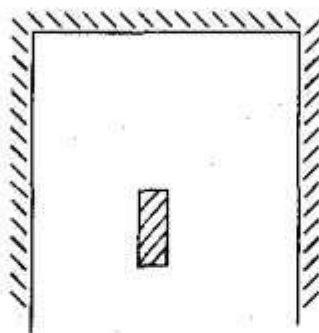


Std IX - For Homi Bhabha Bal Vaidyanik Spardha
2015 Test Paper

Q. 1. 1 kW = _____ Joule/sec.
Ⓐ 1 Ⓑ 10 Ⓒ 100 Ⓓ 1,000

Q. 2. Type of wave generated in SONAR is _____.
Ⓐ having wavelength between 0 and 20 Hz.
Ⓑ having wavelength between 20 and 20,000 Hz.
Ⓒ having wavelength more than 20,000 Hz.
Ⓓ bigger than 20,000 dB.

Q. 3. Three mirrors are kept at ($\theta = 90^\circ$) to each other as shown in the figure.
How many images can be seen with such an arrangement?



Ⓐ 3 Ⓑ 119 Ⓒ θ^2 Ⓓ ∞

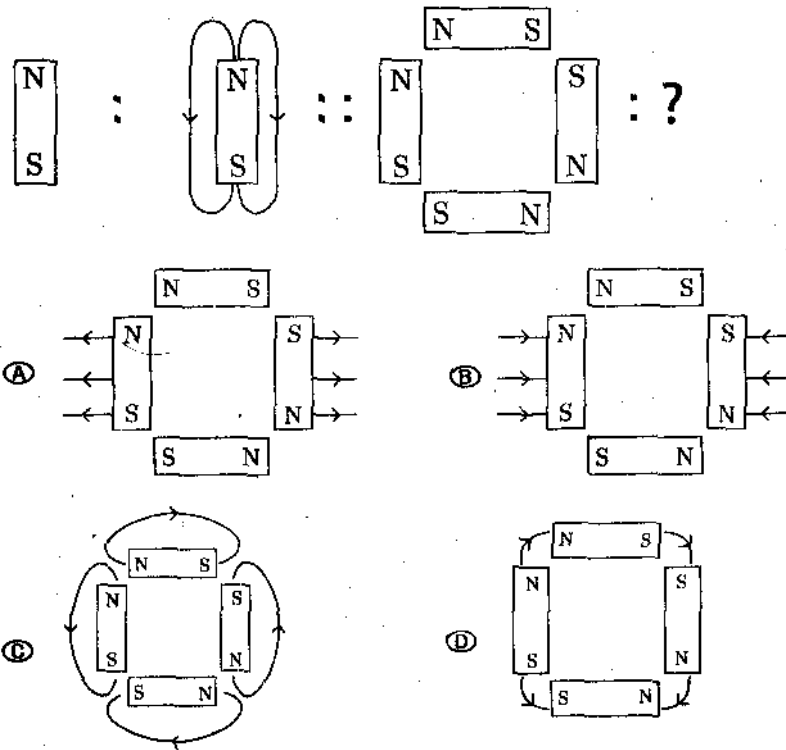
Q. 4. While doing a simple pendulum experiment, what care we need to take?
i) Switch off the nearby fans.
ii) Close the nearby windows.
iii) Switch off the nearby lights.
iv) Switch off the mobile phones in vicinity.

Ⓐ i and ii Ⓑ only iv Ⓒ only i Ⓓ iii and iv

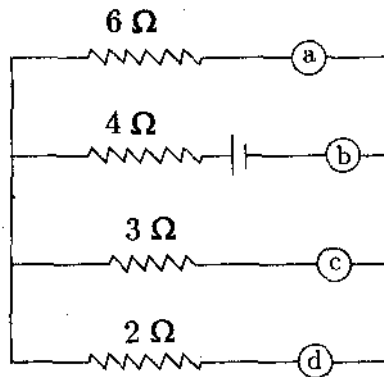
Q. 5. The Tata Institute of Fundamental Research has set up a telescope at Narayangaon, Maharashtra. This is popularity known as GMRT. Here M stands for?

Ⓐ Medium Ⓑ Meterwave Ⓒ Meter Ⓓ Mega

Q. 6. In context to magnetic lines of force, select the appropriate figure.

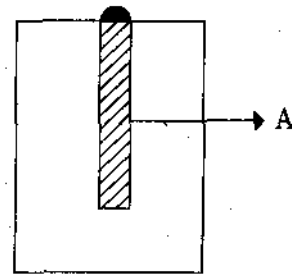


Q. 7. In a circuit shown here, which will be the most appropriate position to connect the ammeter, so that current supplied to the circuit is measured with maximum accuracy?



- (A) a (B) b (C) c (D) d

Q. 8. Diagram shows a dry cell. Identify A.



- A Carbon Rod B Zinc Rod
 C Copper Rod D $ZnCl_2$ Rod

Q. 9. A ship made up of iron sheet is able to float on water, but iron sheet sinks in water. Which of the following quality of iron changes when sheet takes the shape of a ship.

- A Mass B Density C Relative Density D Upthrust

Q. 10. A heavier body and a lighter body have same momentum. Select the *correct* option for their kinetic energy.

- A Both will have same kinetic energy.
 B Heavier body will have more kinetic energy.
 C Lighter body will have more kinetic energy.
 D Kinetic energy of these bodies does not depend on momentum.

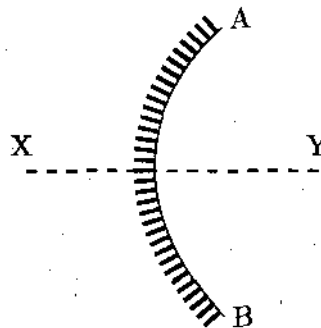
Q. 11. Find the temperature at which the temperature scales in Celsius and Fahrenheit will give same reading.

- A $-40^\circ C$ B Never C $220^\circ C$ D $273^\circ F$

Q. 12. A body of mass m is revolving along a circular path of radius R with uniform speed ' V '. The work done by it in one complete turn is _____.

- A $\frac{1}{2}mV^2$ B $\frac{mV^2}{R}$ C Zero D $\frac{1}{2}mV^2R$

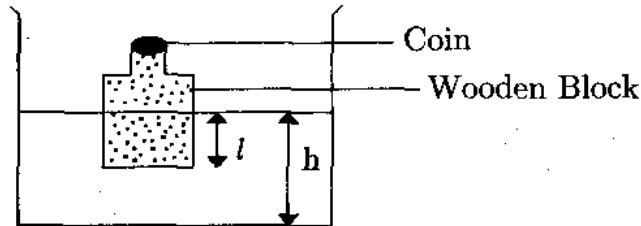
Q. 13. A mirror AB of focal length f , shown in figure, is cut along the line XY. What will be the focal length of each piece?



- A $2f$ B f
 C $f/2$ D f^2

- Q. 14.** The distance from the ground level to the surface of water in a well is 4.9 m. When a stone is dropped into the well, the splash is heard 1.014 seconds after. Find the velocity of sound in air.
- Ⓐ 350 m/s Ⓑ 360 m/s
Ⓒ 330 m/s Ⓓ 320 m/s
- Q. 15.** Choose the *correct* statement.
- Ⓐ The net force on an object travelling upward is more than the net force acting on it when falling freely.
Ⓑ Gravitational force can be attractive or repulsive.
Ⓒ An object can have energy only by virtue of its motion.
Ⓓ Work done by gravitational force of Sun on a comet over a complete orbit is always negative.
- Q. 16.** What is the *correct* unit of momentum in SI system?
- Ⓐ kg · m/s Ⓑ kg · m/s²
Ⓒ kg/m · s Ⓓ kg/m
- Q. 17.** Use of key is advised for any electrical circuit. Which of the following options works as key in our household appliances?
- Ⓐ Switch Ⓑ Fuse
Ⓒ Circuit Breaker Ⓓ Regulator
- Q. 18.** Select the *correct* option for mechanism of breaks?
- Ⓐ Release of air from the cylinder resulting in increased atmospheric pressure on it.
Ⓑ Air gets trapped in cylinder and its pressure increases.
Ⓒ Some air is released from the cylinder which reduces the speed of vehicle.
Ⓓ Air pressure in cylinder creates vacuum between the disc of the break and the wheels.
- Q. 19.** A water sprinkler completes one rotation in 5 seconds at a speed of 44 m/s. Calculate the area drenched by the sprinkler in 5 seconds.
- Ⓐ 2,200 m² Ⓑ 8,800 m²
Ⓒ 3,650 m² Ⓓ 3,850 m²

- Q. 20.** A wooden block with a coin placed on its top floats on water as shown in figure. ' l ' and ' h ' are as shown.



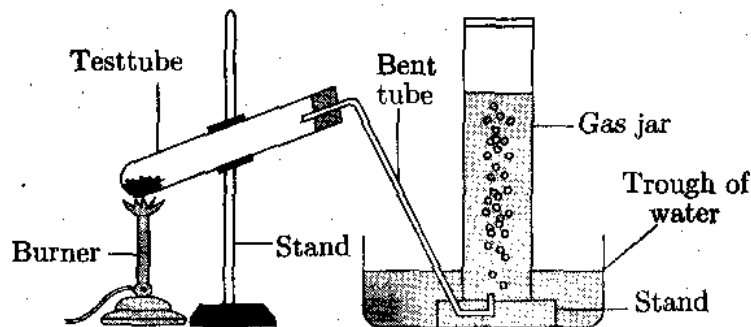
After some time, the coin falls into the water. Hence now _____.

- A l decreases and h increases B l increases and h decreases
 C both l and h will increase D both l and h will decrease
- Q. 21.** A piston applies a force of 36 N on a square area having length 12 cm. Find the pressure acting on this plate.
 A 25 Pa B 250 Pa C 2,500 Pa D 25,000 Pa
- Q. 22.** For any sound wave, unit of amplitude is _____.
 A Second B Meter C Hertz D Decibel
- Q. 23.** Identify the *correct* statement:
 A Substances having lower specific heat will consume higher amount of energy for small increment of temperature.
 B Water contracts when cooled below 4 °C.
 C Conduction is faster method of heat transfer as compared to convection.
 D Air can accommodate more amount of vapour with rise in temperature.
- Q. 24.** Consider following experiment and select the *correct* option for energy transformation.
 "A string suspended on a stand is twisted with hand and set free."
 A Muscular energy → Kinetic energy → Potential energy → Kinetic energy
 B Frictional energy → Potential energy → Kinetic energy
 C Muscular energy → Potential energy → Kinetic energy → Potential energy
 D Potential energy → Kinetic energy → Potential energy → Kinetic energy

- Q. 25.** A beam of light is passing through a prism. Which of the following objects should be held in front of the spectrum obtained from the prism, so that the original beam of light will be visible again?
- Ⓐ If another similar prism is held in upside down position
 - Ⓑ If another similar prism is held in same position as original
 - Ⓒ If a convex lens is kept at a distance of its focal length from the prism
 - Ⓓ If a plain glass is held at a random distance.
- Q. 26.** Surface material of an inclined plane and a horizontal plane is exactly identical. Choose the *correct* option for these surfaces.
- Ⓐ An object in motion will experience larger frictional force on inclined surface.
 - Ⓑ An object in motion will experience larger frictional force on horizontal surface.
 - Ⓒ An object in motion will experience identical frictional force on both surfaces.
 - Ⓓ An object in motion will experience negative frictional force on inclined surface.
- Q. 27.** Select the *correct* option for unit of G?
- Ⓐ N . kg
 - Ⓑ $\text{Nm}^2 \text{kg}^{-2}$
 - Ⓒ kg/ N
 - Ⓓ N . kg^2
- Q. 28.** A uniform object of density 0.6 gm/cm^3 is floating in a liquid of density 0.8 gm/cm^3 . To what level will the object sink?
- Ⓐ 50 % of its volume
 - Ⓑ 75 % of its volume
 - Ⓒ 80 % of its volume
 - Ⓓ 90 % of its volume
- Q. 29.** Which of the following quality will help you to distinguish between two sound notes of same frequency?
- Ⓐ Pitch
 - Ⓑ Timbre
 - Ⓒ Tone
 - Ⓓ Sharpness
- Q. 30.** Choose the *incorrect* statement/s related to Lithium cell.
- 1) Negative pole is of Lithium iron phosphate
 - 2) Positive pole is of Carbon
 - 3) Space between poles is filled with Lithium salt
 - 4) High possibility of damage
 - 5) Can not be recharged, but has to be replaced
- Ⓐ 1 and 2
 - Ⓑ Only 4
 - Ⓒ 1 and 3
 - Ⓓ 4 and 5
- Q. 31.** How many atoms are present in 480 g of Ozone?
- Ⓐ 6.022×10^{23}
 - Ⓑ 6.022×10^{24}
 - Ⓒ 18.066×10^{23}
 - Ⓓ 18.066×10^{24}

- Q. 32. During evaporation of a liquid, its particles change to vapour state from _____.
- (A) its surface (B) its middle portion
(C) its bottom (D) all over the liquid

- Q. 33. Select the *correct* option for the chemicals used and their proportion in the given setup.



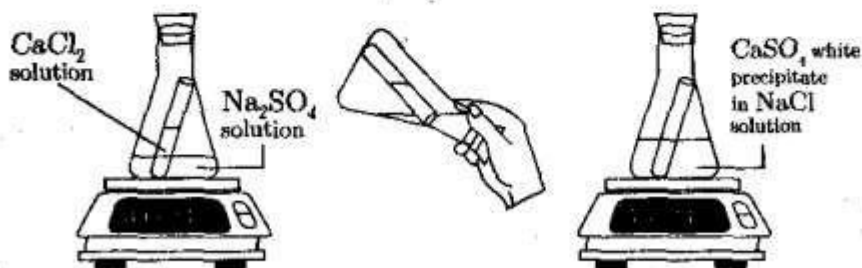
LABORATORY PREPERATION OF OXYGEN

- (A) Potassium chlorate and Manganese dioxide, 5:1
(B) Potassium chlorate and Nickel, 5:1
(C) Potassium chlorate and Manganese dioxide, 1:5
(D) Potassium chlorate and Nickel, 1:5
- Q. 34. If percentage of Nitrogen and Oxygen in air happens to be interchanged, which of the following is possible?
- (A) Breathing will become easier
(B) Increase in forest fires
(C) Increase in the number of rhizobium bacteria
(D) Increase in stamina
- Q. 35. What will be the density of resultant solution if 3 kg salt is dissolved in 1 litre water.
- (A) 4 g/cm³ (B) 1 g/cm³ (C) 1.5 g/cm³ (D) 3 g/cm³
- Q. 36. In which crystals, every Carbon atom has four atoms of Carbon at specific distances around it?
- (A) Fullerin (B) Methane (C) Diamond (D) Graphite
- Q. 37. What is the molecular mass of Sodium sulphate?
- (A) 71 (B) 119 (C) 165 (D) 142

- Q. 38.** Which statement is *correct* for stainless steel?
Ⓐ Only Iron gives hardness
Ⓑ Iron makes steel scratch proof
Ⓒ Chromium and Nickel give silvery look
Ⓓ Nickel renders magnetic properties to stainless steel.
- Q. 39.** What is observed during transition of electrons between the orbits?
Ⓐ It may absorb specific amount of energy
Ⓑ It may emit specific amount of energy
Ⓒ It may absorb or emit specific amount of energy
Ⓓ All of these
- Q. 40.** Complete the following analogy for exceptional properties of metals.
Low density Sodium:: Low melting point : _____
Ⓐ Sodium Ⓑ Aluminium Ⓒ Calcium Ⓓ Magnesium
- Q. 41.** Which of the following statements is *not correct*?
Ⓐ The electrons revolve around the nucleus in specific orbits.
Ⓑ Interorbital movement of electrons is spiral.
Ⓒ Atomic number of an atom is the total number of protons present in it.
Ⓓ The maximum number of electrons present in any orbit of an atom can be calculated with the help of formula, $2n^2$
- Q. 42.** Which of the following is an example of natural polymer?
Ⓐ Cellulose Ⓑ 2 x 2 cotton Ⓒ Terrycot Ⓓ Cotton silk
- Q. 43.** Density of pure water is _____.
Ⓐ 0.1 mg/cm³ Ⓑ 1 kg/cm³ Ⓒ 1 mg/cm³ Ⓓ 1 gm/cm³
- Q. 44.** Which of the following processes is a chemical reaction?
Ⓐ Chalk powder and marble pieces are ground together
Ⓑ Sulphur is added in Sodium chloride solution
Ⓒ Alcohol is added in water
Ⓓ Sodium is added in water
- Q. 45.** For correcting alkaline soil, use of _____ should be most appropriate.
Ⓐ ash Ⓑ urea Ⓒ green manure Ⓓ bone meal
- Q. 46.** In the atom of which of the following elements, number of protons are *not* equal to the number of neutrons?
Ⓐ Ca Ⓑ Mg Ⓒ Na Ⓓ N

- Q. 47.** Which of the following holds *true* in the process of freezing (solidification)?
- Ⓐ Heat energy is released, interparticle attraction decreases, interparticle space increases.
 - Ⓑ Heat energy is absorbed, interparticle attraction increases, interparticle space decreases.
 - Ⓒ Heat energy is absorbed, interparticle attraction decreases, interparticle space increases.
 - Ⓓ Heat energy is released, interparticle attraction increases, interparticle space decreases.
- Q. 48.** Choose the *correct* statement/s for noble metals.
- (i) Platinum and gold are examples of noble metals.
 - (ii) They are generally not affected by air, water, acid, heat etc.
 - (iii) Ordinarily they do not take part in chemical reactions.
 - (iv) In nature they are found in their elemental form.
- Ⓐ All four Ⓑ i, ii, and iii Ⓒ i, iii and iv Ⓓ i and iii
- Q. 49.** Select the *correct* option for piped gas.
- Ⓐ It cannot be liquified.
 - Ⓑ It can be used as autogas.
 - Ⓒ It can be used as eco-friendly substitute for CFC
 - Ⓓ It is denser as compared to LPG.
- Q. 50.** Which of the following are true solutions?
- (i) ENO salt in water (ii) Tomato soup
 - (iii) *Aam Panna* (iv) Filtered black tea
- Ⓐ i and ii Ⓑ i and iv Ⓒ i, ii and iv Ⓓ ii and iii
- Q. 51.** Select the *odd* salt from the following:
- Ⓐ Ammonium chloride Ⓑ Ammonium sulphate
 - Ⓒ Sodium phosphate Ⓓ Aluminium chloride
- Q. 52.** Select the *odd* option on the basis of electronic configuration:
- Ⓐ K^+ Ⓑ Al^{3+} Ⓒ Cl^- Ⓓ Ar
- Q. 53.** What is the proportion of Carbon and Oxygen by weight in Carbon monoxide?
- Ⓐ 2 : 8 Ⓑ 4 : 3 Ⓒ 3 : 4 Ⓓ 8 : 2

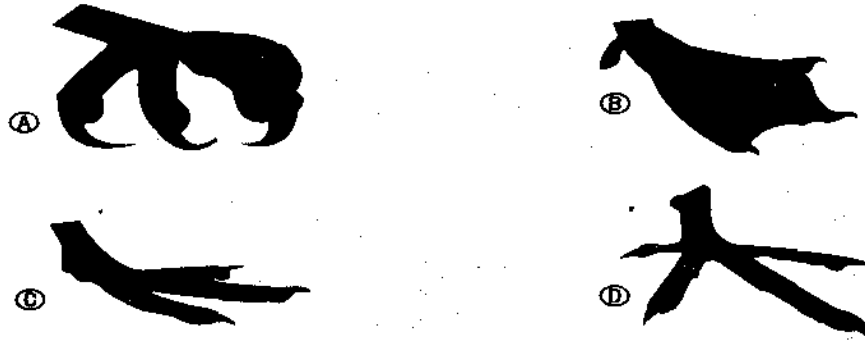
- Q. 54.** Battle tanks are made out of hard but lightweight materials. Which of the following materials are used to gain desired quality?
- Ⓐ Aluminium, Magnesium, Nylon, Carbon
 Ⓑ Aluminium, Steel, Fibre glass, Magnesium
 Ⓒ Aluminium, Nylon, Fibre glass, Magnesium
 Ⓓ Aluminium, Magnesium, Iron, Nylon
- Q. 55.** Find the *odd* physical phenomenon.
- Ⓐ Rubbing both hands on each other in winter
 Ⓑ Keeping water in an earthen pot (*matka*) in summer
 Ⓒ Pouring very hot tea in a saucer
 Ⓓ Applying spirit at the site before giving an injection
- Q. 56.** An element X has valency = 3. What will be the molecular formula of Carbonate of element X?
- Ⓐ X_2CO_3 Ⓑ XCO_3 Ⓒ $X_2(CO_3)_3$ Ⓓ $X(CO_3)_3$
- Q. 57.** Which of the following is hexa-atomic molecule?
- Ⓐ Aluminium oxide Ⓑ Potassium dichromate
 Ⓒ Sodium bicarbonate Ⓓ Sulphuric acid
- Q. 58.** Select the *correct* option for the reaction, 'burning of Magnesium wire in air.'
- Ⓐ Combination, exothermic, oxidation
 Ⓑ Oxidation, combination, endothermic
 Ⓒ Displacement, endothermic, reduction
 Ⓓ Combination, exothermic, reduction
- Q. 59.** Observe the following experiment and select the *correct* option.



- Ⓐ Experiment proves law of conservation of matter
 Ⓑ Experiment proves Proust's law
 Ⓒ Demonstration of decomposition reaction
 Ⓓ Demonstration of combination reaction

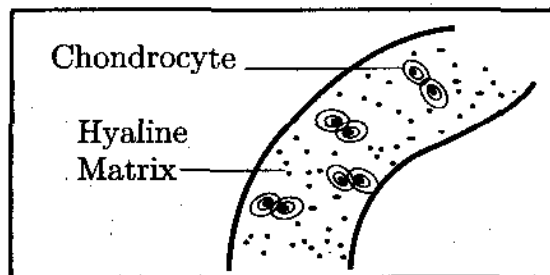
- Q. 60. How much is the difference between boiling points of Ethanol and pure water?
 (A) 68 °F (B) 22 °C
 (C) 24 °C (D) 44 °C

- Q. 61. Which of the following shows the modification of feet for a fast runner bird like ostrich.



- Q. 62. On the basis of nature of diseases, select the *odd* group.
 (A) Hepatitis, Rabies, Flu (B) Leprosy, Typhoid, Enteritis
 (C) Scurvy, Rickets, Pellagra (D) Cancer, Arthritis, Cataract

- Q. 63. Identify the tissue.



- (A) Cartilage (B) Bone (C) Adipose (D) Ligament

- Q. 64. Which of the following statement/s is/are *true* in context of respiration?
 (1) During exhalation, muscles of the diaphragm contract.
 (2) Fast, repeated contractions of diaphragm muscles cause hiccups
 (3) Muscles attached to rib cage contract during exhalation.

- (A) Only 1 (B) Only 2 (C) 1 and 3 (D) 1, 2 and 3

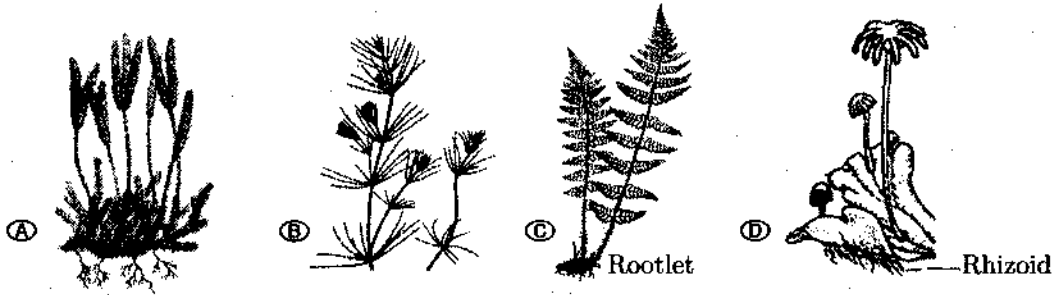
- Q. 65. Consumption of jaggery, dates, chikoo, wheat and green leafy vegetables can help prevent _____.
- Ⓐ Night blindness Ⓑ Goitre Ⓒ Anaemia Ⓓ Rickets
- Q. 66. Which of the following is an example of storage stem showing vegetative propagation?
- Ⓐ Crysanthemum and potato Ⓑ Asparagus and dahlia
 Ⓒ Sweet Potato and ginger Ⓓ Canna and yam
- Q. 67. Which of the following statements is *correct*?
- Ⓐ One time infection by AIDS virus is insufficient to weaken the immune system.
 Ⓑ *Measles* is a bacterial disease and affects the central nervous system in mammals.
 Ⓒ Diarrhoea is caused due to bacterial infections.
 Ⓓ DPT vaccine is given to the infants for immunity in the diseases, whooping cough, diphtheria and tetanus.
- Q. 68. Which of the following is a source of nitrogenous compound in diet?
- Ⓐ *Arhar* and moth beans Ⓑ Soyabean and *Til*
 Ⓒ *Moong* and Ragi Ⓓ Sprouted pulses and cod liver oil
- Q. 69. Secretion of which gland will *not* enter the blood directly?
- Ⓐ Thymus gland Ⓑ Pineal gland
 Ⓒ Sebaceous gland Ⓓ Adrenal gland
- Q. 69. Secretion of which gland will *not* enter the blood directly?
- Ⓐ Thymus gland Ⓑ Pineal gland
 Ⓒ Sebaceous gland Ⓓ Adrenal gland
- Q. 70. Which of the following cell organelle is *not* bound by cell membrane?
- Ⓐ Mitochondrion Ⓑ Ribosomes Ⓒ Chloroplast Ⓓ Lysosome
- Q. 71. The largest cell in human body is _____.
- Ⓐ neuron Ⓑ liver cell Ⓒ cell of heart muscles Ⓓ cell of pancreas
- Q. 72. The process of transformation of larva into an adult through remarkable structural changes is called Metamorphosis. In which of the following organisms this phenomenon is not seen?
- Ⓐ Beetle Ⓑ Toad
 Ⓒ Mosquito Ⓓ Earthworm

- Q. 73.** Which of the following living being shows lowest level of organisation?
 (A) Moss (B) Mucor
 (C) Euglena (D) Leech
- Q. 74.** Cardiac muscles are _____.
 (A) branched multinucleate cells (B) unbranched spindle shaped cells
 (C) cylindrical uninucleate cells (D) branched uninucleate cells
- Q. 75.** Which of the following is *not* suitable for pisciculture in fresh water pond?
 (A) Pomfret (B) Mrigal (C) Rohu (D) Catla
- Q. 76.** Select the *odd one out* on the basis of preventive measures.
 (A) Including fibres in diet
 (B) BCG
 (C) DOTS
 (D) Advertisements by health department to clean flower pots at home every week.
- Q. 77.** Which of the following parts of dead animals is used for stitching surgical wounds?
 (A) Intestine of animals (B) Tail hair of horse
 (C) Hair of mane of camel (D) Inner layer of skin.
- Q. 78.** Select the *odd one out* on the basis of seed sowing method.
 (A) Bittergourd (B) Sugarcane (C) Watermelon (D) Pumpkin
- Q. 79.** Amit had to undergo emergency blood transfusion. His young healthy friend willingly donated blood. What must be the blood group of the friend?
 (A) AB + (B) AB -
 (C) O + (D) O -
- Q. 80.** Which of the following antibiotics is prepared from streptomysis aureofaciens?
 (A) Chloromycetin (B) Streptomycin
 (C) Tetracyclin (D) Erethromycin
- Q. 81.** Find the *odd one out*.
 (A) Gum (B) Chitin
 (C) Tannin (D) Latex

Q. 82. Which of the following vegetables fall in the category of sour leafy vegetables?

- Ⓐ Arum (*Alu*) Ⓑ *Chuka*
 Ⓒ *Rajgeera* Ⓓ *Methi*

Q. 83. Which of the following is a Bryophyte?



Q. 84. Vaccine for hepatitis _____ also prevents hepatitis _____.

- Ⓐ B, D Ⓑ C, A
 Ⓒ C, B Ⓓ A, C

Q. 85. Select the *odd* one out on the basis of reproduction.

- Ⓐ Ovule Ⓑ Pollen
 Ⓒ Scion Ⓓ Adventitious bud

Q. 86. Match the columns A and B

A		B
i)	Golgi Complex	a) DNA is present
ii)	Lysosomes	b) Expell excess water
iii)	Vacuoles	c) Keep the cell clean
iv)	Plastid	d) Produce lysosome

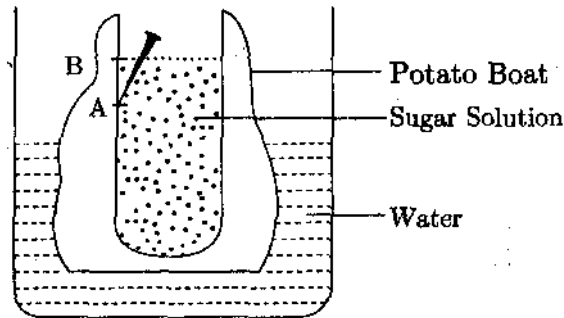
- Ⓐ i - d, ii - c, iii - b, iv - a Ⓑ i - b, ii - d, iii - c, iv - a
 Ⓒ i - d, ii - c, iii - a, iv - b Ⓓ i - b, ii - a, iii - c, iv - d

Q. 87. Select the pair of hybrid strains of jowar.

- Ⓐ Jaya and Sonalika Ⓑ HMT and Sona
 Ⓒ Sihor and Sona Ⓓ Vasant and Swati

- Q. 88. Name the phenomenon demonstrated by the experimental set up in the given figure. Note that the potato is peeled before making the potato boat.

A : Initial level
B : Final level



- (A) Turgidity (B) Imbibition (C) Osmosis (D) Capillarity
- Q. 89. Which of the following is diploblastic?
(A) Amoeba (B) Hydra (C) Sycon (D) Pila
- Q. 90. Select the *incorrect* statement.
(A) Ultimate source of energy for tropical rainforest and frozen tundra is same.
(B) Trophic level of a living organism is not constant.
(C) Pyramid of energy is upright.
(D) Scavengers are essential for returning the nutrients back to the ecosystem.
- Q. 91. Mount Everest shifted by around 3 cm in _____ direction due to devastating earthquake in Nepal.
(A) South East (B) South West
(C) North East (D) South
- Q. 92. Low pressure belt, which is a phenomenon essential for rain, exhibits wind speed of _____ km/hr.
(A) < 32 (B) < 60 (C) 60 to 90 (D) 119 to 220
- Q. 93. Which species of tigers is supposed to be the largest in size in the world?
(A) South African (B) Indian (C) Malaysian (D) Siberian
- Q. 94. Gatiman express, first semi - superfast train of India runs on _____.
(A) Magnetic Levitation
(B) Electricity
(C) Electricity and Diesel combination, in Metrocities and outside respectively
(D) Diesel

- Q. 95.** Generic medicines are affordable medicines and are being promoted these days. Which of the following is not the characteristic of generic medicine?
- Ⓐ They are equally effective as their branded counterpart.
 - Ⓑ They are chemically identical to their branded counterpart.
 - Ⓒ Generic substitutes for newly developed drugs are immediately available in the market.
 - Ⓓ Mode of administration of these drugs is same as branded medicines.

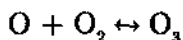
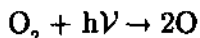
Question numbers 96 to 100 are based on the paragraph given below. Read the paragraph carefully and answer the questions.

OZONE LAYER

The Ozone layer is a belt of naturally occurring Ozone gas that sits 15 to 30 kilometer above Earth and serves as a shield from the harmful ultraviolet radiation emitted by the Sun. Ozone is a highly reactive molecule that contains three Oxygen atoms.

The Ozone molecule is unstable and when ultraviolet light hits Ozone, it splits into a molecule of O₂ and an individual atom of Oxygen, through a continuous process called the Ozone-Oxygen cycle.

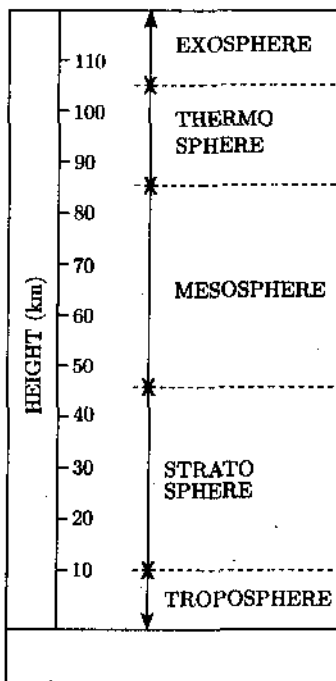
Chemically, this can be described as:



Today, there is a widespread concern that the Ozone layer is deteriorating due to the release of pollution containing the chemicals Chlorine and Bromine. Such deterioration allows large amounts of ultraviolet rays to reach Earth, which can cause skin cancer and cataracts in humans and harm animals as well.

Extra ultraviolet radiation reaching Earth also inhibits the reproductive cycle of phytoplankton, single-celled organisms such as algae that make up the bottom rung of the food chain.

The Ozone layer above the Antarctic has been particularly impacted by pollution. Low temperature of this region speeds up the conversion of CFC to Chlorine. In the southern spring and summer, when the Sun shines for long periods of the day, chlorine reacts with ultraviolet rays, destroying Ozone on a massive scale.



- Q. 96.** With the help of information given in paragraph and diagram, name the layer of Earth's atmosphere where the Ozone blanket is present.
 Ⓐ Stratosphere Ⓑ Aerosphere Ⓒ Troposphere Ⓓ Ionosphere
- Q. 97.** In an aquatic ecosystem what will be the effect of Ozone depletion?
 (i) Primary production will increase
 (ii) Zooplanktons planktons will decrease
 (iii) Oxygen level will increase
 Ⓐ i and ii Ⓑ ii and iii Ⓒ Only ii Ⓓ i, ii and iii
- Q. 98.** Select the *odd one out* in context of measures of controlling ozone depletion.
 Ⓐ Air Cooler Ⓑ Exhaust Fan
 Ⓒ Air-Conditioner Ⓓ Humidifier
- Q. 99.** Which of the following diseases is most probable in Ozone depleted area?
 (i) Cataract (ii) Lung Cancer (iii) Tumor (iv) Glaucoma
 Ⓐ Only i Ⓑ i and iv Ⓒ ii and iii Ⓓ only iv
- Q. 100.** In above stated reaction h represents:
 Ⓐ Planck's Constant Ⓑ Density of Atmosphere
 Ⓒ Specific Heat Ⓓ Height

Test Paper Solution

- A. 1. (D) **Explanation:** $1 \text{ kW} = 1,000 \text{ W}$ and $1 \text{ W} = 1 \text{ Joule/sec}$.
 $\therefore 1 \text{ kW} = 1,000 \text{ Joule/sec}$.
- A. 2. (C) **Explanation:** SONAR technique uses ultrasonic waves. Hence, waves generated in SONAR will have wavelength more than 20,000 Hz.
- A. 3. (D) **Explanation:** When we keep two plane mirrors parallel to each other, we get infinite number of images.
- A. 4. (A) **Explanation:** To measure the periodic time of a pendulum accurately, it must oscillate in only one plane. There should be no disturbance due to wind.
- A. 5. (B) **Explanation:** M stands for meterwave.
- A. 6. (C) **Explanation:** Magnetic lines of force start from north pole (N) and end at south pole (S) outside the magnet.
- A. 7. (B) **Explanation:** In the given circuit, ammeter should be connected in series with the cell as the current is produced by cell and then gets divided into the branches of the circuit.
- A. 8. (A) **Explanation:** In the given figure, A represents Carbon rod which is +ve terminal of the cell.
- A. 9. (B) **Explanation:** When iron sheet takes shape of a ship, its volume increases and density decreases.
- A. 10. (C) **Explanation:**

$$m_1 v_1 = m_2 v_2$$
$$\text{Let } m_1 > m_2$$

$$m_1 = \frac{m_2 v_2}{v_1} \text{ and } m_2 = \frac{m_1 v_1}{v_2}$$

$$\therefore \frac{1}{2} m_1 v_1^2 = \frac{1}{2} \frac{m_2 v_2}{v_1} v_1^2 = \frac{1}{2} m_2 v_1 v_2$$

$$\text{and } \frac{1}{2} m_2 v_2^2 = \frac{1}{2} \frac{m_1 v_1}{v_2} v_2^2 = \frac{1}{2} m_1 v_1 v_2$$

$$\therefore \frac{1}{2} m_1 v_1^2 < \frac{1}{2} m_2 v_2^2$$

A. 11. (A) Explanation: $\frac{F - 32}{180} = \frac{C}{100}$

Let $\theta = F = C$

$$\frac{\theta - 32}{180} = \frac{\theta}{100}$$

$$\therefore 100(\theta - 32) = 180\theta$$

$$\therefore -3200 = 180\theta - 100\theta$$

$$\therefore -3200 = 80\theta$$

$$\therefore \theta = -40$$

A. 12. (C) Explanation: Work = Force x Displacement

As displacement of the body is zero, work done by it is also zero.

A. 13. (B) Explanation: Focal length is half of the radius of curvature for both concave and convex mirrors. This is shown by $F = R/2$. When we cut the mirror, its radius of curvature remains unchanged.

A. 14. (A) Explanation: $S = ut + \frac{1}{2}at^2$
 $S = \text{distance travelled} = 4.9 \text{ m.}, u = 0$
 $a = g = 9.8 \text{ m/s}^2$
 $\therefore 4.9 = 0 + \frac{1}{2} \times 9.8 \times t^2$
 $\therefore t^2 = 1$
 $\therefore t = \pm 1 \text{ sec.}$

Hence, the stone reaches at the surface of water in 1 sec. But the sound of splash is heard after 1.014 s i.e. (1.014 - 1 = 0.014 s.) later. This time is taken by the sound to travel the distance of 4.9 m.

$$\therefore \text{Velocity of sound} = 4.9/0.014 = 350 \text{ m/s.}$$

A. 15. (A)

A. 16. (A) Explanation: Momentum = Mass x Velocity
 Unit of Momentum = Unit of mass x Unit of velocity
 = kg.m/s.

A. 17. (A)

A. 18. (B)

A. 19. (D) Explanation: Speed of the sprinkler = 44 m/s.

Time required for one rotation = 5 sec.

$$\therefore \text{Perimeter of the area drenched by the sprinkler} = 44 \times 5 = 220 \text{ m.}$$

$$\therefore \text{Radius of the area} = \frac{7}{44} \times 220 = 35 \text{ m.}$$

$$\therefore \text{Area drenched} = \frac{22}{7} \times 35 \times 35 = 3,850 \text{ m}^2$$

A. 20. (D) **Explanation:** When a coin falls in the water, weight of the wooden block will decrease. So, it will move in the upward direction and l will decrease. When any substance is dipped more and more in water, level of water in pot increases. When we take out a substance from water, the level in the pot decreases. Hence h will decrease.

A. 21. (C) **Explanation:** Pressure \approx Force/Area

$$= \frac{36}{0.12 \times 0.12} = \frac{36}{144 \times 10^{-4}} \text{ Nm}^{-2} \text{ (pa)}$$

$$= 1/4 \times 10^4 = 2,500 \text{ pa}$$

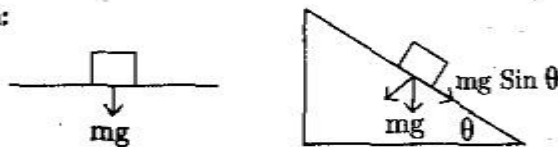
A. 22. (B)

A. 23. (D)

A. 24. (A) **Explanation:** When we twist the string with hand, we use muscular energy. Due to this energy, the string gets rotational motion and kinetic energy (K.E.). This K. E. is stored in the string as potential energy till we set the string free. When we set the string free, it starts rotating in opposite direction. That means its Potential energy (P.E.) gets converted into K. E.

A. 25. (A) **Explanation:** When light passes through the prism, refraction and dispersion of light takes place. If another similar prism is held in upside down position in front of the spectrum, refraction will take place, but in opposite direction. This nullifies dispersion. The rays of different colours from the spectrum come together and we will get original beam of light.

A. 26. (B) **Explanation:**



At plane surface, weight (mg) acts along perpendicular direction to the surface.

Whereas inclined surface, mg acts at some angle (θ) less than 90° .

Frictional force depends on surface ($\mu =$ coefficient of friction) and weight (mg).

For plane surface $F_f = \mu (mg)$

For inclined surface $= F_f = \mu (mg \sin \theta)$

Hence on horizontal surface F_f is maximum.

A. 27. (B)

A. 28. (B) Explanation: For floating object:

Weight of the object = Weight of the displaced liquid

Let V = Volume of the object

V_1 = Volume of the displaced liquid

d = Density of the object

ρ = Density of the liquid

$$\therefore Vdg = V_1\rho g$$

$$\therefore \frac{V_1}{V} = \frac{d}{\rho} = \frac{0.6}{0.8} = 75\%$$

A. 29. (B)

A. 30. (B)

A. 31. (D) Explanation: No. of atoms in 480 g of Ozone =?

one molecule of Ozone has 3 atoms of Oxygen

Atomic weight of Oxygen = 16

$$\therefore \text{Molecular mass of Ozone} = 3 \times 16 = 48$$

48 g of Ozone = 1 mole

$$\therefore 480 \text{ g of Ozone} = 10 \text{ mole}$$

1 mole of Ozone = 6.022×10^{23} molecules of O_3

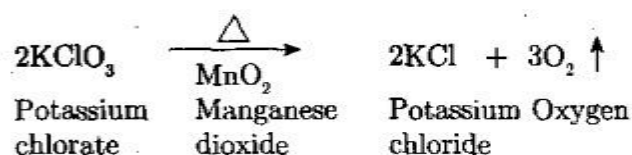
$$\therefore 10 \text{ moles of } O_3 \text{ contains } 10 \times 6.022 \times 10^{23} \text{ molecules of } O_3$$

There are three atoms in each molecules.

$$\text{No. of atoms} = 3 \times 6.022 \times 10^{24} = 18.066 \times 10^{24}$$

A. 32. (A)

A. 33. (A) Explanation: The set up shows the laboratory Preparation of Oxygen.



A. 34. (B) Explanation: Large amount of Oxygen will help burning. But higher pressure of Oxygen does not help breathing.

A. 35. (A) Explanation: $3 \text{ kg/l} = 3,000 \text{ g} / 1,000 \text{ ml}$
 $= 3 \text{ g/cm}^3$

A. 36. (C)

A. 37. (D) **Explanation:**

We have to find out molecular mass of Na_2SO_4

Atomic mass of Na = 23 \therefore 2 x 23 = 46

Atomic mass of S = 32

Atomic mass of O = 16 \therefore 4 x 16 = 64

\therefore Molecular mass of Sodium Sulphate = 46+32+64 = 142

A. 38. (C)

A. 39. (D) **Explanation:** If an electron has to move from lower to higher orbit or shell, it should absorb energy. For reverse movement, it should release energy.

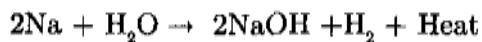
A. 40. (A) **Explanation:** Sodium is a low density metal having low melting point. Generally metals have high density and high melting point.

A. 41. (B) **Explanation:** Interorbital movement of electron is not spiral.

A. 42. (A) **Explanation:** Rest all are synthetic substances or a blend of synthetic and natural threads. Cellulose is a type of carbohydrate.

A. 43. (D) **Explanation:** Density of pure water is 1 g/cm³.

A. 44. (D) **Explanation:** Reactions in option A, B and C are physical changes. Sodium is highly reactive. It reacts with water to form Sodium hydroxide with release of heat.



A. 45. (C) **Explanation:** Green manure contains humus which is acidic in nature. Thus, it will help in neutralising.

A. 46. (C) **Explanation:** Number of Protons is not equal to number of Neutrons in Na.

Element	No. of Protons	No. of Neutrons
Na	11	12
Ca	20	20
Mg	12	12
N	7	7

A. 47. (D)

A. 48. (A)

A. 49. (A) **Explanation:** Piped gas cannot be liquified and hence it is delivered through pipe. Rest all are incorrect statements.

A. 50. (B)

A. 51. (C) **Explanation:** Sodium phosphate is alkaline in nature. Rest all are acidic salts.

A. 52. (B) **Explanation:** On the basis of electron configuration, K^+ , Al^{3+} , Cl^- , Ar;

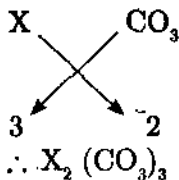
Element/ Ion	Z	No. of electrons	Configuraution
K^+	19	18	2, 8, 8
Al^{3+}	13	10	2, 8
Cl^-	17	18	2, 8, 8
Ar	18	18	2, 8, 8

A. 53. (C) **Explanation:** Atomic mass of Carbon = 12
Atomic mass of Oxygen = 16
 \therefore For Carbon monoxide (CO),
C : O = 12 : 16
= 3 : 4

A. 54. (C)

A. 55. (A) **Explanation:** Rest all are endothermic phenomena.

A. 56. (C) **Explanation:** Valency of X is 3 and that of Carbonate is -2 . Hence,



A. 57. (C) Explanation:

Name	Molecular formula	No. of atoms
Aluminium oxide	Al_2O_3	5 (Pentaatomic)
Potassium dichromata	$K_2Cr_2O_7$	11 (Hendecaatomic)
Sodium Bicarbonate	$NaHCO_3$	6 (Hexaatomic)
Sulphuric acid	H_2SO_4	7 (Heptaatomic)

A. 58. (A)

A. 59. (A)

A. 60. (B) Explanation: Find out the difference between boiling point of ethanol and boiling point of water.

Boiling point of pure water = $100\text{ }^\circ\text{C}$

Boiling Point of Ethanol = $78\text{ }^\circ\text{C}$

\therefore Difference = $100 - 78 = 22\text{ }^\circ\text{C}$

A. 61. (C) Explanation: A fast runner bird like Ostrich has three toes directed forward.

A. 62. (B) Explanation: Option A shows all viral diseases.
Option C shows deficiency diseases.
Option D shows all non-communicable diseases.
Option B does not show any such basis.

A. 63. (A)

A. 64. (B) Explanation: During exhalation, muscles of the diaphragm and muscles attached to rib cage relax bringing rib cage downward and inward making the diaphragm dome shaped. This increases pressure in lungs and air gets pushed out. During hiccups, continuous involuntary contractions of diaphragm take place.

A. 65. (C) Explanation: Anaemia is a deficiency disease caused due to lack of Iron in diet. Jaggery, dates, green leafy vegetables and *chikoo* are a good sources of Iron.

A. 66. (D) Explanation: Option A – Crysanthemum is not a storage stem.
Option B – Both are storage roots.
Option C – Sweet Potato is a storage root.
Option D is the answer.

- A. 67. (D) Explanation:** Even one encounter with with HIV leads to AIDS. Measles is a viral disease. Bacterial infection is not the only cause of diarrhoea. It can be caused due to infections, emotional stress, food poisoning, allergy etc. Bacterial infection is not the only cause of diarrhoea.
- A. 68. (A) Explanation:** Proteins are the source of nitrogenous compounds in diet. *Arhar* and moth beans are the primary sources of proteins. Also Soyabean, *Moong* and sprouted pulses are a source of protein. *Ragi* is primarily a carbohydrate source. *Til* and cod liver oil are oils. *Til* is a source of vitamin E and cod liver oil is that of vitamin A.
- A. 69. (C) Explanation:** Rest of the glands are endocrine or ductless glands.
- A. 70. (B) Explanation:** Ribosomes are just ribosomal RNA granules.
- A. 71. (A)**
- A. 72. (D)**
- A. 73. (C) Explanation:** *Euglena* is unicellular hence shows cellular level of organisation.
- A. 74. (D/C)**
- A. 75. (A) Explanation:** Pomfret is a marine fish.
- A. 76. (C) Explanation:** DOTS is a treatment for tuberculosis and not a preventive measure. BCG is a vaccine. Fibres are included in diet to prevent constipation. Advertisements do prevent diseases by creating awareness. However, they may not be considered as a direct preventive measure.
- A. 77. (A)**
- A. 78. (B) Explanation:** Sugarcane is planted in furrows made in soil. Rest all options are sown by poking them into soil one by one.
- A. 79. (D) Explanation:** As no antigen in O – blood group, this is considered as an ideal donor group.
- A. 80. (C)**
- A. 81. (B) Explanation:** Rest all are excretory products of plants.
- A. 82. (B)**

- A. 83 (D) Explanation:** The given diagrams are:
A → *Lycopodium* (Pteridophyte)
B → *Chara* (Thallophyte)
C → Fern (Pteridophyte)
D → *Riccia* (Bryophyte)
- A. 84 (A)**
- A. 85 (C) Explanation:** Rest all are natural options whereas scion is involved in artificial propagation.
- A. 86 (A)**
- A. 87 (D)**
- A. 88 (C)**
- A. 89 (B)**
- A. 90 (D) Explanation:** Scavengers are nature's cleaners. They consume the dead organisms. Decomposers return the nutrients to ecosystem.
- A. 91 (B)**
- A. 92 (A)**
- A. 93 (D)**
- A. 94 (B)**
- A. 95 (C) Explanation:** Generic substitutes of newly developed drugs are made available in market only after 15 years, so that company can get returns on the investments put up on research and development of that drug.
- A. 96 (A)**
- A. 97 (C) Explanation:** As phytoplankton reproduction is affected, the primary production gets affected. Hence zooplankton will decrease due to lack of food and Oxygen level will also decrease.
- A. 98 (C) Explanation:** Rest of the options do not emit CFCs.
- A. 99 (A)**
- A. 100 (A)**