) $2x^3 - x^2 + 5x + 7$ (c) $2x^3 + x^2 + 5x + 7$ (d) $2x^3 + x^2 - 5x - 7$

Ans. **(a)**

Sol. Polynomial = (divisor × quotient) + Reminder

$= (x + 2) \times (2x^2 - 3x + 1) + 5$

$= x(2x^2 - 3x + 1) + 2(2x^2 - 3x + 1) + 5$

$= 2x^3 - 3x^2 + x + 4x^2 - 6x + 2 + 5$

$= 2x^3 + x^2 - 5x + 7$

42. If there is no solution of linear equation system kx − 5y = 2 and 6x + 2y = 7, then the value of k will be

(a) −10   (b) −5   (c) −6   (d) −15

Ans. **(d)**

Sol. The condition for no solution is

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{C_2}$$

$$\therefore \frac{k}{6} = \frac{-5}{2}$$

$$\therefore K = -\frac{5 \times 6}{2} = -15$$

43. In a quadratic equation $x^2 + ax + 3 = 0$, if one of the roots is 1, then other root will be....

(a) 3   (b) −3   (c) 2   (d) −2

Ans. **(a)**

Sol. 1 is the solution of $x^2 + ax + 3 = 0$

$\therefore (1)^2 + a(1) + 3 = 0$

$\therefore a = -4$

So, equation is $x^2 - 4x + 3 = 0$

$\therefore (x - 3)(x - 1) = 0$

$\therefore x - 3 = 0$ or $x - 1 = 0$

$\therefore x = 3$ $x = 1$

So, other root will be 3.

44. The first and last term of an arithmatic progression are 17 and 332 respectively. If common difference is 9, then the number of terms will be...

(a) 34   (b) 35   (c) 36   (d) 37

Ans. (c)

Sol. $a = 17$

$l = 332$

$d = 9$

taking 332 as nth term.

$a_n = a + (n - 1)d$

$\therefore 332 = 17 + (n - 1)9$

$\therefore 332 - 17 = (n - 1)9$

$\therefore 315 = (n - 1) \times 9$

$\therefore 35 = (n - 1)$

$\therefore n = 36$

45. A work is completed in 9 days by 25 persons for 6 hrs daily. Then the same work will be completed by 15 persons for 9hrs daily in how many days....

(a) 25   (b) 9   (c) 10   (d) 6

Ans. (c)

Sol. $D_1 = 9$ days $D_2 = ?$

$M_1 = 25$ persons $M_2 = 15$ persons

$T_1 = 6$ hrs $T_2 = 9$ hrs

$M_1 D_1 T_1 = M_2 D_2 T_2$

$\therefore 25 \times 9 \times 6 = 15 \times D_2 \times 9$

$\therefore D_2 = 10$ days

46. If point (0, 2) is equidistant from (3, k) and (k, 5), then the value of k will be–

(a) 1   (b) –1   (c) 2   (d) –2

Ans. (a)

Sol. A (3, k)

B (k, 5)

C (0, 2)

$AC = BC$

$AC^2 = BC^2$

$(3 - 0)^2 + (k - 2)^2 = (k - 0)^2 + (5 - 2)^2$

$\therefore 9 + k^2 - 4k + 4 = k^2 + 9$

$\therefore k = 1$

47. Education cess is calculated on

(a) Total income   (b) Total income tax   (c) Taxable amount   (d) None of these

Ans. (b)

48. The value of $\dfrac{2\tan 30°}{1+\tan^2 30°}$ is

(a) $\sin 60°$ (b) $\cos 60°$ (c) $\tan 60°$ (d) $\sin 30°$

Ans. (a)

Sol. $\dfrac{2\tan 30°}{1+\tan^2 30}$

$$\dfrac{2 \times \dfrac{1}{\sqrt{3}}}{1+\left(\dfrac{1}{\sqrt{3}}\right)^2} = \dfrac{\dfrac{2}{\sqrt{3}}}{1+\dfrac{1}{3}}$$

$$= \dfrac{\dfrac{2}{\sqrt{3}}}{\dfrac{4}{3}} = \dfrac{\sqrt{3}}{2} = \sin 60°$$

49. The angle of elevation of top of a tower from a point on the ground is 30°. The point is 60 meter away from the foot of the tower. The height of tower will be.....

(a) $20\sqrt{3}m$ (b) $30\sqrt{3}m$ (c) $60\sqrt{3}m$ (d) $15\sqrt{3}m$

Ans. (a)

Sol. $\tan 30° = \dfrac{\text{height of tower(h)}}{60}$

$$\therefore \dfrac{1}{\sqrt{3}} = \dfrac{h}{60}$$

$$\therefore h = \dfrac{60}{\sqrt{3}}$$

$$\therefore h = 20\sqrt{3}\ m$$

50. If $\triangle ABC \sim \triangle DEF$ such that DE = 3cm, EF = 2cm, DF = 2.5 cm and BC = 4 cm.

Then the perimeter of $\triangle ABC$ will be...

(a) 18 cm   (b) 20 cm   (c) 12 cm   (d) 15 cm

Ans. (d)

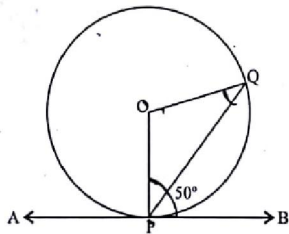**Sol.** $\dfrac{BC}{EF} = \dfrac{Perimeter\ of\ \triangle ABC}{Perimeter\ of\ \triangle DEF}$

$\therefore \dfrac{4}{2} = \dfrac{p}{DE + EF + DF}$

$\therefore 2 = \dfrac{P}{3 + 2 + 2.5}$

$\therefore 2 = \dfrac{P}{7.5}$

$\therefore P = 15cm$

51. In the given figure, a circle is centred at O. APB is a tangent at a point P, if $\angle QPB = 50°$, then the measurement of $\angle POQ$ will be...

(a) 100°   (b) 120°   (c) 140°   (d) 150°

Ans. (a)

Sol. $OP \perp AB$ ($\because$ radius is always perpendicular to tangent)

$\therefore \angle OPB = 90^0$

$\therefore \angle OPQ + \angle QPB = 90^0$

$\therefore \angle OPQ + 50^0 = 90^0$

$\therefore \angle OPQ = 40^0$ .... (i)

Now, In $\triangle OPQ$,

OP = OQ = r

$\therefore \angle OPQ = \angle OQP = 40^0$ (From (i))

$\therefore \angle POQ = 180^0 - 80^0$

$\qquad = 100°$

52. In a right angled triangle ABC, AB = 3 cm, BC = 4cm and $\angle B$ = 90°. A circumcircle is constructed. Radius of circumcircle will be....

(a) 3 cm   (b) 4 cm   (c) 5 cm   (d) 2.5 cm

Ans. (d)

Sol. $\triangle$ ABC is right angle triangle.

$\therefore$ AC is diameter ($\because$ diameter subtends 90° at any point of circle)

Now, applying pythagoras theorem in $\triangle$ ABC

$AC^2 = AB^2 + BC^2$

$= 3^2 + 4^2$

$= 9 + 16$

$= 25$

$\therefore$ AC = 5 cm

$\therefore$ radius = 2.5 cm

53. Statement P : x and y both are integers, then negative statements will be....

(a) $\sim P$: x and y both are integer.

(b) $\sim P$: x is not integer or y is not integer.

(c) $\sim P$: x and y both are not integer

(d) P : x and y both are not integer.

Ans. (b)

54. Maximum length of the pole which can be put in the room whose length, breadth and height are 10m, 10m and 5m respectively...

(a) 25m   (b) 20m   (c) 15m   (d) 10m

Ans. (c)

Sol. Maximum length of pole

= diagonal of the room

$= \sqrt{l^2 + b^2 + h^2} = \sqrt{10^2 + 10^2 + 5^2} = \sqrt{225}$

= 15 m

55. A right angled triangle with sides 3cm, 4cm and 5cm is rotated about the side of 3cm as the axis to form a cone. The volume of the cone that is formed by the traingle will be....

(a) $12\pi cm^3$　　　(b) $15\pi cm^3$　　　(c) $16\pi cm^3$　　　(d) $20\pi cm^3$

Ans. **(c)**

Sol. h = 3 cm

r = 4 cm

$l^2 = r^2 + h^2 = 4^2 + 3^2 = 16 + 9 = 25$

$\therefore \ l = 5$ cm

Volume of cone = $\dfrac{\pi r^2 h}{3}$

$= \dfrac{\pi 4^2 \times 3}{3} = 16\pi cm^3$

56. If mode of the 64, 60, 48, x, 43, 48, 43, 34 is 43. Then the value of x is...
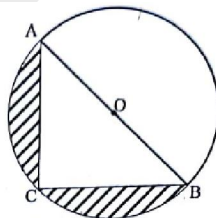
(a) 60　　　(b) 40　　　(c) 43　　　(d) 48

Ans. **(c)**

Sol.
Observation	Freq
64	1
60	1
48	2
43	2
34	1

Now, mode to be 43, highest frequency must be of observation 43.

So, x = 43

57. In the given fiogure O is the centre of circle. If AC = 8cm, BC = 6cm. Then the area of the shaded part will be.... $(\pi = 3.14)$

(a) 24 cm²　　　(b) 78·50 cm²　　　(c) 39·25 cm²　　　(d) 15.25 cm²

Ans. **(d)**

Sol. Area of shaded region

= Area of semicircle − area of $\triangle$ ABC

$$= \frac{\pi r^2}{2} - \frac{1}{2} \times b \times h = \frac{3.14 \times 5^2}{2} - \frac{1}{2} \times 6 \times 8 = 39.25 - 24 = 15.25 \text{ cm}^2$$

58. Gradient (slope) of straight line 7x − 2y = 5 is....

(a) $\dfrac{-7}{2}$ (b) $\dfrac{7}{2}$ (c) $\dfrac{2}{7}$ (d) $\dfrac{-2}{7}$

Ans. (b)

Sol. 7x − 2y = 5

$\therefore 7x - 2y - 5 = 0$

a = 7 b = −2 c = −5

Slope of the line ax + by + c = 0 is $\dfrac{-a}{b}$

$\therefore \text{Slope} = \dfrac{-7}{-2} = \dfrac{7}{2}$

59. Rohan opened a recurring deposit for ₹ 100 per month for 5 years at the interest rate of 6% per year in the post office. After 5 years the amount he will get from post office is

(a) ₹ 6000   (b) ₹ 915   (c) ₹ 6,915   (d) ₹ 1,015

Ans. (c)

Sol. P = Rs. 100 / month

T = 5 years = 5 × 12 = 60 months

$\therefore$ n = 60

R = 6% per year

$$\text{M.V.} = (n \times p) + \left[\frac{p \times r}{100} + \frac{1}{12} \left(\frac{n(n+1)}{2} \right) \right]$$

$$= (60 \times 100) + \left[\frac{100 \times 6}{100} + \frac{1}{12} \times \frac{60 \times 61}{2} \right]$$

= 6000 + (3 × 5 × 61) = 6000 + 915

= 6915

60. A chord of length 24cm is situated 5cm from the centre of a circle. The diameter of the circle will be

(a) 24 cm (b) 29cm (c) 26cm (d) 13cm

Ans. (c)

Sol. length of chord AB = 24 cm

$$\therefore MB = \frac{1}{2}AB = \frac{1}{2} \times 24 = 12 \text{ cm}$$

Radius = OB

Now, ΔOMB is right angled triangle

$$\therefore OB^2 = OM^2 + MB^2$$
$$= 5^2 + 12^2$$
$$= 25 + 144$$
$$= 169$$
$$OB^2 = 13^2$$

$$\boxed{\therefore OB = 13\, cm}$$

61. The year of economic depression in the world is...

(a) 1929 (b) 1919 (c) 1909 (d) 1949

Ans. (a)

Sol. The year of economic depression in the world is 1929 AD.

62. Under whose command does the british army opened fire during jallian wallah bagh massacre ?

(a) Warren Hastings (b) General Dyer (c) Mount Batten (d) Curzon

Ans. (b)

Sol. On the command of General Dyer.

63. The main cause of the down fall of the roman empire was

(a) Debouched and disloneal attitude of the Eastern Monarchs

(b) Arise of Christianity

(c) Vastness of the empire

(d) Invasion of barbarous

Ans. (b & d both)

Sol. Many causes were responsible behind the downfall of roman empire. The most prominent among them were arise of christianity & invasion of barborous tribe.

64. The name of Sansad of Russia is...

(a) Lok Sabha (b) Vidhan Sabha (c) Duma (d) Zar

Ans. (c)

Russion parliament is known as Duma

65. Sarnath's maximum part of capital is attributed to.....

(a) Kanishka   (b) Harshvardhan   (c) Ashok   (d) Chandragupta

Ans. (c)

Sol. Ashoka

66. Transfer of India's capital from Kolkata to Delhi was effected during regime of....

(a) Dufferin   (b) Wellington   (c) Rippen   (d) Harding

Ans. (d)

Sol. During the tenure of Lord Hardin.

67. Which one of the following pair is not corect....

(a) Role of the ladies changed – After the first world war.

(b) Television invented by – John Logie Bayerd.

(c) Racism – Gift of Hilter.

(d) Base of awareness in country – Industries

Ans. (d)

Sol. Base of awareness in country - Industries.

68. When did Vaskodigama arrived in India via Cape of Good Hope ?

(a) 1598   (b) 1599   (c) 1498   (d) 1499

Ans. (c)

Sol. Vasco - da - gama reached calicut in 1498.

69. Who did propose to introduce English language in India as a medium of instriction ?

(a) Lord Macaulay   (b) Lord William Bantick   (c) Raja Ram Mohan Roy
(d) Warren Hastings.

Ans. (a)

Sol. Lord Macaulay introduced english as a medium of instruction in Indian education system.

70. Second world war took place :

(a) Because of high ambition of Germany

(b) Because of fasism

(c) Because of nazism

(d) Because of party system

Ans. (a)

Sol. World war II started due to the high ambition of Hitler's Nazi Germany.

71. Declaration of Indain independence (Poorna Swarajya) was promulgate by Indian National Congress on...

(a) 26 January   (b) 26 January 1932   (c) 26 January 1930   (d) 26 January 1929

Ans. (Bonus)

Sol. The resolution was passed by INC in December 1929 & 26 Jan, 1930 was celebrated as Independence day by Congress.

72. The Industrial Revolution set in because of

(a) The changes in the techniques and organization of production.

(b) The revolution in agriculture.

(c) The acquisition of colonies.

(d) The acquisition of colonies.

Ans. (a)

Sol. Due to change in technology.

73. For which is 'Grand-Bank' Known ?

(a) Deep Sea   (b) Fishing ground   (c) A big port   (d) Sea platform

Ans. (b)

Sol. Fishing ground due to the meeting of warm & cold current

74. Which steel plant of Indian is sometime called India's first swadeshi steel plant–

(a) Bengal Iron work's compant   (b) Tisco

(c) Bhilai steel plant   (d) Bokaro steel plant.

Ans. (d)

Sol. Bokara steel plant situated in Jharkhand

75. By using insecticides which layer is destroyed first.....

(a) Mineral layer   (b) Down layer   (c) Biological layer   (d) Above all

Ans. (c)

Sol. Biological layer destroyed First.

76. Massai is a tribe of

(a) India   (b) Africa   (c) Europe   (d) China

Ans. (b)

Sol. Massai is a tribal community in habitat in Africa.

77. How many state of India share its border with Bhutan?

(a) 2   (b) 3   (c) 4   (d) 5

Ans. (c)

Sol. Four states - Sikkim, Assam, Himachal pradesh & West Bengal.

78. Which of the sea canal connects North sea and Baltic sea?

(a) Manchaster   (b) Panama   (c) Kiel   (d) Suez

Ans. (c)

Sol. Kiel canel connecting north sea to Baltic sea constructed in 1895 in Germany.

79. Asia's largest tulip garden is located in which state?

(a) Jammu-kashmir   (b) Assam   (c) Sikkim   (d) Uttrakhand

Ans. (a)

Sol. Asia largest tulip Garden is situated in Srinagar.

80. Which one of the following pairs of rivers and cities situated beside is not correctly matched

(a) London – Tames river

(b) Newyork – Hudson river

(c) Chicago – Michigan river

(d) Delhi – Ganga river

Ans. (d)

Sol. Delhi is Situated on the bank of river Yamuna.

81. Growing population is called

(a) Popoulation explosion (b) Literacy (c) Sex Ratio (d) All of the above

Ans. (a)

Sol. Population explosion

82. Which of the following phenomena causes the shape of the earth?

(a) Internal Structure (b) Atmosphere pressure (c) Rotation (d) Revolution

Ans. (c)

Sol. Shape of the earth is spherical due to the rotation.

83. 'Jaduguda' mines are famous for

(a) Iron ore (b) Mica deposits (c) Gold deposits (d) Uranium deposits

Ans. (d)

Sol. Jadu Goda mines are famous for Uranium deposits situated at Jharkhand.

84. Where is the oil and natural gas commission located?

(a) Haldia (b) Dehradun (c) Ankleshwar (d) Cambay

Ans. (d)

Sol. Dehadun- Uttrakhand or Considered as bonus.

Present HQ is at Delhi, earlier it was in Deheradun

85. Who amongst the following decides whether a bill presented in the vidhan sabha, money bill or not?

(a) Finance minister (b) Chief minister

(c) Governer of the state (d) Speaker of the vidhan sabha

Ans. (d)

Sol. Speaker of Vidhan Sabha decides whether bill is money bill or non- money bill.

86. How many permanent members are there in UN secretary council?

(a) Six (b) Four (c) Three (d) Five

Ans. (d)

Sol. The permanent members are England, france, U.S.A, China and Russia.

87. Which of the following is a public interest Litigation or order that can be passed by the Supreme Court on the High Court to safe guard the rights of a citizen?

(a) Habeas corpus   (b) Referendum   (c) Initiative   (d) Plebiscite

Ans. (a)

Sol. Habeas corpus is the writ passed by supreme court for the protection of rights of the citizens.

88. The constitution of which country inspired us to establish a 'Republic'

(a) France   (b) Italy   (c) South Africa   (d) Britain

Ans. (a)

Sol. Constitution of France

89. Niyamgiri is

(a) A movement   (b) A mountain   (c) Storage of bauxite   (d) A king

Ans. (b)

Sol. A Mountain situated in Odisha.

90. The main cause of opposition of Hindu code bill was possibility of

(a) End of castism

(b) Possiblity of change in Hindu Religion and social system

(c) Establishment of equality of men and women

(d) Right of religious freedom

Ans. (b)

Possiblity of change in Hindu religion & social system.

91. The First general election took place –

(a) In 1952   (b) In 1957   (c) In 1975   (d) In 1962

Ans. (a)

Sol. Ist General election took place in 1952.

92. How long a person should practised in a high court to be eligible to be appointed as judge of supreme court of India ?

(a) 10 years   (b) 12 years   (c) 15 years   (d) 20 years

Ans. (a)

Sol. A person should have ten yeears of working experience as a Judge of high court to be the judge of Supreme court.

93. What amount of the national income of India is obtained from agriculture ?

(a) 65%   (b) 26%   (c) 62%   (d) 22%

Ans. (b)

Sol. 26% of National income of India is obtained from Agriculture.

94. Which one of the following pair is not correct –

(a) Foreign Trade - To sell goods in other countries

(b) System of banks is changed by R.T.G.S

(c) Mental Development – Up to the age of 3 years

(d) Octroi duty - Goods brought from foreign countries

Ans. (d)

Sol. Octroi duty is imposed by municipal corporation or local governing bodies.

95. In Chhattisgarh, in 2012 the act was passed –

(a) Mid Day meal programme   (b) Malnutrition act

(c) Food security act   (d) Save food Act.

Ans. (c)

Sol. Food security act was passed in 2012.

96. Reasons for the privatisation and liberalisation of public sector after 1991 are –

(a) Corruption   (b) Lact of efficiency in work

(c) Ineffective management   (d) All of the above

Ans. (d)

Sol. All of the above

97. The Central bank of India is –

(a) State Bank of India   (b) Central Bank of India

(c) State Co-operative bank   (d) Reserve Bank of India

Ans. (d)

Sol. RBI is central bank of India which regulates working of the banking system in India.

98. Control and ownership of production on more than one countries by –

(a) European Countries   (b) Multinational Companies

(c) Indian Companies   (d) None of the above

Ans. (b)

Sol. A mutinational company which works in multiple nations.

99. The term ' Evergeen Revolution' has been used for increasing production in India by –

(a) Norrman Borlaug   (b) Raj Krishna   (c) M.S.Swaminathan (d) R.K. V. Rao

Ans. (c)

Sol. M.S. Swaminathan Father of green revolution

100. When elasticity of demand and elasticity of supply are equal. The burden of tax –

(a) Lies more on Buyer   (b) Lies more on seller

(c) Lies equally on buyer and seller   (d) None of the above

Ans. (c)

Sol. Lies equally on buyer & seller.