

Directions (Questions ١-٥): Choose the word which best expresses the meaning of the underlined word in the sentence.

١. She is a very sensible person.  
 (١) rational (٢) cunning (٣) educated (٤) sensitive
٢. I am on the horns of dilemma these days.  
 (١) confusion (٢) clear  
 (٣) difficult situation (٤) favourable situation
٣. The musicians found out that they do not have ample time to go there.  
 (١) some (٢) enough (٣) much (٤) abundant
٤. The minister's speech was not comprehensible to the public.  
 (١) complement (٢) confident  
 (٣) able to be understood (٤) comprehensive
٥. Man is mortal.  
 (١) ever growing (٢) constantly active (٣) imperishable (٤) subject to death

Directions (Questions ٦-١٠): Choose the word which is closest to the opposite in meaning of the underlined word in the sentence.

٦. The Ganga is a pious river.  
 (١) impure (٢) terrible (٣) common (٤) pure
٧. Bravery is a good quality.  
 (١) Audacity (٢) Fearful (٣) Heroism (٤) Cowardice
٨. A unanimous decision was taken by the organization.  
 (١) great (٢) one-sided (٣) fair (٤) unfair
٩. She was very cheerful on her wedding day.  
 (١) overjoyed (٢) emotional (٣) happy (٤) cheerless
١٠. Educated parents make a virtuous circle.  
 (١) vicious (٢) long (٣) alternative (٤) good

Directions (Questions ١١-١٥): Choose the option which best expresses the meaning of the underlined idiom/phrase in the sentence.

١١. Peter was put in cold storage in the party.  
 (١) sadness (٢) ignored (٣) grief (٤) sympathy

١٢. Ravish showed crocodile tears at the death of his employee.  
 (١) happiness (٢) fake mourning (٣) weeping (٤) mourning
١٣. The President did away with the unpopular act.  
 (١) retain (٢) abolish (٣) distribute (٤) consider
١٤. A good weather friend is not a true friend.  
 (١) attentive friend (٢) faithful friend (٣) selfish friend (٤) caring friend
١٥. He cannot praise you unnecessarily because he calls a spade a spade.  
 (١) states clearly (٢) pretends (٣) makes things vague (٤) absconds

Directions (Questions ١٦-٢٠): In each of these questions, choose the word which can be substituted for the given sentence / words.

١٦. A book or work of art whose creator is not known.  
 (١) Unknown (٢) Unanimous (٣) Unidentified (٤) Anonymous
١٧. A disease which spreads by physical contact.  
 (١) Non infectious (٢) Contagious (٣) Untouchable (٤) Fatal
١٨. One who eats too much.  
 (١) Fat (٢) Obese (٣) Glutton (٤) Gorge
١٩. One who knows many languages.  
 (١) Bi-lingual (٢) Decoder (٣) Linguist (٤) Cryptologist
٢٠. Happening at the same time.  
 (١) Simultaneous (٢) Co-happening (٣) Coexistent (٤) Identical

Directions (Questions ٢١-٢٤): Fill in the blank.

٢١. Mounting unemployment is the most serious and \_\_\_\_\_ problem being faced by India.  
 (١) dubious (٢) profound (٣) unpopular (٤) intractable
٢٢. His logic \_\_\_\_\_ everyone, including the experts.  
 (١) surprised (٢) teased (٣) mocked (٤) confounded
٢٣. The unruly behaviour of the students \_\_\_\_\_ their teacher.  
 (١) tempered (٢) clashed (٣) impeached (٤) incensed
٢٤. The children \_\_\_\_\_ crackers to celebrate the victory of their team.  
 (١) burst (٢) fired (٣) shot (٤) broke

Directions (Questions ٢٥–٣٠) Study the passages below and answer the questions that follow each passage.

### Passage-I

Complementary and alternative medicine, which includes a range of practices outside of conventional medicine such as herbs, homeopathy, massage therapy, yoga, and acupuncture, hold increasing popularity for Americans. In fact, according to one estimate, ٤٢% of Americans have used alternative therapies. In all age groups, the use of unconventional healthcare practices has steadily increased in the past ٢٠ years, and the trend is likely to continue, although people born before ١٩٤٥ are the least likely to use these therapies. Why have so many patients turned to alternative therapies? Many are frustrated by the time constraints of managed care and alienated by conventional medicine's focus on technology. Others feel that a holistic approach to healthcare better reflects their beliefs and values. Other factors include therapies that relieve symptoms associated with chronic disease, symptoms that mainstream medicine cannot treat. Some alternative therapies have even crossed the line into mainstream medicine. Recent scientific investigation has confirmed their safety and efficacy. For example, physicians may now currently prescribe acupuncture for pain management or to control the nausea associated with chemotherapy. Additionally, many U.S. medical schools teach courses in alternative therapies. Finally, many health insurance companies offer some alternative medicine benefits.

٢٥. What is the main idea of this passage?

- (١) Alternative medicine is now a big business in the United States with more Americans seeking it out than ever before.
- (٢) Today, it is not unusual for mainstream doctors to incorporate alternative therapies into their practice.
- (٣) Over the last few decades, alternative medicine has become more popular, accepted, and practised in the United States.
- (٤) People are tired of conventional medicine's focus on technology.

٢٦. According to the passage, which practice would not be defined as alternative medicine?

- (١) Pain management
- (٢) Acupuncture
- (٣) Taking herbal garlic supplements
- (٤) Massage therapy

٢٧. Based on the passage, what kind of person would be least likely to seek out alternative treatments?

- (١) A senior citizen suffering from chemotherapy induced nausea.
- (٢) A young woman suffering from chronic fatigue syndrome.
- (٣) A ٤٥-year-old man who believes that his body and mind must be treated together.
- (٤) A ٢٥-year-old track star with chronic back pain.

## Passage-II

Sprouts not only contain a full spectrum of minerals, but during the process of soaking, germination and sprouting the mineral salts present undergo significant changes. The changed composition of the water soluble variety, easily assimilated by the body. The quantum of nutrient present also increases in multiples. For example, sprouted moong has an 8.3% increase in water content per seed. Its energy content decreases by 15%, its carbohydrates content decreases by 9% and its protein availability increases by 30%. All this makes it an ideal food for those who desire to lose weight. At the same time, it provides a more than ample supply of vitamins, minerals and amino acids. One of the benefits of becoming a sproutarian is the fact that sprouts have a lot of fibre and water and hence help drive away constipation. The reduction in carbohydrate content indicates that many carbohydrate molecules are broken down during sprouting, and these react with atmospheric nitrogen to form free amino acids. The resultant protein has a simple molecular structure, and is the most digestible protein available in all foods. Also, during sprouting much of the starch gets broken down by enzymatic action into simple, pre-digested sugars such as glucose and sucrose. The proteins are converted into simple amino acids and amides, and this reduction in the amount of complex proteins ingested helps in preventing ageing and the degenerative diseases. A handful of common moong seeds can blossom and provide the most complete of meals. After the seed has been sprouted, the calcium content increases by 10%, potassium content increases by 80%, the iron content increases by 40%, the phosphorous content increases by as much as 790%. Sprouted sesame seeds too, are excellent for providing the body with easily assimilable minerals. They contain 10 times more calcium than cow's milk.

28. Why is sprout most easily digestible in terms of its protein contents?

- (1) Protein has a simple molecular structure.
- (2) Calcium content is low, hence digestion is easy.
- (3) There is an increase in complex proteins.
- (4) Fats and oils are eliminated.

29. Why is sprout an ideal choice of food for those who want to lose weight?

- (1) It contains digestive acids.
- (2) It is rich in calories.
- (3) It is rich in protein content.
- (4) It contains vitamins, minerals and amino acids.

30. In which process do the minerals in sprouts undergo significant changes?

- (1) Spectral changes
- (2) Soaking, germination and sprouting
- (3) Assimilation
- (4) Radiation and Germination

۳۱. In a projectile motion, the velocity is  
 (۱) always perpendicular to the acceleration.  
 (۲) never perpendicular to the acceleration.  
 (۳) perpendicular to the acceleration for one instant only.  
 (۴) perpendicular to the acceleration for two instants.
۳۲. A cannon ball is fired with a velocity  $v$  in a direction making an angle  $\theta$  with the horizontal. At the highest point of its path it breaks into two parts of equal masses. One of the parts follows the initial path of the ball. The speed of the second part immediately after explosion in m/s is  
 (۱)  $\frac{3}{2}v\cos\theta$  (۲)  $\sqrt{\frac{3}{2}}v\cos\theta$  (۳)  $\frac{1}{2}v\cos\theta$  (۴)  $\frac{3}{2}v\cos\theta$
۳۳. Mr. Naveen kicked off a football with an initial speed  $19.6$  m/s at a projection angle  $45^\circ$ . A receiver on the goal line  $17.5$  m away in the direction of the kick starts running to meet the ball at that instant. What must be his speed so that he could catch the ball before hitting the ground?  
 (۱)  $1.75$  m/s (۲)  $1.75\sqrt{2}$  m/s (۳)  $3.92$  m/s (۴)  $10$  m/s
۳۴. A car starts from rest to cover a distance  $s$ . The coefficient of friction between the road and tyres is  $\mu$ . The minimum time in which the car can cover the distance is proportional to \_\_\_\_\_  
 (۱)  $\mu$  (۲)  $\sqrt{\mu}$  (۳)  $\sqrt{\frac{1}{\mu}}$  (۴)  $\frac{1}{\sqrt{\mu}}$
۳۵. A particle moves along the x-axis from  $x = x_1$  to  $x = x_2$  under the influence of a force given by  $F = \alpha x$ . Then work done in the process is \_\_\_\_\_.  
 (۱) zero (۲)  $\alpha x_2 - \alpha x_1$  (۳)  $\frac{1}{2}\alpha x_2(x_2 - x_1)$  (۴)  $\frac{1}{2}\alpha x_1(x_1 - x_2)$
۳۶. The speed  $v$  reached by a car of mass  $m$ , driven with constant power  $P$ , is given by \_\_\_\_\_  
 (۱)  $v = \frac{3}{2} \frac{XP}{m}$  (۲)  $v = \left( \frac{2XP}{m} \right)^{1/2}$  (۳)  $v = \left( \frac{XP}{m} \right)^{1/2}$  (۴)  $v = \left( \frac{XP}{m} \right)^2$
۳۷. A convex and a concave lens separated by distance  $d$  are then put in contact. The focal length of the combination  
 (۱) decreases (۲) increases (۳) becomes  $\infty$  (۴) remains the same
۳۸. Two discs of same thickness but of different radii are made of two different materials such that their masses are same. The densities of the materials are in the ratio  $1 : 3$ . The moments of inertia of these discs about the respective axes passing through their centres and perpendicular to their planes will be in the ratio \_\_\_\_\_.  
 (۱)  $1 : 3$  (۲)  $3 : 1$  (۳)  $1 : 9$  (۴)  $9 : 1$

39. A body weighs  $W$  Newton at the surface of the earth. Its weight at a height equal to the radius of the earth will be \_\_\_\_\_.
- (1)  $\frac{W}{2}$  (2)  $\frac{2W}{3}$  (3)  $\frac{W}{9}$  (4)  $\frac{W}{27}$
40. A geostationary satellite orbits around the earth in a circular orbit of radius  $36,000$  km. Then, the time period of a satellite orbiting a few hundred kilometres above the earth's surface ( $R_{\text{Earth}} = 6400$  km) will approximately be
- (1)  $2$  h (2)  $4$  h (3)  $8$  h (4)  $16$  h
41. A heavy uniform rod is hanging vertically from a fixed support. It is stretched by its weight. The diameter of the rod is
- (1) smallest at the top and gradually increases down the rod.  
 (2) largest at the top and gradually decreases down the rod.  
 (3) uniform everywhere.  
 (4) maximum in the middle.
42. On bisecting a soap bubble along a diameter, the force due to surface tension on any one part will be \_\_\_\_\_.
- (1)  $2\pi RT$  (2)  $\frac{4\pi RT}{T}$  (3)  $\frac{T}{4\pi R}$  (4)  $\frac{2T}{R}$
43. In a seconds pendulum, mass of the bob is  $30$  gm. If it is replaced by  $90$  gm mass, then its period will be
- (1)  $1$  sec. (2)  $2$  sec. (3)  $4$  sec. (4)  $3$  sec.
44. The potential energy of a particle executing S.H.M. is  $2.0$  J, when its displacement is half its amplitude. The total energy of the particle is \_\_\_\_\_.
- (1)  $18$  J (2)  $10$  J (3)  $12$  J (4)  $2.0$  J
45. A simple pendulum has a metal bob, which is negatively charged. If it is allowed to oscillate above a positively charged metallic plate, then its time period will
- (1) increase. (2) decrease. (3) become zero. (4) remain the same.
46. A cylindrical bar magnet is kept along the axis of a circular coil. If the magnet is rotated about its axis, then
- (1) a current will be induced in the coil.  
 (2) no current will be induced in the coil.  
 (3) only an e.m.f. will be induced in the coil.  
 (4) both e.m.f. and current will be induced in the coil.

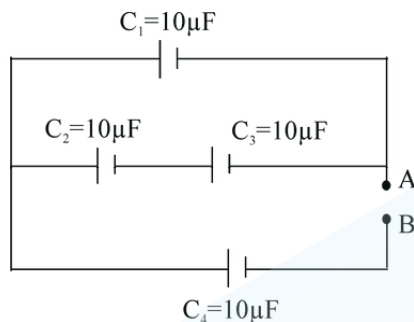
٤٧. A body of mass  $\varepsilon$  kg is accelerated upon by a constant force, travels a distance of  $\phi$  m in first second and a distance of  $\gamma$  m in the third second. The force acting on the body is
- (١)  $2$  N                      (٢)  $\varepsilon$  N                      (٣)  $\gamma$  N                      (٤)  $\wedge$  N
٤٨. In a double slit experiment, instead of taking slits of equal widths, one slit is made twice as the other. Then in the interference pattern the
- (١) intensities of both the maxima and the minima increase.  
 (٢) intensity of maxima increases and the minima has zero intensity.  
 (٣) intensity of maxima decreases and that of the minima increases.  
 (٤) intensity of maxima decreases and the minima has zero intensity.
٤٩. Which of the following statements is incorrects
- (١) Half-life of a neutron is ١٢ minutes.  
 (٢) The stability of a nucleus is determined by the number of neutrons present in it.  
 (٣) Both fast and slow neutrons are capable of penetrating a nucleus.  
 (٤) A free neutron decays into a proton, an electron and positron.
٥٠. The depletion layer in silicon diode is  $١ \mu\text{m}$  wide and the knee potential is  $٠.٦$  V, then electric field in the depletion layer will be
- (١) zero                      (٢)  $٠.٦ \text{ Vm}^{-١}$                       (٣)  $٦ \times ١٠^٤ \text{ V/m}$                       (٤)  $٦ \times ١٠^٥ \text{ V/m}$
٥١. Which of the following is a scalar quantity:
- (١) Impulse                      (٢) Current                      (٣) Torque                      (٤) Momentum
٥٢. Human eye is most sensitive to the colour having wavelength of nearly
- (١)  $٦٨٠ \text{ nm}$ .                      (٢)  $٧٢٠ \text{ nm}$ .                      (٣)  $٤٨٠ \text{ nm}$ .                      (٤)  $٥٥٠ \text{ nm}$ .
٥٣. A double converse lens of focal length  $١٥ \text{ cm}$  produces a distinct real image of an object on a screen kept at  $١٥٠ \text{ cm}$  away from the object. On moving the lens alone, how many other images of the same object can be produced on the same screens
- (١) Zero                      (٢) One                      (٣) Ten                      (٤) Two
٥٤. A person, standing near the edge of the top of a tall building throws two balls A and B. Ball B is thrown vertically upward while the ball A is thrown vertically downward, with the same speed  $V$ . Then, the ball A hits the ground with a speed  $V$  while the ball B hits the ground with speed  $V'$ . Which of the following relationships is likely to hold true:
- (١)  $V = V'$   
 (٢)  $V < V'$   
 (٣)  $V > V'$   
 (٤) The relationship between the speeds  $V$  and  $V'$  will depend on the height of the tall building above the ground only.



55. A vehicle with  $\varepsilon \cdot$  cm diameter wheels is moving with a speed of  $\gamma \lambda$  m/s. Then,  $\varepsilon$  wheels of the vehicle are turning at a speed of \_\_\_\_\_.
- (1)  $\gamma \cdot$  revolutions/second. (2)  $\varepsilon \cdot$  m/s.
- (3)  $\gamma \lambda$  revolutions/second. (4)  $\varepsilon \cdot / \pi$  revolutions/second.

56. The kinetic energy  $E$  of an object of mass  $m$ , having linear momentum  $p$ , will be \_\_\_\_\_.
- (1)  $p^2 m^2$  (2)  $p^2 / m^2$  (3)  $p^2 / 2m$  (4)  $p^2 / m$

57. The capacitance across the terminal A and B of the electrical circuit, given below, is \_\_\_\_\_.



- (1)  $\gamma \mu F$  (2)  $\gamma \cdot \mu F$  (3)  $\gamma \cdot \mu F$  (4)  $\cdot \mu F$
58. The angular momentum of a flywheel, having rotational inertia of  $\cdot \gamma \gamma$  kg m<sup>2</sup>, decreases  $\gamma \cdot \gamma$  kg m<sup>2</sup>/s to  $\cdot \lambda$  kg m<sup>2</sup>/s in  $\gamma \cdot \gamma$  s. The average torque acting on the flywheel during this is \_\_\_\_\_.
- (1)  $\gamma \cdot$  Nm (2)  $\gamma \cdot$  kg m<sup>2</sup>/s<sup>2</sup> (3)  $\gamma \cdot$  kg m<sup>2</sup>/s<sup>2</sup> (4)  $\gamma \cdot$  Nm

59. If a gymnast, sitting on a rotating stool, with his arms out-stretched, suddenly folds his \_\_\_\_\_.
- (1) moment of inertia decreases. (2) angular velocity remains constant.
- (3) angular momentum decreases. (4) angular momentum increases.

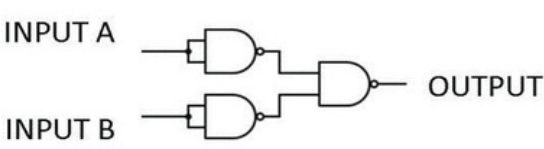
60. The intensity ratio of two waves A and B is  $\gamma : \gamma$ . Then, the ratio of their amplitudes will be \_\_\_\_\_.
- (1)  $\gamma : \gamma$  (2)  $\gamma : \gamma$  (3)  $\gamma : \gamma$  (4)  $\gamma : \gamma$

61. The total energy of a particle, executing simple harmonic motion (SHM) is proportional to \_\_\_\_\_.
- (1) its period. (2) its phase angle.
- (3) the square of its amplitude. (4) None of these

62. A capacitor of capacitance  $\gamma \cdot \cdot$  pF is charged by a battery of  $\gamma \cdot \cdot$  V. Then, the electrostatic energy stored by the capacitor will be \_\_\_\_\_.
- (1)  $\varepsilon \cdot \mu J$  (2)  $\varepsilon \cdot nJ$  (3)  $\varepsilon \cdot J$  (4)  $\gamma \mu J$



٦٣. The initial velocity of a body travelling along a straight line is  $٢٠ \text{ ms}^{-١}$ . If the retardation body is  $\epsilon \text{ ms}^{-١}$ , the distance moved by the particle in the  $\phi$ th second is \_\_\_\_\_.
- (١)  $٢ \text{ m}$  (٢)  $١٩ \text{ m}$  (٣)  $٧٥ \text{ m}$  (٤)  $١٠٠ \text{ m}$
٦٤. If the change in the value of 'g' at a height 'h' above the surface of the earth is the same depth 'x' below its surface, then
- (١)  $x = h٢$  (٢)  $x = ٠.٥ h$  (٣)  $x = ٢ h$  (٤)  $x = h$
٦٥. Terminal velocity of a body of a radius 'R' is directly proportional to \_\_\_\_\_.
- (١)  $R٢$  (٢)  $R^{-٢}$  (٣)  $R$  (٤)  $R^{-١}$
٦٦. The temperature at which Celsius and Fahrenheit scale have the same reading is \_\_\_\_\_.
- (١)  $-١٠٠^\circ \text{C}$  (٢)  $-٢٠٠^\circ \text{C}$  (٣)  $-٣٠٠^\circ \text{C}$  (٤)  $-٤٠٠^\circ \text{C}$
٦٧. The masses of two radioactive substances are same and their half lives are ١ year and respectively. The ratio of their activities after ١ years will be
- (١)  $١ : \epsilon$  (٢)  $١ : ٢$  (٣)  $١ : ٣$  (٤)  $١ : ٦$
٦٨. Which of the following statements is incorrects
- (١) Work done in the adiabatic process is greater than the work done in isothermal process  
(٢) Work done in the adiabatic process is directly proportional to the gas.  
(٣) Work done in the adiabatic process is directly proportional to the temperature difference  
(٤)  $\frac{nR(T_f - T_i)}{\gamma - 1}$
٦٩. Work that must be done by a force on  $١٠ \text{ kg}$  body in order to accelerate it from ٠ to  $٢٠ \text{ m s}^{-١}$  seconds is \_\_\_\_\_.
- (١)  $٢ \times ١٠ \epsilon \text{ J}$  (٢)  $\epsilon \times ١٠ \epsilon \text{ J}$  (٣)  $\epsilon \times ١٠ \epsilon \text{ J}$  (٤)  $٠.٢ \times ١٠ \epsilon \text{ J}$
٧٠. An ideal heat engine operates in Carnot cycle between  $٢٢٧^\circ \text{C}$  and  $٣٢٧^\circ \text{C}$ . It absorbs  $١ \times ١٠^٤$  calories at the higher temperature. Calculate the amount of heat converted into work
- (١)  $١ \times ١٠^٤$  calories (٢)  $١.٦ \times ١٠^٤$  calories (٣)  $٢ \times ١٠^٤$  calories (٤)  $٣ \times ١٠^٤$  calories
٧١. How many times more intense is a  $٩٠ \text{ dB}$  sound compared to  $\epsilon \text{ dB}$  sounds
- (١)  $١٠٥$  (٢)  $١٠٠$  (٣)  $١٠٠٠$  (٤)  $١٠ \epsilon$

٧٢. A small particle carrying a negative charge of  $2 \times 10^{-19}$  C is suspended in equilibrium between the horizontal plates 1 cm apart, having a potential difference of 200 V across them. The mass of the particle is (assuming  $g \sim 10 \text{ ms}^{-2}$ )
- (١)  $2 \times 10^{-16} \text{ Kg}$       (٢)  $5 \times 10^{-16} \text{ Kg}$       (٣)  $3 \times 10^{-16} \text{ Kg}$       (٤)  $2 \times 10^{-16} \text{ Kg}$
٧٣. A wire is stretched to make it 0.1% longer. The percentage change in its resistance is \_\_\_\_\_
- (١) 0.2%      (٢) 0.1%      (٣) 0.4%      (٤) 0.8%
٧٤. The ratio of the concentration of electrons to that of holes in a semiconductor is 9/5 and the ratio of currents is 9/4, then the ratio of their drift velocities is \_\_\_\_\_.
- (١) 5/4      (٢) 3/4      (٣) 2/3      (٤) 1/3
٧٥. A ferromagnetic material is heated above its curie temperature. Which one is correct statement?
- (١) Ferromagnetic domains are perfectly arranged  
(٢) Ferromagnetic domains become random  
(٣) Ferromagnetic domains are not influenced  
(٤) Ferromagnetic materials change into diamagnetic materials
٧٦. If a current is given by  $I = I_0 \sin \omega t \left( \frac{\pi}{\gamma} \right)$  flows in an A.C. circuit across which an A.C. potential  $E = E_0 \sin(\omega t)$  has been applied, then power consumption in the circuit will be \_\_\_\_\_
- (١)  $P = E_0 \frac{I_0}{2\sqrt{\gamma}}$       (٢)  $P = E_0 \frac{I_0}{\sqrt{\gamma}}$       (٣)  $P = E_0 \frac{I_0}{\gamma}$       (٤) 0
٧٧. Which of the following electromagnetic waves has the longest wavelength?
- (١) Heat Waves      (٢) Visible Light  
(٣) Radio frequency waves      (٤) Microwaves
٧٨. The current relationship between two current gains ( $\alpha$ ,  $\beta$ ) in a transistor is \_\_\_\_\_
- (١)  $\frac{\beta}{1+\beta}$       (٢)  $\beta = \alpha \frac{1}{1+\alpha}$       (٣)  $\alpha = \beta \frac{1}{1-\beta}$       (٤)  $\alpha = \frac{\beta}{2+\beta}$
٧٩. Operating point of a transistor is \_\_\_\_\_.
- (١) zero signal value of  $I_B$  and  $V_{CE}$       (٢) zero signal value of  $I_B$  and  $V_{CC}$   
(٣) zero signal value of  $V_{CC}$       (٤) zero signal value of  $I_{CC}$
٨٠. The GATE represented by block diagram is
- 
- (١) AND gate.      (٢) OR gate.      (٣) NOR gate.      (٤) NAND gate.

11. If A and B are square matrices of the same order r, then  $(A+B)(A-B) =$  \_\_\_\_\_.

- (1)  $A^2 - BA - AB - B^2$  (2)  $A^2 - B^2 + BA - AB$  (3)  $A^2 - B^2$  (4)  $A^2 - BA + B^2 + AB$

12. There are two values of 'a' which makes  $\begin{vmatrix} 1 & -2 & 0 \\ a & -1 & \\ 0 & 2 & 2a \end{vmatrix} = 16$ , then the sum of these numbers \_\_\_\_\_.

- (1) 7 (2) 9 (3) -5 (4) 5

13. For the function  $f(x) = x^2 - 2x$ , the value of c in the interval  $\left[\frac{1}{\sqrt{2}}, \right]$  by Rolle's theorem is \_\_\_\_\_.

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

14. If  $x = t^2, y = t^3$ , then  $\frac{d^2y}{dx^2} =$  \_\_\_\_\_.

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

15.  $\int_{a+c}^{b+c} f(x) dx =$  \_\_\_\_\_.

- (1)  $\int_{a-c}^{b-c} f(x) dx$  (2)  $\int_a^b f(x-c) dx$  (3)  $\int_a^b f(x+c) dx$  (4)  $\int_a^b f(x) dx$

16.  $\int \left( \frac{x^2 - x}{1 + x^2} \right)^2 dx =$  \_\_\_\_\_.

- (1)  $\frac{-e^x}{1+x^2} + C$  (2)  $\frac{ex}{1+x^2} + C$  (3)  $\frac{ex}{(1+x^2)^2}$  (4)  $\frac{-ex}{(1+x^2)^2} + C$

17. The angle between the vectors  $\hat{i} + \hat{j}$  and  $\hat{j} - \hat{k}$  is \_\_\_\_\_.

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

18. Distance of point  $(a, \beta, r)$  from y-axis is \_\_\_\_\_.

- (1)  $|\beta|$  (2)  $a\sqrt{1+r^2}$  (3) a (4)  $|\beta| + |r|$

19. If A and B' are independent events then  $P(A' \cup B) =$  \_\_\_\_\_.

- (1)  $P(A)P(B')$  (2)  $P(A')P(B')$  (3)  $P(A' \cap B')$  (4)  $P(A')P(B)$

90. A man is known to speak truth  $\frac{3}{4}$  out of  $\frac{1}{2}$  times. He throws a dice and reports that it is a six. The probability that it is actually a six is \_\_\_\_\_.

(1)  $\frac{3}{4}$

(2)  $\frac{1}{6}$

(3)  $\frac{3}{8}$

(4)  $\frac{1}{2}$

91. The domain and range of the real function  $f$  defined by  $f(x) =$

$\frac{e^{-x}}{x-0}$  is given by \_\_\_\_\_

(1) Domain =  $\mathbb{R}$ , Range =  $(-\infty, 0)$

(2) Domain =  $\mathbb{R} - \{0\}$ , Range =  $\mathbb{R}$

(3) Domain =  $\mathbb{R} - \{0\}$ , Range =  $(-\infty, 1)$

(4) Domain =  $\mathbb{R} - \{0\}$ , Range =  $(-\infty, 1)$

92. If  $\sin\theta + \operatorname{cosec}\theta = -2$ , then  $\sin^2\theta + \operatorname{cosec}^2\theta =$  \_\_\_\_\_.

(1) 2

(2) 4

(3) -4

(4) -1

93. The sum of the series  $i + i^2 + i^3 + \dots$  up to  $100$  terms is \_\_\_\_\_.

(1)  $i$

(2)  $-i$

(3) 0

(4) 1

94. For a real number  $x$  if  $|x| > 2$ , then \_\_\_\_\_.

(1)  $x < 2$

(2)  $x > -2$

(3)  $-2 > x > 2$

(4)  $-2 > x > 2$

95. The number of ways of selecting 11 players from 22 players always including 2 of them and excluding 4 of them is \_\_\_\_\_.

(1)  $20 \cdot C_{11}$

(2)  $16 \cdot C_{11}$

(3)  $20 \cdot C_9$

(4)  $16 \cdot C_9$

96. The locus of the centre of a square made outside the circle  $x^2 + y^2 = a^2$  on a chord of length equal to radius is \_\_\_\_\_.

(1)  $x^2 + y^2 = \frac{a^2(1)}{2}$

(2)  $x^2 + y^2 = \frac{a^2(1)}{4}$

(3)  $x^2 + y^2 = \frac{a^2(2+1)}{4}$

(4)  $x^2 + y^2 = \frac{a^2(2+2)}{4}$

The triangle having the largest area in a circle of radius  $r$  has \_\_\_\_\_ as one of its sides.

97.

(1)  $2r$

(2)  $\sqrt{3}r$

(3)  $2r / \sqrt{3}$

(4) None of these

98. For  $x = 2$ , which of the following statement is false:

(1)  $x$  is prime and  $x$  is even

(2)  $x$  is odd or  $x$  is even

(3)  $x$  is not prime and  $x$  is even

(4)  $x$  is odd or  $x$  is prime

99. The diagonal of square made touching the hyperbola  $x \cdot y = 2$  tangentially is \_\_\_\_\_.

(1)  $4\sqrt{2}$

(2)  $4\sqrt{3}$

(3)  $3\sqrt{3}$

(4) 4

100. The image of the point  $(1, 2, 3)$  in a plane is  $(3, 2, 1)$ . The plane passes through the point \_\_\_\_\_.

(1)  $(4, 0, 6)$

(2)  $(0, 4, 6)$

(3)  $(4, 0, 4)$

(4)  $(4, 0, 0)$

1.1. A plane passes through  $(1, 0, 1)$ ,  $(1, 1, 0)$  and gives a circle of area  $\pi$  when intersect with sphere  $x^2 + y^2 + z^2 = 1$ . The normal to the plane passing through  $(2, 3, 0)$  also passes through \_\_\_\_\_.

(1)  $(3, 2, 6)$

(2)  $(6, 3, 2)$

(3)  $(3, 2, 2)$

(4)  $(3, 2, 0)$

1.2. Normal to a plane at  $(1/\sqrt{2}, 0, \sqrt{2}/\sqrt{2})$  has distance  $0.5$  unit from centre of unit sphere at origin. The area of circle cut by the plane to sphere is \_\_\_\_\_.

(1)  $\pi\sqrt{2}$

(2)  $\pi/\sqrt{2}$

(3)  $\pi/\sqrt{2}$

(4)  $\pi/\sqrt{2}$

1.3. A largest sphere is made inside the sphere  $x^2 + y^2 + z^2 = 1$  and outside the sphere  $(x-1)^2 + (y-1)^2 + z^2 = 1$ . The volume of the sphere is \_\_\_\_\_.

(1)  $\pi\sqrt{2}$

(2)  $\pi\sqrt{2}$

(3)  $\pi\sqrt{2}$

(4)  $\pi\sqrt{2}$

1.4. The plane passing through  $(1, 2, 3)$ ,  $(2, 1, 3)$  and origin is rotated at right angle. The plane passes through the point \_\_\_\_\_.

(1)  $(1, 1, 1)$

(2)  $(2, 3, 2)$

(3)  $(1, 1, -1)$

(4)  $(3, 2, 3)$

1.5. A vector has components  $\sqrt{2}$  and  $\sqrt{2}$  in rectangular coordinate. If the plane is rotated with angle counter clockwise, then its components  $\sqrt{2}a + \sqrt{2}$  and  $\sqrt{2}$ . The value of  $a$  is \_\_\_\_\_.

(1)  $-\sqrt{2}/\sqrt{2}$

(2)  $\sqrt{2}/\sqrt{2}$

(3)  $-\sqrt{2}/\sqrt{2}$

(4)  $-\sqrt{2}/\sqrt{2}$

1.6. The vector  $w = (2-a)i + (2+a)j + ak$  is parallel to plane containing the vector  $u = i + j + k$  and  $v = i + 2j + 2k$ . The value of  $a$  is \_\_\_\_\_.

(1)  $\frac{2}{3}(3+\sqrt{1})$

(2)  $\frac{2}{3}(2+\sqrt{3})$

(3)  $\frac{2}{3}(3+\sqrt{2})$

(4)  $\frac{2}{3}(2+\sqrt{2})$

1.7. Vectors  $u = ai + 5j + k$ ,  $v = 2i + j + 5k$  and  $w = i + 2j + (a-1)k$  are coplanar. Then  $a$  is \_\_\_\_\_.

(1)  $\frac{2}{5}(1+\sqrt{39})$

(2)  $\frac{2}{5}(3-\sqrt{39})$

(3)  $\frac{2}{5}(1+\sqrt{39})$

(4)  $\frac{2}{5}(1-\sqrt{39})$

1.8. In a biased dice, the probability of getting even number is twice of odd number. If two sum

dice are rolled, what is probability of getting a sum 9?

(1)  $10/18$

(2)  $18/18$

(3)  $1/12$

(4)  $8/18$

1.9. Ram picks a random card out of pack of 52 cards and if it is not a queen, he replaces and again picks. How many cards, he should draw so that his probability of getting queen is at least

(1) 6

(2) 7

(3) 8

(4) 9

1.10. A cinema hall offers 10%, 20% and 30% of discount on tickets of type I, II, and III. If the ratio of tickets of type I, II and III are 5:3:2 and Shyam buys a ticket randomly, what is probability that he gets discount more than 10%?

(1) 0.25

(2) 0.33

(3) 0.66

(4) 0.5

۱۱۱. The probability of a same birth date of at least two students in a class of ۲۰ students is \_\_\_\_\_

(۱) ۰.۴۱۱

(۲) ۰.۵۸۸

(۳) ۰.۲۵

(۴) ۰.۱۱۴

۱۱۲. The number of solutions of  $\sec^2(x) + \tan^2(x) = ۱۱$  for  $x$  in  $[0, 2\pi]$  is \_\_\_\_\_

(۱) ۰

(۲) ۱

(۳) ۲

(۴)  $\infty$

۱۱۳. The number of values of  $x$  in  $[0, 2\pi]$  for which  $\cos(x/2)$ ,  $\sin(x)$  and  $\tan(x/2)$  are in G.P. is

(۱) ۰

(۲) ۲

(۳) ۴

(۴) ۶

۱۱۴. If  $2\alpha = \pi$ , then value of  $\cot(\alpha) \cdot \cot(2\alpha) \dots \cot(9\alpha)$  is

(۱) -۱

(۲)  $\infty$

is equal to

(۳) - $\infty$

۱۱۵. If  $\frac{11Z_1}{17Z_2}$  is purely imaginary, then  $\left[ \frac{rZ_1 + sZ_2}{rZ_1 - sZ_2} \right]$

(۱)  $\frac{11}{17}$

(۲)  $\frac{13}{19}$

(۳)  $\frac{33}{15}$

(۴) None of these

۱۱۶. Let  $z_1 = 1 - i$  and  $z_2 = 3 + \sqrt{2}i$ , then the curve represented by  $\left| \frac{z - z_1}{z - z_2} \right| = 1$  is a

(۱) straight line.

(۲) circle.

(۳) parabola.

(۴) None of these

۱۱۷. Let O be the origin and A and B be two points in the argand plane such that O, A and B are collinear and  $OA \cdot OB = 1$ . If the point A is represented by  $z$ , then the point B is given by \_\_\_\_\_.

(۱)  $\frac{1}{z}$

(۲)  $z$

(۳)  $\frac{1}{z}$

(۴) None of these

۱۱۸. The centre of a square ABCD is at the origin and point A is represented by  $\sqrt{v+ri}$ . Then

centroid of  $\Delta BCD$  is represented by \_\_\_\_\_.

(۱)  $-\frac{\sqrt{7}}{3} - i$

(۲)  $1+i \frac{\sqrt{v}}{3}$

(۳)  $\frac{\sqrt{v}}{3} + i$

(۴)  $-1 - \frac{\sqrt{v}}{3}$

۱۱۹. The number of ways in which ۱۱ different flowers can be strung to form a garland so that ۵ particular flowers are never separated is \_\_\_\_\_.

(۱)  $5! \cdot 6!$

(۲)  $5! \cdot 7!$

(۳)  $7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$

(۴) None of these

۱۲۰. The number of ways of distributing ۷ bananas among ۵ children so that each child receives at least one banana is \_\_\_\_\_.

(۱) ۲۱

(۲) ۳۵

(۳) ۱۵

(۴) ۷

١٢١. The total count of numbers of seven digits that can be made using the digits ١ to ٩ without repetition such that all the digits on the left of the digit in the middle are less than it and all the digits on the right of the digit in the middle are greater than the digit in the middle is \_\_\_\_\_.

- (١) ٥٧٦ (٢) ١٢٩٦ (٣) ٨! (٤) None of these

١٢٢. The number of ٧ digit numbers in which no two adjacent digits are identical is \_\_\_\_\_

- (١) ٩.٨٦ (٢) ٩٢.٨٥ (٣) ٩٣.٨٤ (٤) ٩٧

١٢٣. If  $X$  is a singular matrix of order  $n$ , then  $X \cdot (\text{adj}X)$  is \_\_\_\_\_.

- (١) Identity matrix (٢) Null matrix (٣) Scalar matrix (٤) None of these

١٢٤. If  $A$  and  $B$  are square matrices of order ٣ such that  $|A| = -٣$  and  $|B| = ٥$ , then  $|٢AB|$  is \_\_\_\_\_

- (١) -٦٠ (٢) ١٢٠ (٣) -١٢٠ (٤) ٦٠

١٢٥. Consider the system of equations  $٢x - y + ٢z = ٢$ ;  $x - ٢y + z = -٤$ ;  $x + y + z = ٤$ . The number of solutions of this system of equations is \_\_\_\_\_.

- (١) ٠ (٢) ١ (٣) ٢ (٤) Infinitely many

١٢٦. Let  $a \neq x$ ,  $b \neq y$  and  $c \neq z$  and  $\begin{vmatrix} a & b & z \\ x & b & c \\ x+a & y+b & ٢c \end{vmatrix} = ٠$ , then  $\frac{x}{x-a} + \frac{y}{y-b} + \frac{z}{z-c} =$  \_\_\_\_\_.

- (١) ٠ (٢) ١ (٣) ٢ (٤) ٣

١٢٧. The range of function  $f(x) = \log_٣(٩ - x^٢)$  is \_\_\_\_\_.

- (١)  $(-\infty, ٢]$  (٢)  $[-٣, ٢]$  (٣)  $[-٣, ٢]$  (٤)  $(-٣, ٣)$

١٢٨. The function  $f(x) = ٢\sin^٢x + \sqrt{٥}\cos x$  is \_\_\_\_\_.

- (١) periodic function with period  $٢\pi$   
(٢) periodic function with period  $\frac{2\pi}{٣}$   
(٣) periodic function with period  $\frac{2\pi}{\sqrt{٥}}$   
(٤) not a periodic function

١٢٩. If  $f(x) = \sin x - \cos x$  and  $g(x) = ١ - x^٢$ , then  $g(f(x))$  is invertible in the domain \_\_\_\_\_

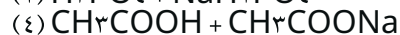
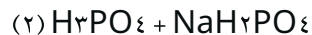
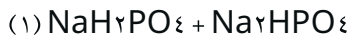
- (١)  $\left[0, \frac{\pi}{2}\right]$  (٢)  $\left[\frac{\pi}{4}, \frac{\pi}{2}\right]$  (٣)  $\left[\frac{\pi}{4}, \frac{\pi}{2}\right]$  (٤)  $\left[\frac{\pi}{4}, \pi\right]$

١٣٠. Let  $f: [-٣, ٠] \rightarrow \mathbb{R}$  be given by  $f(x) = e^x + \cos x$ , then its extension to  $[-٣, ٣]$  is \_\_\_\_\_.

- (١)  $-e^{|x|} - \cos|x|$  (٢)  $e^{|x|} - \cos|x|$  (٣)  $e^{|x|} + \cos|x|$  (٤)  $-e^{|x|} + \cos|x|$



۱۳۱. The Principal buffer present in human blood is \_\_\_\_\_.



۱۳۲. Number of moles  $\text{MnO}_4^-$  required to oxidize one mole of ferrous oxalate in acidic medium is

(۱) ۲.۵ mol.

(۲) ۰.۲ mol.

(۳) ۰.۶ mol.

(۴) ۰.۴ mol.

۱۳۳. At a temperature of about ۲۰ K (very low), which allotropes form of molecular hydrogen is stable?

(۱) Ortho hydrogen

(۲) Para hydrogen

(۳) Both Ortho and Para hydrogen

(۴) None of these

۱۳۴. The order of increasing bond dissociation enthalpy of H-H, D-D and F-F molecules is \_\_\_\_\_.

(۱)  $\text{H-H} > \text{D-D} > \text{F-F}$  (۲)  $\text{F-F} > \text{H-H} > \text{D-D}$  (۳)  $\text{F-F} > \text{D-D} > \text{H-H}$  (۴)  $\text{D-D} > \text{H-H} > \text{F-F}$

۱۳۵. Which of the following anions is present in the chain structure of silicates?



۱۳۶.  $\text{H}_3\text{BO}_3$  is

(۱) Monobasic and weak Lewis acid.

(۲) Monobasic and weak Brønsted acid.

(۳) Monobasic and strong Lewis acid.

(۴) Tribasic and weak Brønsted acid.

۱۳۷. Percentage of lead in lead Pencil is \_\_\_\_\_.

(۱) Zero

(۲) ۲۰

(۳) ۸۰

(۴) ۷۰

۱۳۸. On mixing certain alkane with chlorine and irradiating it with U.V light, it forms only one monochloroalkane. The alkane is

(۱) Isopentane.

(۲) Neopentane.

(۳) Propane.

(۴) Pentane.

۱۳۹. The chemical reagent used to detect the presence of phenol in a given sample of organic compound is

(۱) Tollen's reagent in presence of alkali.

(۲) Neutral ferric chloride solution.

(۳)  $(\text{NaOH} + \text{I}_2)$  solution.

(۴) Sodium Hydrogen Carbonate (Bicarbonate Test).

١٤٠. The gases present in atmosphere that causes Greenhouse effect are

- (١) Carbon Dioxide, Oxygen and Nitrogen.
- (٢) Carbon dioxide, Sulphur dioxide and Methane.
- (٣) Nitrous oxide, Oxygen, and Water vapours.
- (٤) Methane, Water vapours and Carbon dioxide.

١٤١. Structurally a biodegradable detergent should contain a

- (١) Normal alkyl chain.
- (٢) Branched alkyl chain.
- (٣) Phenyl side chain.
- (٤) Cyclohexyl side chain.

١٤٢. Lithium metal crystallises in a B.C.C structure. If the length of the side of the unit cell of lithium is ٣٥١ pm, the atomic radius of the lithium will be

- (١) ١٥١.٨ pm.
- (٢) ٧٥.٥ pm.
- (٣) ٣٠٠.٥ pm.
- (٤) ٢٤٠.٨ pm.

١٤٣. A ٥.٢٥% solution of substance is isotonic with ١.٥% solution of urea (molar mass = ٦٠ g mol<sup>-١</sup>) in the same solvent. If the densities of both the solution are assumed to be equal to ١.٠ g cm<sup>-٣</sup>, molar mass of the substance will be \_\_\_\_\_.

- (١) ١٠٥.٠ g mol<sup>-١</sup>
- (٢) ٢١٠.٠ g mol<sup>-١</sup>
- (٣) ٩٠.٠ g mol<sup>-١</sup>
- (٤) ١١٥.٠ g mol<sup>-١</sup>

١٤٤. The correct order of equivalent conductance at infinite dilution among LiCl, NaCl and KCl \_\_\_\_\_.

- (١) LiCl < NaCl < KCl
- (٢) NaCl < KCl < LiCl
- (٣) KCl < NaCl < LiCl
- (٤) LiCl < KCl < NaCl

١٤٥. For a first order reaction

- (١) the degree of dissociation is equal to (١-e<sup>-kt</sup>).
- (٢) a plot of reciprocal concentration of the reactant Vs. time gives a straight line.
- (٣) the time taken for the completion of ٧٥% reaction is thrice the t<sub>١/٢</sub> of the reaction.
- (٤) the pre-exponential factor in the Arrhenius equation has the dimension of kJ mol<sup>-١</sup>s<sup>-١</sup>.

١٤٦. Which of the following barium salts is soluble in water?

- (١) Barium Sulphate
- (٢) Barium Carbonate
- (٣) Barium Nitrate
- (٤) Barium Phosphate

١٤٧. A gas can be liquefied

- (١) below its critical temperature.
- (٢) above its critical temperature.
- (٣) at its critical temperature.
- (٤) at any temperature.

١٤٨. Fac-Mer isomerism is associated with which one of the following complexes (M=central metal)?

- (١)  $M(AA)_2$
- (٢)  $MA_3Br$
- (٣)  $M(AA)_3$
- (٤)  $MA_2Br$

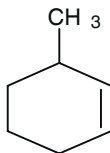
١٤٩. (CH<sub>3</sub>)<sub>3</sub>CMgBr on reaction with D<sub>2</sub>O produces \_\_\_\_\_.

- (١) (CH<sub>3</sub>)<sub>3</sub>CD
- (٢) (CH<sub>3</sub>)COD
- (٣) (CD<sub>3</sub>)<sub>3</sub>CD
- (٤) (CD<sub>3</sub>)<sub>3</sub>COD

150. Hybridization of nitrogen in pyridine is \_\_\_\_\_.

- (1)  $sp^3d$  (2)  $sp^2$  (3)  $sp$  (4)  $sp$

151. The IUPAC name of the compound shown in the figure is



- (1) 1-methylcyclohex-5-ene. (2) 1-methylcyclohexene.  
(3) 1-methylcyclohex-2-ene. (4) 3-methylcyclohexene.

152. The function of  $AlCl_3$  in Friedel Craft's reaction is to

- (1) produce nucleophile. (2) produce attacking electrophile.  
(3) absorb water. (4) absorb  $HCl$ .

153. If two compounds have same empirical formula but different molecular formulae, they must have

- (1) same viscosity. (2) same vapor pressure.  
(3) different percentage composition. (4) different molecular weights.

154. The C-H bond length is longest in \_\_\_\_\_.

- (1)  $C_2H_2$  (2)  $C_2H_4$  (3)  $C_2H_6$  (4)  $C_2H_5Br$

155. The final product in the reaction  $CH_2=CH_2 \xrightarrow{O_3} X \xrightarrow{H_2O} Y$  is

- (1) Ethylene glycol. (2) Ethanol. (3) Epoxyethane. (4) None of these

156. Among the following the least reactive aldehyde is \_\_\_\_\_.

- (1)  $C_6H_5CHO$  (2)  $C_6H_5CHO$  (3)  $CH_3CHO$  (4)  $HCHO$

157. In the following reaction



- (1)  $NH_3$  and  $CH_3CONH_2$  (2)  $NH_3$  and  $CH_3CONH_2$   
(3)  $HN$

158. Ethyl isocyanide on hydrogen in acidic medium generates

- (1) Methylamine salt and ethanoic acid.  
(2) Ethanoic acid and ammonium salt.  
(3) Propanoic acid and ammonium salt.  
(4) Ethylamine salt and methanoic acid.

١٥٩. Natural rubber is a polymer of  
 (١) Isoprene. (٢) Phenol. (٣) Ethylene. (٤) Vinyl chloride.
١٦٠. Ester used as a medicine is  
 (١) Methyl salicylate. (٢) Ethyl benzoate. (٣) Methyl acetate. (٤) Ethyl acetate.
١٦١. Which of the following has largest number of atoms?  
 (١) ١g of Cu (٢) ٠.٥ mole of Cu (٣) ٠.٦٣٥ g of Cu (٤) ٠.٢٥ mole of Cu
١٦٢. The spin magnetic moment of the cobalt in the compound  $\text{HgCo(SCN)}_4$  is \_\_\_\_\_.  
 (١)  $\sqrt{24}$  (٢)  $\sqrt{14}$  (٣)  $\sqrt{10}$  (٤)  $\sqrt{8}$
١٦٣. The correct order of the electron affinity of the elements of the oxygen family in the periodic table is \_\_\_\_\_.  
 (١)  $\text{S} < \text{Se} < \text{O}$  (٢)  $\text{O} < \text{S} < \text{Se}$  (٣)  $\text{Se} < \text{S} < \text{O}$  (٤)  $\text{S} < \text{O} < \text{Se}$
١٦٤. The number of the coordinate bond in  $\text{HF} \cdot \text{F}$  is /are \_\_\_\_\_.  
 (١) ١ (٢) ٠ (٣) ٢ (٤) ١ or ٢
١٦٥. In the reaction  $\text{A(g)} + ٣ \text{B(g)} \rightleftharpoons ٤ \text{C(g)}$ , initial concentration of A is equal to that of B. The equilibrium concentration of A and C are equal. The equilibrium constant is equal to \_\_\_\_\_.  
 (١) ٨ (٢) ٠.٨ (٣) ٠.٠٠٨ (٤) ١/٨
١٦٦. Which of the following is a compound whose ٠.١ M solution is basic?  
 (١) Sodium Acetate. (٢) Ammonium Acetate.  
 (٣) Ammonium Chloride. (٤) Ammonium Sulphate.
١٦٧. The critical temperature of water is higher than that of O because the  $\text{H}_2\text{O}$  molecule has \_\_\_\_\_.  
 (١) V-shape (٢) Fewer electrons than O  
 (٣) Dipole-moment (٤) Two covalent bonds
١٦٨. Glass is a  
 (١) gel. (٢) polymeric Mixture.  
 (٣) microcrystalline solid. (٤) super cooled liquid.
١٦٩. Which is not a colligative property?  
 (١) Elevation of boiling point (٢) Osmotic pressure  
 (٣) Depression of freezing point (٤) Lowering of vapor pressure

170. The highest electrical conductivity of the following aqueous solution is of

- (1) 0.1 M Fluoroacetic acid. (2) 0.1 M Chloroacetic acid.  
(3) 0.1 M Acetic acid. (4) 0.1 M Difluoroacetic acid.

171. Hydrogen bomb is based on the principle of

- (1) natural radioactivity. (2) nuclear fusion.  
(3) nuclear fission. (4) artificial radioactivity.

172. The bond angle and dipole moment of water are respectively \_\_\_\_\_.

- (1) 109.5° and 1.85 D (2) 104.5° and 1.85 D  
(3) 102.5° and 1.56 D (4) 107.5° and 1.56 D

173. Which of the following ore contains both Cu and Fe?

- (1) Malachite (2) Cuprite (3) Chalcopyrites (4) Chalcocite

174. The H-O-H angle in water molecule is \_\_\_\_\_.

- (1) 90° (2) 105° (3) 104° (4) 115°

175. Several blocks of magnesium are fixed to the bottom of a ship to

- (1) prevent puncturing by undersea rocks. (2) prevent action of water and salt.  
(3) make the ship lighter. (4) keep away the sharks.

176. The correct order of increasing C-O bond length of CO, CO<sub>2</sub>, CO<sub>3</sub><sup>2-</sup> is \_\_\_\_\_.

- (1) CO < CO<sub>2</sub> < CO<sub>3</sub><sup>2-</sup> (2) CO < CO<sub>3</sub><sup>2-</sup> < CO<sub>2</sub>  
(3) CO < CO<sub>3</sub><sup>2-</sup> < CO (4) CO<sub>3</sub><sup>2-</sup> < CO<sub>2</sub> < CO

177. Boiling /melting point of following hydride follow the order \_\_\_\_\_.

- (1) SbH<sub>3</sub> < AsH<sub>3</sub> < PH<sub>3</sub> < NH<sub>3</sub> (2) SbH<sub>3</sub> < NH<sub>3</sub> < AsH<sub>3</sub> < PH<sub>3</sub>  
(3) SbH<sub>3</sub> > AsH<sub>3</sub> > PH<sub>3</sub> > NH<sub>3</sub> (4) AsH<sub>3</sub> < SbH<sub>3</sub> < PH<sub>3</sub> < NH<sub>3</sub>

178. Which of the following is paramagnetic compound?

- (1) KO<sub>2</sub> (2) Na<sub>2</sub>O<sub>2</sub> (3) O<sub>3</sub> (4) N<sub>2</sub>O

179. Shape and hybridization of IF<sub>5</sub> respectively are \_\_\_\_\_.

- (1) Pentagonal pyramidal, sp<sup>3</sup>rd<sup>2</sup> (2) Square pyramidal, sp<sup>3</sup>rd<sup>2</sup>  
(3) See saw, sp<sup>3</sup>d (4) Trigonal bipyramidal, sp<sup>3</sup>d

180. Xenon hexafluoride reacts with Silica to form to Xenon Compound 'X'. The oxidation state of Xenon in 'X' is \_\_\_\_\_.

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

181. World Cancer Day is held on \_\_\_\_\_ every year to raise awareness of  
(1) February (2) March (3) April (4) May
182. Whom did Serena Williams defeat in the final to win the Australian Open 2018 Women's Singles title?  
(1) Venus Williams (2) Maria Sharapova (3) Ekaterina Makarova (4) None of these
183. Which technology giant became the first company in the world to reach a market value of billion?  
(1) Microsoft (2) Google (3) Apple (4) Facebook
184. Which Indian Golfer has won the Malaysian Open 2018?  
(1) Jeev Milkha Singh (2) Arjun Atwal (3) Anirban Lahiri (4) Jyoti Randhawa
185. Saina Nehwal won the Syed Modi International India Grand Prix Gold badminton title 2018 in the women's singles category by defeating world champion Carolina Marin of  
(1) Spain. (2) Denmark. (3) Malaysia. (4) Taiwan.
186. Airport Council International (ACI) has ranked \_\_\_\_\_ as the world's best airport in the 20-40 million passengers per annum (MPPA) category for the year 2018.  
(1) Rajiv Gandhi International Airport, Hyderabad  
(2) Bengaluru International Airport, Bengaluru  
(3) IGI Airport, New Delhi  
(4) Chennai International Airport
187. \_\_\_\_\_ became the first batsman to hit double century in Cricket World Cup history.  
(1) Chris Gayle (2) Rohit Sharma (3) Virender Sehwag (4) Martin Guptill
188. Senior Journalist Vinod Mehta who passed away on 1 March 2018 was associated with which of the following magazines?  
(1) Outlook (2) India Today (3) The Week (4) Tehelka
189. Indian Railways has signed an MoU with \_\_\_\_\_ to raise ₹ 11,000 crore for financing the development of its various commercially viable infrastructure projects.  
(1) LIC of India (2) World Bank (3) State Bank of India (4) NHAI
190. Who among the following has been selected as the Brand Ambassador for the North East Region by the Indian Government?  
(1) Baichung Bhutia (2) Mary Kom  
(3) Sarita Devi (4) Somdev Devvarman

१९१. The mass nesting of Olive Ridley sea turtles, an endangered species happens in which Indian state?
- (१) Odisha (२) West Bengal (३) Andhra Pradesh (४) Tamil Nadu
१९२. \_\_\_\_\_ has acquired the shopping search engine TheFind.
- (१) Facebook (२) Google (३) Yahoo (४) Twitter
१९३. National Photography Awards in India are given by Ministry of
- (१) Information & Broadcasting. (२) Human Resource Development.  
(३) Skill Development & Entrepreneurship. (४) Tourism.
१९४. Who has authored the book “Indian Parliamentary Diplomacy – Speaker’s Perspective”?
- (१) Meira Kumar (२) Shivraj Patil  
(३) Somnath Chatterjee (४) Manohar Joshi
१९५. India’s indigenously developed Beyond Visual Range (BVR) air-to-air missile \_\_\_\_\_ successfully tested in March २०१० from a Sukhoi-३० fighter aircraft.
- (१) Astra (२) Shastra (३) Prithvi (४) Agni
१९६. National Green Tribunal (NGT) has announced a fine of \_\_\_\_\_ on individuals for littering or throwing waste on the railway platforms and tracks.
- (१) ५०० (२) १००० (३) ३००० (४) ५०००
१९७. Who among the following won the best actress award in the ६२nd National Film Awards announced in March २०१०?
- (१) Kangana Ranaut (२) Alia Bhatt (३) Tabbu (४) Baljinder Kaur
१९८. In March २०१०, NASA’s curiosity rover has found evidence of \_\_\_\_\_ on Mars.
- (१) Oxygen (२) Nitrogen (३) Hydrogen (४) plutonium
१९९. Which is the only country in the world where the Prime Minister, Parliament speaker, Leader of the opposition, Deputy Leader of the house, and a major opposition leader are all women?
- (१) Denmark (२) Bangladesh (३) Spain (४) None of these
२००. Who is the richest man of India as per the Forbes Rich list २०१०?
- (१) Anil Ambani (२) Mukesh Ambani (३) Shiv Nadar (४) Lakshmi Mittal