

Section 1 - Section 1

Question No.1

4.00

Bookmark

The appearance of colour in solid alkali metal halides is generally due to,

- Schottky defect
- F-centres
- Interstitial position
- Frenkel defect

Question No.2

4.00

Bookmark

The monomer of Teflon is,

- $\text{CF}_2=\text{CF}_2$
- $\text{CH}_2=\text{CH}(\text{Cl})\text{CH}=\text{CH}_2$
- $\text{CH}_2=\text{CHCl}$
- $\text{CH}_2=\text{CHCN}$

Question No.3

4.00

Bookmark

A car travelling with  $\frac{5}{7}$  of its actual speed covers 42 km in 1 hr 40 min 48 sec. Find the actual speed of the car.

- 20KM/H
- 30KM/H
- 25KM/H
- 35KM/H

Question No.4

4.00

Bookmark

Based on the information given, answer the following question.

1. A,B,C,D,E and F are travelling in a bus.
2. There are two reporters, two mechanics, one photographer and one writer in the group.
3. Photographer A is married to D who is a reporter.
4. The writer is married to B who is of the same profession as that of F.
5. A,B,C,D are two married couples and no one in this belong to the same profession.
6. F is the brother of C.

Which of the following pair is a couple?

- AD
- BF
- AB
- None of these

Question No.5

4.00

Bookmark

Which of the following functions is the solution of the differential equation,  $\frac{dy}{dx} = -y$ ?

- $y = \exp(-x)$
- $y = \exp(x)$
- $y = \exp(x) - \exp(-x)$
- $y = \exp(x) + \exp(-x)$

Question No.6

4.00

Bookmark

A bag contains 12 balls out of which x are white. If 6 more white balls are put in the bag, the probability of drawing a white ball is double the probability of drawing a white ball before putting 6 balls. Then the value of x is

- 4
- 3

- 5
- 6

**Question No.7**

4.00

Bookmark 

32, 31, 32, 29, 32, 27, 32 ?

- 32
- 23
- 21
- 25

**Question No.8**

4.00

Bookmark 

An observer moves towards a stationary source of sound with a velocity one-fifth of the velocity of sound. What is the percentage increase in the apparent frequency?

- 0.50%
- 20%
- Zero
- 5%

**Question No.9**

4.00

Bookmark 

Rule, Command, Dictate  
Doze, Sleep, ?

- Hibernate
- Insomnia
- Snore
- Wake

**Question No.10**

4.00

Bookmark 

If each of the base angles of a triangle is half its vertical angle, then the triangle is

- an isosceles right-angled triangle
- an equilateral triangle
- a scalene triangle
- an obtuse angled triangle

**Question No.11**

4.00

Bookmark 

A rope of mass  $m$  is tied to a wall at one end and a person is pulling the other end horizontally. The force that the person should exert to make the rope perfectly straight and horizontal is

- $\infty$
- $G$
- $mg$
- $0$

**Question No.12**

4.00

Bookmark 

An arch is in the form of semi-ellipse whose span is 48m wide. The height of the arch is 20m. Then the width of the arch at a height of 10m above the base is

- $20\sqrt{2}$  m
- $24\sqrt{3}$  m
- $48\sqrt{2}$  m
- $24\sqrt{5}$  m

**Question No.13**

4.00

**Bookmark** 

Due to frequent power failure in this area, factories are being forced to \_\_\_\_\_ men, because of the closing of the second shift.

- throw away
- put off
- lay off
- send off

**Question No.14**

4.00

**Bookmark** 

Baking soda is the common name for,

- Calcium carbonate
- Sodium bicarbonate
- Sodium carbonate
- Calcium bicarbonate

**Question No.15**

4.00

**Bookmark** 

The catalyst employed in the manufacturing of nitric acid by Ostwald process is,

- Platinum gauze
- $V_2O_5$
- Palladium turnings
- $VOSO_4$

**Question No.16**

4.00

**Bookmark** 

In a code language, Sam Fun Dun means Sun is Shining, Fun Bun Tun means Sun and Moon and Sam Dam Lam is Star is twinkling, which word means Shining?

- Tun
- Dun
- Bun
- Sam

**Question No.17**

4.00

**Bookmark** 

The focal length of a convex mirror is 20 cm its radius of curvature will be

- 20 cm
- 80 cm
- 10 cm
- 40 cm

**Question No.18**

4.00

**Bookmark** 

A convex lens has a focal length of 3 centimeters. How far from the mirror is the object, if the image formed is 4 centimeters away?

- 3 cm
- 1 cm
- 10 cm
- 8 cm

**Question No.19**

4.00

**Bookmark** 

The isotope of carbon 14 is radioactive and has half-life period of 5730 years. If we start with 500 carbon 14 nuclei, how many will remain after 11460 years?

- 250
- 500
- 125
- 62

**Question No.20**

4.00

Bookmark 

A particle is undergoing uniform circular motion with a constant angular velocity. The particle is having:

- a constant linear velocity
- an acceleration with changing direction
- a constant acceleration
- an angular position that is constant

**Question No.21**

4.00

Bookmark 

Chose the option that is CLOSEST in meaning to the given word:

DETRIMENTAL

- Aversion
- Harmful
- Beneficial
- Demolition

**Question No.22**

4.00

Bookmark 

The angle between the asymptotes of the hyperbola  $\frac{x^2}{9} - \frac{y^2}{4} = 1$  is approximately

- 75°
- 65°
- 33°
- 67°

**Question No.23**

4.00

Bookmark 

The metal present in chlorophyll, the green pigment of plants is,

- Magnesium
- Calcium
- Manganese
- Zinc

**Question No.24**

4.00

Bookmark 

Choose the best antonym of the italicized word.

An artisan well is dug up to an *impervious* layer of rocks.

- superficial
- hidden
- hard
- penetrable

**Question No.25**

4.00

Bookmark 

The coordination number of copper in  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  is,

- 4
- 3
- 6
- 5

**Question No.26**

4.00

Bookmark 

Which one of the following is NOT a correct statement?

- Hybridization of phosphorus in  $\text{P}_4$  is  $\text{sp}^3$
- White phosphorous contains discrete  $\text{P}_4$  molecules
- White phosphorous is stored under water

- White phosphorus is least reactive

**Question No.27**

4.00

**Bookmark**

When the price of a product was decreased by 10%, the number of products sold increased by 30%. What was the increase on the total revenue?

- 16%
- 23%
- 17%
- 15%

**Question No.28**

4.00

**Bookmark**

In a spectrum of hydrogen atom, the Lyman series is observed in the region,

- Ultraviolet
- Near-Infrared
- Visible
- Far-Infrared

**Question No.29**

4.00

**Bookmark**

Sulphide ores common for the metals are,

- Al, Cu and Pb
- Ag, Mg and Pb
- Ag, Cu and Sn
- Ag, Cu and Pb

**Question No.30**

4.00

**Bookmark**

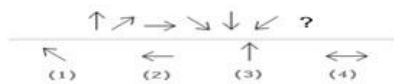
A point mass of 1 Kg collides elastically with a stationary point mass of 5 Kg. After the collision, the 1 Kg mass reverses its direction and moves with a speed of 2 m/s. Which of the following statement is correct for the system of these two masses?

- Total kinetic energy of the system is 6 J
- Momentum of the 5 Kg mass after collision is 4 Kg m/s
- Kinetic energy of the large mass after collision is 5 J
- Total momentum of the system is 3 Kg m/s

**Question No.31**

4.00

**Bookmark**



- 2
- 3
- 1
- 4

**Question No.32**

4.00

**Bookmark**

In a camp there is sufficient food for 105 soldiers for 21 days. If 42 soldiers leave the camp, how long would the food last ?

- 35
- 30
- 65
- 45

## Question No.33

4.00

Bookmark 

Which one of the following circuit elements stores energy in the electromagnetic field

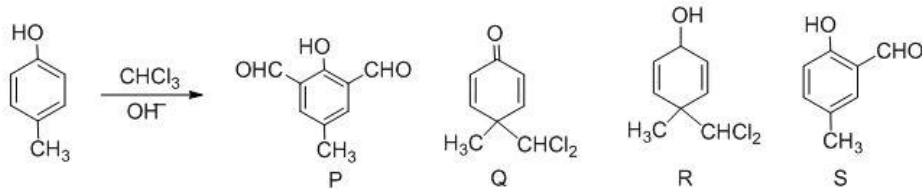
- Inductance
- Resistance
- Transistor
- Diode

## Question No.34

4.00

Bookmark 

The major product of the following reaction is,



- P
- Q
- S
- R

## Question No.35

4.00

Bookmark 

Choose the best synonym of the italicized word.

Lucia has a *penchant* for fine poetry.

- liking
- bias
- training
- desire

## Question No.36

4.00

Bookmark 

Suppose two equal charges of magnitude  $q$  each are kept one at  $x = 0$  and the other at  $x = 2a$ , where can you place a third charge so that the whole system is in equilibrium and how much charge has to be placed.

- $q/2$  Coulombs at  $x=a$
- $-q$  Coulombs at  $x = -2a$
- $-q/4$  Coulombs at  $x=a$
- $+q$  Coulombs at  $x = -2a$

## Question No.37

4.00

Bookmark 

My tuition master's criteria for the essay \_\_\_\_\_ unclear to me.

- was being
- are
- is
- was

## Question No.38

4.00

Bookmark 

Correct the error in the italicized part of the sentence by choosing the most appropriate option.

*All along the journey* she remained silent.

- All through the journey
- All during the journey
- All along in the journey
- Throughout all journey

**Question No.39**

4.00

Bookmark

Such an \_\_\_\_\_ discussion of the recent economic crisis is usually not found in newspapers; normally, such treatment could be found only in scholarly journals.

- erudite
- overt
- ingenious
- arrogant

**Question No.40**

4.00

Bookmark

The number of binary operations on the set {a,b} is

- 10
- 20
- 8
- 16

**Question No.41**

4.00

Bookmark

If a, b and c are in arithmetic progression then the value of the determinant

$$\begin{vmatrix} x+2 & x+3 & x+2a \\ x+3 & x+4 & x+2b \\ x+4 & x+5 & x+2c \end{vmatrix}$$
 is

- 0
- x
- 1
- 2x

**Question No.42**

4.00

Bookmark

The ozone layer is found in which layer of the atmosphere,

- Stratosphere
- Thermosphere
- Mesosphere
- Troposphere

**Question No.43**

4.00

Bookmark

The system of equations  $x+2y+3z=6$ ,  $x+y+z=3$  and  $2x+3y+4z=9$  has

- a unique solution
- infinitely many solutions
- no solution
- None of these

**Question No.44**

4.00

Bookmark

Ganga purchased an iron box at  $\frac{9}{10}$ th of its selling price and sold it at 8% more than its selling price. Find her gain percent.

- 10%
- 40%
- 30%
- 20%

**Question No.45**

4.00

Bookmark 

An Op-amp as a voltage follower has a voltage gain of

- Zero
- Less than Unity
- Unity
- Infinity

**Question No.46**

4.00

Bookmark 

Let T be the absolute temperature. Then, the kinetic energy of the molecules is proportional to

- $\log(T)$
- T
- $T_2$
- $T_4$

**Question No.47**

4.00

Bookmark 

The more appropriate value of  $\sin^{-1}\left(\sin\frac{3\pi}{5}\right)$  is

- $\frac{9\pi}{5}$
- $\frac{3\pi}{5}$
- $\frac{8\pi}{5}$
- $\frac{2\pi}{5}$

**Question No.48**

4.00

Bookmark 

Which of the following is correct

- Light waves and waves on a string are transverse while sound waves are longitudinal.
- Sound waves and waves on a string are longitudinal while light waves are transverse.
- Light waves and waves on a string are longitudinal while sound waves are transverse.
- Sound waves and waves on a string are transverse while light waves are longitudinal.

**Question No.49**

4.00

Bookmark 

Which is not an intensive variable in thermodynamics

- Chemical Potential
- Temperature
- Entropy
- Pressure

**Question No.50**

4.00

Bookmark 

During an adiabatic process, the pressure of a gas is found to be proportional to the cube of its absolute temperature. The ratio  $C_p/C_v$  for the gas is

- 3/2
- 2
- 5/3



**Question No.51**

4.00

**Bookmark** 

ABCD is a rhombus whose one angle is  $60^\circ$ . Then the ratio of the lengths of its diagonals is

- $\sqrt{2} : 1$
- $\sqrt{3} : 1$
- $2 : 1$
- $3 : 1$

**Question No.52**

4.00

**Bookmark** 

If the distance between two positive charges is decreased by half, the electrostatic force between them becomes:

- Half of the original force
- One fourth of the original force
- Four times the original force
- Two times the original force

**Question No.53**

4.00

**Bookmark** 

I don't mind \_\_\_\_\_ you with the cooking.

- for helping
- helping
- to help
- help

**Question No.54**

4.00

**Bookmark** 

Which of the following statement is incorrect for the nuclear force between two nucleons?

- It is spin dependent
- It has a non-central dependent
- It is charge dependent
- It is velocity dependent

**Question No.55**

4.00

**Bookmark** 

Which circuit element will oppose any change in current through a circuit

- Diode
- Capacitance
- Resistance
- Inductance

**Question No.56**

4.00

Bookmark 

The two most common oxides of chromium are,

- CrO and CrO<sub>3</sub>
- CrO<sub>2</sub> and CrO<sub>3</sub>
- Cr<sub>2</sub>O<sub>3</sub> and CrO<sub>3</sub>
- CrO<sub>4</sub> and CrO<sub>3</sub>

**Question No.57**

4.00

Bookmark 

Bromine is a,

- Yellow liquid
- Red solid
- Red liquid
- Violet gas

**Question No.58**

4.00

Bookmark 

Which one of the oxidation states is common for lanthanoids?

- +2
- +3
- +4
- +6

**Question No.59**

4.00

Bookmark 

The approximate change in the volume of a cube of side x meters caused by increasing the side by 3% is

- $0.9x^3m^3$
- $0.06x^3m^3$
- $0.6x^3m^3$
- $0.09x^3m^3$

**Question No.60**

4.00

Bookmark 

The professor was as usual \_\_\_\_ about his favourite subject.

- urging on
- dragging on
- going on
- rambling on

**Question No.61**

4.00

Bookmark 

The ascending order (lowest first) of ligands according to spectrochemical series is,

- $Cl^- < H_2O < NH_3$
- $Cl^- < NH_3 < H_2O$
- $H_2O < NH_3 < Cl^-$
- $NH_3 < OH_2 < Cl^-$

**Question No.62**

4.00

Bookmark 

6, 11, 21, 36, 56, ?

- 81
- 70

- 75
- 90
- 65

**Question No.63**

4.00

Bookmark 

Silver objects tarnish (turn black) in air, due to reaction with,

- Carbon disulphide
- Ozone
- Hydrogen sulphide
- Carbon dioxide

**Question No.64**

4.00

Bookmark 

If the lowest resonant frequency of a tube with both ends open is  $f_0$ , then the resonant frequency of the same tube if one end is closed is

- $\frac{f_0}{2}$
- $f_0$
- $2f_0$
- $\frac{f_0}{4}$

**Question No.65**

4.00

Bookmark 

A circular field has a circumference of 360km. three cyclists start together and can cycle 60km , 72km , and 90km a day, round the field . After how many days will they meet again at the starting point ?

- 40 days
- 45 days
- 60 days
- 50 days

**Question No.66**

4.00

Bookmark 

The statement that is NOT correct about ozone is,

- O—O bond lengths are equal
- O<sub>3</sub> is diamagnetic in nature
- Thermal decomposition of O<sub>3</sub> is endothermic
- O<sub>3</sub> has a bent structure

**Question No.67**

4.00

Bookmark 

The correct order of ionization energies of C, N, and O is (lowest first),

- N < C < O
- N < O < C
- C < O < N
- O < N < C

**Question No.68**

4.00

Bookmark 

If  $\left(\frac{1+i}{1-i}\right)^m = 1$  then the least integer m is

- 5
- 4
- 2
- 5

**Question No.69**

4.00

Bookmark 

The compound that does NOT liberate  $\text{CO}_2$  on treatment with aqueous sodium bicarbonate solution is,

- Benzoic acid
- Salicylic acid
- Benzenesulfonic acid
- Carboic acid (Phenol)

**Question No.70**

4.00

Bookmark 

Concentrated nitric acid, upon long standing, turns yellow-brown due to the formation of,

- $\text{NO}_2$
- $\text{N}_2\text{O}$
- $\text{N}_2\text{O}_4$
- $\text{NO}$

**Question No.71**

4.00

Bookmark 

SI unit of power of lens is

- dioptre
- metre
- Cm
- Watt

**Question No.72**

4.00

Bookmark 

Which of the following parameters does not characterize the thermodynamic state of matter?

- pressure
- temperature
- volume
- work

**Question No.73**

4.00

Bookmark 

How many atoms per unit cell are in fcc structure?

- 6
- 2
- 4
- 1

**Question No.74**

4.00

Bookmark 

The gas produced when calcium carbide reacts with water is,

- Methane
- Acetylene
- Butane
- Ethylene

## Question No.75

4.00

Bookmark 

The earth radiates in the infra-red region of the spectrum. The wavelength of the maximum intensity of the spectrum is correctly given by

- Rayleigh Jeans law
- Planck's law of radiation
- Stefan's law of radiation
- Wien's law

## Question No.76

4.00

Bookmark 

**Statement:** The Secretary of the housing society have requested society members to use water economically to help society to save on water tax.

**Assumptions:**

- I. Majority of the members of the society are likely to follow the request.
- II. It is desirable to reduce expenditure wherever possible.

- If only assumption I is implicit
- If both I and II are implicit
- If neither I nor II is implicit
- If only assumption II is implicit

## Question No.77

4.00

Bookmark 

The point at which the tangent to the curve  $y = \sqrt{4x - 3} - 1$  has its slope  $2/3$  is

- (2,3)
- (3,2)
- (3,1)
- (1,3)

## Question No.78

4.00

Bookmark 

A force  $F = (5i + 4j)$  N acts on an object as it moves in the x direction from the origin to  $x = 2$  m. Here the  $i$  and  $j$  denote the unit vectors in the x and y direction. The work done by the object is

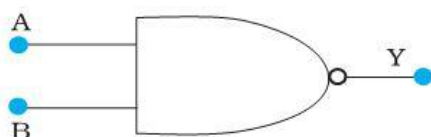
- 10 N.m
- 20 N.m
- 18 N.m
- 4 N.m

## Question No.79

4.00

Bookmark 

The symbol below stands for which logic gate?



- AND
- NOT
- OR

NAND

**Question No.80**

4.00

Bookmark

The size of 3d metals across the periodic table, from left to right side,

- Increases
- Remains constant
- First increases then decreases
- Decreases

**Question No.81**

4.00

Bookmark

The number of non-zero integral solutions of the equation  $|1 - i|^x = 2^x$  is

- one
- infinite
- finitely many
- zero

**Question No.82**

4.00

Bookmark

Which one of the following is NOT a constituent of nucleic acid?

- Uracil
- Ribose sugar
- Guanidine
- Phosphoric acid

**Question No.83**

4.00

Bookmark

Select the best description of read-only memory (ROM)

- volatile, used to store information that changes during system operation
- nonvolatile, used to store information that changes during system operation
- nonvolatile, used to store information that does not change during system operation
- volatile, used to store information that does not change during system operation

**Question No.84**

4.00

Bookmark

Gadolinium's (Z = 64) correct electronic configuration is,

- $[\text{Xe}]4f^95s^1$
- $[\text{Xe}]4f^85d^16s^1$
- $[\text{Xe}]4f^75d^16s^2$
- $[\text{Xe}]4f^85d^2$

**Question No.85**

4.00

Bookmark

The solution of  $\tan^{-1}(2x) + \tan^{-1}(3x) = \frac{\pi}{4}$  is

- 1
- 1/2
- 1/6
- 0

**Question No.86**

4.00

Bookmark

The locus of a point which is equidistant from the three lines determined by the sides of a triangle is

- incentre
- none of these
- circumcentre
- ortho centre

**Question No.87**

4.00

Bookmark 

Which one of the following is NOT a correct statement?

- $\text{SiO}_2$  has pp-pp bonds allowing it to form network solid
- $\text{SiO}_2$  and  $\text{CO}_2$  are weak acids
- $\text{CO}_2$  is a linear molecule
- $\text{CO}_2$  has pp-pp bonds between C and O atoms

**Question No.88**

4.00

Bookmark 

Which one of the following statements is NOT correct?

- Graphite has higher electrical conductivity than diamond.
- Graphite has higher thermal conductivity than diamond
- Graphite has  $\text{sp}^3$  hybridization, while diamond has  $\text{sp}^2$
- Graphite has higher C-C bond order than diamond

**Question No.89**

4.00

Bookmark 

The feasible region of a LPP is always

- an annular region
- a bounded region but not convex
- a convex region
- a bounded region

**Question No.90**

4.00

Bookmark 

The number of magnetic field lines passing normally through an unit area is known as

- magnetic energy
- magnetic flux
- magnetic flux density
- magnetic lines of force

**Question No.91**

4.00

Bookmark 

Raja has enough money to buy 75 machines worth Rs.200 each. How many machines can he buy if he gets a discount of Rs.50 on each machine?

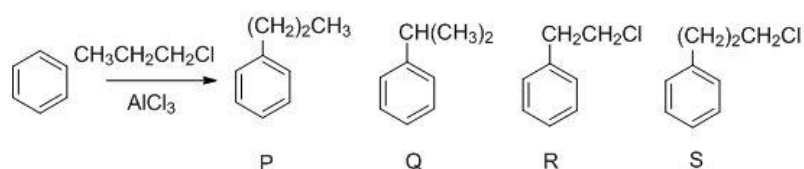
- 180
- 100
- 200
- 150

**Question No.92**

4.00

Bookmark 

The correct product of the following reaction is,



- R
- Q
- P
- S

**Question No.93**

4.00

Bookmark 

Which of the following is not used as a moderator in a nuclear reactor?

- C
- Al
- H<sub>2</sub>O
- D<sub>2</sub>O

**Question No.94**

4.00

Bookmark 

A black and a red dice are rolled. The conditional probability of obtaining a sum greater than 9, given that the black die resulted in a 5 is

- 3/4
- 1/6
- 1/3
- 1/9

**Question No.95**

4.00

Bookmark 

When a ray of light is refracted by a medium, the refracted ray does not have the same wavelength as the incident ray. This means that ...

- The frequency of the light has increased but the velocity of the light remains a constant
- The frequency of the light remains constant but the velocity of the light has decreased
- The frequency of the light remains constant but the velocity of the light has increased
- The frequency of the light has decreased but the velocity of the light remains a constant

**Question No.96**

4.00

Bookmark 

Based on the given information, answer the following question. 1. Six friends P, Q, R, S, T and U are members of a club and play different games of Football, Cricket, Tennis, Basketball, Badminton and Volleyball 2. T who is taller than P and S plays Tennis. 3. The tallest among them plays Basketball. 4. The Shortest among them plays volleyball. 5. Q and S neither play Volleyball nor Basketball. 6. R plays Volleyball 7. T is between Q who plays Football and P in order of height Who will be at the third place if they are arranged in the descending order of their height?

- T
- P
- Q
- S

**Question No.97**

4.00

Bookmark 

The coordination geometry of the metal in the complex Ni(CO)<sub>4</sub> is,

- Tetrahedral
- Trigonal bipyramidal
- Trigonal pyramidal
- Square planar

**Question No.98**

4.00

Bookmark 

A magnetic material that is slightly repelled by a magnetic field is known as

- Ferromagnetic material



- Nonmagnetic material
- Diamagnetic material
- Paramagnetic material

**Question No.99**

4.00

Bookmark 

Look at this series: 53, 53, 40, 40, 27, 27, ... What number should come next?

- 14
- 10
- 20
- 13

**Question No.100**

4.00

Bookmark 

Find the odd one out?

- Twigs : Nest
- Wood : Tree
- Gold : Ornaments
- Picture : Album