

NEET EXAMINATION – 2019 (CODE P-5)

PHYSICS

HELD ON 05-05-2019 (TIME : 02.00 PM TO 05.00 PM)

1. The speed of a swimmer in still water is 20 m/s. The speed of river water is 10 m/s and is flowing due east. If he is standing on the south bank and wishes to cross the river along the shortest path, the angle at which he should make his strokes w.r.t. north is given by:

- 1) 30° west 2) 0°
3) 60° west 4) 45° west

ANS : 1

2. In an experiment, the percentage of error occurred in the measurement of physical quantities A, B, C and D are 1%, 2%, 3% and 4% respectively. Then the maximum percentage of error in the measurement X, where $X = \frac{A^2 B^{1/2}}{C^{1/3} D^3}$, will be

- 1) $\left(\frac{3}{13}\right)\%$ 2) 16%
3) -10% 4) 10%

ANS : 2

3. In total internal reflection when the angle of incident is equal to the critical angle for the pair of media in contact, what will be angle of refraction?

- 1) 180° 2) 0°
3) Equal to angle of incidence
4) 90°

ANS : 4

4. A block of mass 10kg is in contact against the inner wall of a hollow cylindrical drum of radius 1m. The coefficient of friction between the block and the inner wall of the cylinder is 0.1. The minimum angular velocity needed for the cylinder to keep the block stationary when the cylinder is vertical and rotating about its axis, will be ($g=10 \text{ m/s}^2$)

- 1) $\sqrt{10} \text{ rad/s}$ 2) $\frac{10}{2\pi} \text{ rad/s}$
3) 10 rad/s 4) $10\pi \text{ rad/s}$

ANS : 3

5. For a p-type semiconductor, which of the following statement is true?

- 1) Electrons are the majority carries and trivalent atoms are
2) Holes are the majority carries and trivalent atoms are the dopants.
3) Holes are the majority carries and pentavalent atoms are the dopants
4) Electrons are the majority carries and pentavalent atoms are the dopants.

ANS : 2

6. The total energy of an electron in an atom in an orbits is -3.4 eV. Its kinetic and potential energies are, respectively:

- 1) -3.4 eV, -3.4 eV 2) -3.4 eV, -6.8 eV
3) 3.4 eV, -6.8 eV 4) 3.4 eV, 3.4 eV

ANS : 3

7. A copper rod of 88cm and an aluminium rod of unknown length have their increase in length independent of increase in temperature. The length of aluminium rod is ($\alpha_{Cu} = 1.7 \times 10^{-5} \text{ K}^{-1}$ and $\alpha_{Al} = 2.2 \times 10^{-5} \text{ K}^{-1}$)

- 1) 6.8 cm 2) 113.9 cm
3) 88 cm 4) 68 cm

ANS : 4

8. A small hole of area of cross-section 3 mm^2 is present near the bottom of a fully filled open tank of height 2m. Taking $g=10 \text{ m/s}^2$, the rate of flow of water through the open hole would be nearly:

- 1) $12.6 \times 10^{-6} \text{ m}^3/\text{s}$ 2) $8.9 \times 10^{-6} \text{ m}^3/\text{s}$
3) $2.23 \times 10^{-6} \text{ m}^3/\text{s}$ 4) $6.4 \times 10^{-6} \text{ m}^3/\text{s}$

ANS : 1

9. When a block of mass M is suspended by a long wire of length L, the length of the wire becomes (L+l). The elastic potential energy stored in the extended wire is

- 1) $Mg\ell$ 2) MgL
3) $\frac{1}{2} Mg\ell$ 4) $\frac{1}{2} MgL$

ANS : 3

10. Two particles A and B are moving in uniform circular motion in concentric circles of radii r_A and r_B with speed v_A and v_B respectively. Their time period of rotation is the same. The ratio of angular speed of A to that of B will be:

- 1) $r_A : r_B$ 2) $v_A : v_B$
3) $r_B : r_A$ 4) 1 : 1

ANS : 4

11. A parallel plate capacitor of capacitance $20\mu\text{F}$ is being charged by a voltage source whose potential is changing at the rate of 3 V/s . The conduction current through the connecting wires, and the displacement current through the plates of the capacitor, would be, respectively:

- 1) zero, $60\mu\text{A}$ 2) $60\mu\text{A}$, $60\mu\text{A}$
3) $60\mu\text{A}$, zero 4) zero, zero

ANS : 2

12. A 800 turn coil of effective area 0.05 m^2 is kept perpendicular to a magnetic field $5 \times 10^{-5}\text{ T}$. When the plane of the coil is rotated by 90° around any of its coplanar axis in 0.1 s , the emf induced in the coil will be:

- 1) 2V 2) 0.2V
3) $2 \times 10^{-3}\text{ V}$ 4) 0.02V

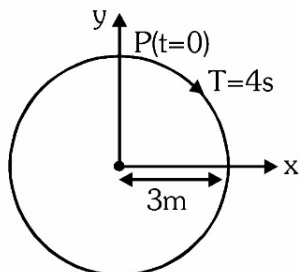
ANS : 4

13. The unit of thermal conductivity is:

- 1) J m K^{-1} 2) $\text{J m}^{-1} \text{K}^{-1}$
3) W m K^{-1} 4) $\text{W m}^{-1} \text{K}^{-1}$

ANS : 4

14. The radius of circle, the period of revolution, initial position and sense of revolution are indicated in the fig.



y-projection of the radius vector of rotating particle P is:

- 1) $y(t) = -3 \cos 2\pi t$, where y in m
2) $y(t) = 4 \sin\left(\frac{\pi t}{2}\right)$, where y in m

3) $y(t) = 3 \cos\left(\frac{3\pi t}{2}\right)$, where y in m

4) $y(t) = 3 \cos\left(\frac{\pi t}{2}\right)$, where y in m

ANS : 4

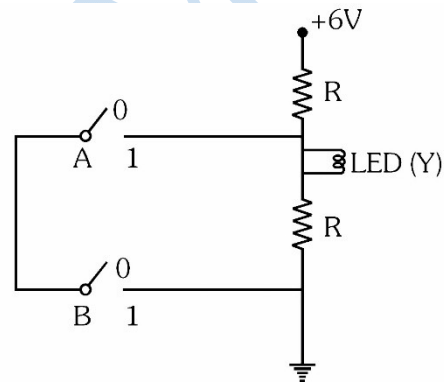
15. The displacement of particle executing simple harmonic motion is given by $y = A_0 + A \sin \omega t + B \cos \omega t$.

Then the amplitude of its oscillation is given by:

- 1) $A_0 + \sqrt{A^2 + B^2}$ 2) $\sqrt{A^2 + B^2}$
3) $\sqrt{A_0^2 + (A + B)^2}$ 4) $A + B$

ANS : 2

16.



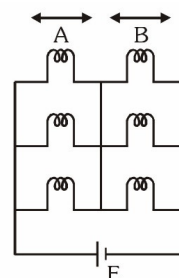
The correct Boolean operation represented by the circuit diagram drawn is:

- 1) AND 2) OR
3) NAND 4) NOR

ANS : 3

17. Six similar bulbs are connected as shown in the figure with a DC source of emf E, and zero internal resistance.

The ratio of power consumption by the bulbs when (i) all are glowing and (ii) in the situation when two from section A and one from section B are glowing, will be:



- 1) 4 : 9 2) 9 : 4 3) 1 : 2 4) 2 : 1

ANS : 2

18. A hollow metal sphere of radius R is uniformly charged. The electric field due to the sphere at a distance r from the centre
- 1) Increase as r increases for $r < R$ and for $r > R$
 - 2) Zero as r increases for $r < R$, decreases as r increases for $r > R$
 - 3) Zero as r increases for $r < R$, increases as r increases for $r > R$
 - 4) Decreases as r increases for $r > R$ and for $r < R$

ANS : 2

19. The work done to raise a mass m from the surface of the earth to height h , which is equal to the radius of the earth, is:
- 1) mgR
 - 2) $2mgR$
 - 3) $\frac{1}{2}mgR$
 - 4) $\frac{3}{2}mgR$

ANS : 3

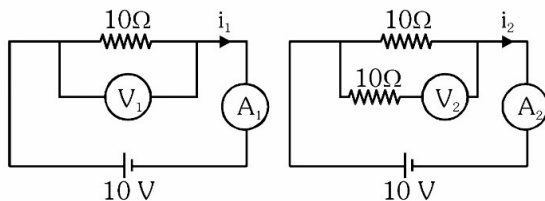
20. An electron is accelerated through a potential difference of $10,000V$. Its Broglie wavelength is (nearly): ($m_e = 9 \times 10^{-31}kg$)
- 1) $12.2 \times 10^{-13}m$
 - 2) $12.2 \times 10^{-12}m$
 - 3) $12.2 \times 10^{-14}m$
 - 4) $12.2 nm$

ANS : 2

21. In a double slit experiment, when light of wavelength $400 nm$ was used, the angular width of the first minima formed on a screen placed $1 m$ away, was found to be 0.2° . What will be the angular width of the first minima, if the entire experimental apparatus is immersed in water?
- ($\mu_{water} = 4/3$)
- 1) 0.266°
 - 2) 0.15°
 - 3) 0.05°
 - 4) 0.1°

ANS : 2

22. In the circuits shown below, the readings, of the voltmeters and the ammeters will be:



Circuit 1

Circuit 2

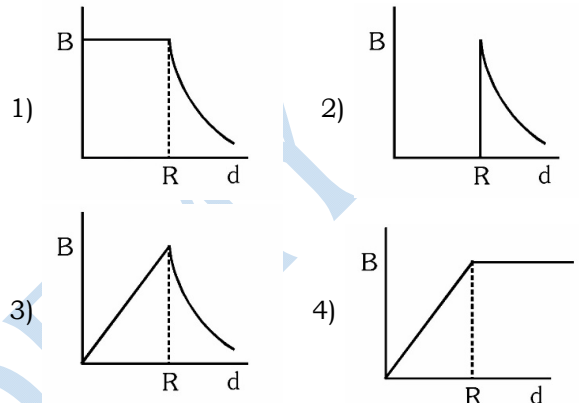
- 1) $V_2 > V_1$ and $i_1 = i_2$
- 2) $V_1 = V_2$ and $i_1 > i_2$
- 3) $V_1 = V_2$ and $i_1 = i_2$
- 4) $V_2 > V_1$ and $i_1 > i_2$

ANS : 3

23. A body weighs $200N$ on the surface of the earth. How much will it weight half way down to the centre of the earth?
- 1) $150N$
 - 2) $200N$
 - 3) $250N$
 - 4) $100N$

ANS : 4

24. A cylindrical conductor of radius R is carrying a constant current. The plot of the magnitude of the magnetic field, B with the distance, d , from the centre of the conductor, is correctly represented by the figure



ANS : 3

25. Ionized hydrogen atoms and α -particles with same momenta enters perpendicular to a constant magnetic field, B . The ratio of their radii of their paths $r_H : r_\alpha$ will be:
- 1) $2 : 1$
 - 2) $1 : 2$
 - 3) $4 : 1$
 - 4) $1 : 4$

ANS : 1

26. Which of the following acts as a circuit protection device?
- 1) Conductor
 - 2) Inductor
 - 3) Switch
 - 4) Fuse

ANS : 4

27. Two parallel infinite line charges with linear charge densities $+\lambda C/m$ and $-\lambda C/m$ are placed at a distance of $2R$ in free space. What is the electric field mid-way between the two line charges?

- 1) Zero
- 2) $\frac{2\lambda}{\pi\epsilon_0 R} N/C$
- 3) $\frac{\lambda}{\pi\epsilon_0 R} N/C$
- 4) $\frac{\lambda}{2\pi\epsilon_0 R} N/C$

ANS : 3

28. A disc of radius 2m mass 100 kg rolls on a horizontal floor. Its centre of mass has speed of 20 cm/s. How much work is needed to stop it?

- 1) 3J 2) 30kJ 3) 2J 4) 1J

ANS : 1

29. α -particle consists of

- 1) 2 protons and 2 neutrons only
2) 2 electrons, 2 protons and 2 neutrons
3) 2 electrons and 4 protons only
4) 2 protons only

ANS : 1

30. Two points charges A and B, having charges +Q and -Q respectively, are placed certain distance apart and force acting between them is F. If 25% charge of A is transferred to B, the force between the charges becomes

- 1) F 2) $\frac{9F}{16}$ 3) $\frac{16F}{9}$ 4) $\frac{4F}{3}$

ANS : 2

31. Which colour of the light has the longest wavelength?

- 1) Red 2) Blue 3) Green 4) Violet

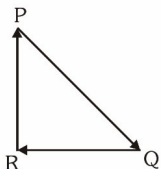
ANS : 1

32. When an object is shot from the bottom of along smooth inclined plane kept at an angle 60° with horizontal, it can travel a distance x_1 along the plane. But when the inclination is decreased to 30° and the same object is shot with the same velocity, it can travel x_2 distance. Then $x_1:x_2$ will be:

- 1) $1:\sqrt{2}$ 2) $\sqrt{2}:1$
3) $1:\sqrt{3}$ 4) $1:2\sqrt{3}$

ANS : 3

33. A particle moving with velocity \vec{V} is acted by three forces shown by the vector triangle PQR. The velocity of the particle will:



- 1) Increase 2) Decrease
3) Remain constant
4) Change according to the smallest force \overline{QR}

ANS : 3

34. At a point A on the earth's surface the angle of dip, $\delta = +25^\circ$. At a point B on the earth's surface the angle of dip, $\delta = -25^\circ$. We can interpret that:

- 1) A and B are both located in the northern hemisphere.
2) A is located in the southern hemisphere and B is located in the northern hemisphere
3) A is located in the northern hemisphere and B is located in the southern hemisphere.
4) A and B are both located in the southern hemisphere.

ANS : 3

35. A force $F = 20+10y$ acts on a particle in y-direction where F is in newton and y in water. Work done by this force to move the particle from $y=0$ to $y=1$ m is:

- 1) 30J 2) 5J 3) 25J 4) 20J

ANS : 3

36. A mass m is attached to thin wire and whirled in a vertical circle. The wire is most likely to break when:

- 1) The mass is at the highest point
2) The wire is horizontal
3) The mass is at the lowest point
4) Inclined at an angle of 60° from vertical

ANS : 3

37. A solid cylinder of mass 2 kg and radius 4 cm is rotating about its axis at the rate of 3 rpm. The torque required to stop after 2π revolutions is:

- 1) $2 \times 10^{-6} \text{ Nm}$ 2) $2 \times 10^{-3} \text{ Nm}$
3) $12 \times 10^{-4} \text{ Nm}$ 4) $2 \times 10^6 \text{ Nm}$

ANS : 1

38. In which of the following devices, the eddy current effect is not used?

- 1) Induction furnace
2) Magnetic braking in train
3) Electromagnet
4) Electric heater

ANS : 4

39. Body A of mass $4m$ moving with speed u collides with another body B of mass $2m$, at rest. The collision is head on and elastic in nature. After the collision the fraction of energy lost by the colliding body A is:

- 1) $\frac{1}{9}$ 2) $\frac{8}{9}$ 3) $\frac{4}{9}$ 4) $\frac{5}{9}$

ANS : 2

40. Average velocity of a particle executing SHM in one complete vibration is

- 1) $\frac{A\omega}{2}$ 2) $A\omega$ 3) $\frac{A\omega^2}{2}$ 4) Zero

ANS : 4

41. Pick the wrong answer in the context with rainbow.

- 1) When the light rays undergo two internal reflections in a water drop, a secondary rainbow is formed
- 2) The order of colours is reversed in the secondary rainbow
- 3) An observer can see rainbow when his front is towards the sun.
- 4) Rainbow is a combined effect of dispersion, refraction and reflection of sunlight

ANS : 3

42. Two similar thin equi-convex lenses, of focal length f each, are kept coaxially in contact with each other such that the focal length of the combination is F_1 . When the space between the two lenses is filled with glycerine (which has the same refractive index ($\mu=1.5$) as that of glass) then the equivalent focal length is F_2 . The ratio $F_1:F_2$ will be

- 1) 2 : 1 2) 1 : 2 3) 2 : 3 4) 3 : 4

ANS : 2

43. A soap bubble, having radius of 1 mm, is blown from a detergent solution having a surface tension of $2.5 \times 10^{-2} \text{N/m}$. The pressure inside the bubble equals at a point Z_0 below the free surface of water in a container. Taking $g=10 \text{ m/s}^2$, density of water $=10^3 \text{ kg/m}^3$, the value of Z_0 is:

- 1) 100 cm 2) 10 cm
3) 1 cm 4) 0.5 cm

ANS : 3

44. In which of the following processes, heat is neither absorbed nor released by a system?

- 1) Isothermal 2) Adiabatic
3) Isobaric 4) Isochoric

ANS : 2

45. Increases in temperature of a gas filled in a container would lead to:

- 1) Increase in its mass
- 2) Increase in its kinetic energy
- 3) Decrease in its pressure
- 4) Decrease in intermolecular distance

ANS : 2

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BIOLOGY

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46. Thiobacillus is a group of bacteria helpful in carrying out:

- 1) Nitrogen fixation
- 2) Chemoautotrophic fixation
- 3) Nitrification
- 4) Denitrification

ANS : 4

47. From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, in first observed in:

- 1) Liverworts
- 2) Mosses
- 3) Pteridophytes
- 4) Gymnosperms

ANS : 3

48. Which of the following is most important cause for animals and plants being driven to extinction?

- 1) Habitat loss and fragmentation
- 2) Drought and floods
- 3) Economic exploitation
- 4) Alien species invasion

ANS : 1

49. Xylem translocates:

- 1) Water only
- 2) Water and mineral salts only
- 3) Water, mineral salts and some organic nitrogen only
- 4) Water, mineral salts, some organic nitrogen and hormones

ANS : 4

50. Which of the following statements is correct?

- 1) Cornea is an external, transparent and protective proteinacious covering of the eye-ball
- 2) Cornea consists of dense connective tissue of elastin and can repair itself
- 3) Cornea is convex, transparent layer which is highly vascularised
- 4) Cornea consists of dense matrix of collagen and is the most sensitive portion of the eye

ANS : 4

51. Persistent nucellus in the seed is known as:

- 1) Chalza
- 2) Perisperm
- 3) Hilum
- 4) Tegmen

ANS : 2

52. Extrusion of second polar body from egg nucleus occurs:

- 1) After entry of sperm but before fertilization
- 2) After fertilization
- 3) Before entry of sperm into ovum
- 4) Simultaneously with first cleavage

ANS : 1

53. Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus:

- 1) Mangifera indica Car. Linn
- 2) Mangifera indica Linn
- 3) Mangifera indica
- 4) Mngifera indica

ANS : 2

54. Expressed Sequence Tags (ESTs) refers to:

- 1) Genes expressed as RNA
- 2) Polypeptide expression
- 3) DNA polymorphism
- 4) Novel DNA sequences

ANS : 1

55. Grass leaves curl inward during very dry weather. Select the most appropriate reason from the following:

- 1) Clousre of stomata
- 2) Flaccidity of bulliform cells
- 3) Shrinkage of air spaces in spongy mesophyll
- 4) Tyloses in vessels

ANS : 2

56. Which of the following muscular disorders is inherited?

- 1) Tetany
- 2) Muscular dystrophy
- 3) Myasthenia gravis
- 4) Botulism

ANS : 2

57. Under which of the following conditions will there be no change in the reading frame of following mRNA?

5' AAC AGC GGU GCU AUU 3'

- 1) Insertion of G at 5th position
- 2) Deletion of G from 5th position
- 3) Insertion of A and G at 4th and 5th positions respectively
- 4) Deletion of GGU from 7th, 8th and 9th positions

ANS : 4

58. The shorter and longer arms of a submetacentric chromosomes are referred to as:

- 1) s-arm and l-arm respectively
- 2) p-arm and q-arm respectively
- 3) q-arm and p-arm respectively
- 4) m-arm and n-arm respectively

ANS : 2

59. Select the correct option.

- 1) 8th, 9th and 10th pairs of ribs articulate directly with the sternum
- 2) 11th and 12th pairs of ribs are connected to the sternum with the help of hyaline cartilage
- 3) Each rib is a flat thin bone and all the ribs are connected dorsally to the thoracic vertebrae and ventrally to the sternum
- 4) There are seven pairs of vertebrosteral, three pairs of vertebrochondral and two pairs of vertebral ribs

ANS : 4

60. Which of the following sexually transmitted diseases is not completely curable?

- 1) Gonorrhoea
- 2) Genital warts
- 3) Genital herpes
- 4) Chlamydia

ANS : 3

61. Which of the following statements is not correct

- 1) Lysosomes have numerous hydrolytic enzymes
- 2) The hydrolytic enzymes of lysosomes are active under acidic pH
- 3) Lysosomes are membrane bound structures
- 4) Lysosomes are formed by the process of packaging in the endoplasmic reticulum

ANS : 4

62. Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production of enzymes?

- 1) BOD incubator
- 2) Sludge digester
- 3) Industrial oven
- 4) Bioreactor

ANS : 4

63. Which one of the following is not a method of in situ conservation of biodiversity?

- 1) Biosphere Reserve
- 2) Wildlife Sanctuary
- 3) Botanical Garden
- 4) Sacred Grove

ANS : 3

64. Consider following features:

- a) Organ system level of organisation
 - b) Bilateral symmetry
 - c) True coelomates with segmentation of body
- Select the correct option of animal groups which possess all the above characteristics.

- 1) Annelida, Arthropoda and Chordata
- 2) Annelida, Arthropoda and Mollusca
- 3) Arthropoda, Mollusca and Chordata
- 4) Annelida, Mollusca and Chordata

ANS : 1

65. The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in:

- 1) Bile duct and Bronchioles
- 2) Fallopian tubes and Pancreatic duct
- 3) Eustachian tube and Salivary duct
- 4) Bronchioles and Fallopian tubes

ANS : 4

66. What is the site of perception of photoperiod necessary for induction of flowering in plants?

- 1) Lateral bud
- 2) Pulvinus
- 3) Shoot apex
- 4) Leaves

ANS : 4

67. Match the hominids with their correct brain size:

- | | |
|--------------------------|-----------------|
| a) Homo habilis | i. 900 cc |
| b) Homo neanderthalensis | ii. 1350 cc |
| c) Homo erectus | iii. 650-800 cc |
| d) Homo sapiens | iv. 1400 cc |

Select the correct option:

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

ANS : 3

68. In *Antirrhinum* (Snapdragon), a red flower was crossed with a white flower and in F_1 generation, pink flowers were obtained. When pink flowers were selfed, the F_2 generation showed white, red and pink flowers. Choose the incorrect statement from the following:
- 1) This experiment does not follow the Principle of Dominance
 - 2) Pink colour in F_1 is due to incomplete dominance
 - 3) Ratio of F_2 is $\frac{1}{4}$ (Red) : $\frac{2}{4}$ (Pink) : $\frac{1}{4}$ (White)
 - 4) Law of Segregation does not apply in this experiment

ANS : 4

69. Which of these following methods is the most suitable for disposal of nuclear waste?
- 1) Shoot the waste into space
 - 2) Bury the waste under Antarctic ice-cover
 - 3) Dump the waste within rocks under deep ocean
 - 4) Bury the waste within rocks deep below the Earth's surface

ANS : 4

70. Drug called 'Heroin' is synthesized by:
- 1) Methylation of morphine
 - 2) Acetylation of morphine
 - 3) Glycosylation of morphine
 - 4) Nitration of morphine

ANS : 2

71. Use of the artificial kidney during haemodialysis may result in:
- a) Nitrogenous waste build-up in the body
 - b) Non-elimination of excess potassium ions
 - c) Reduced absorption of calcium ions from gastro-intestinal tract
 - d) Reduced RBC production
- Which of the following options is the most appropriate?
- 1) a and b are correct
 - 2) b and c are correct
 - 3) c and b are correct
 - 4) a and d are correct

ANS : 3

72. What is the genetic disorder in which an individual has an overall masculine development, gynaecomastia, and is sterile?
- 1) Turner's syndrome
 - 2) Klinefelter's syndrome
 - 3) Edwards syndrome
 - 4) Down's syndrome

ANS : 2

73. Which of the following statements is incorrect?
- 1) Morels and truffles are edible delicacies
 - 2) *Claviceps* is a source of many alkaloids and LSD
 - 3) Conidia are produced exogenously and ascospores endogenously
 - 4) Yeasts have filamentous bodies with long thread-like hyphae

ANS : 4

74. Which of the following ecological pyramids is generally inverted?
- 1) Pyramid of numbers in grassland
 - 2) Pyramid of energy
 - 3) Pyramid of biomass in a forest
 - 4) Pyramid of biomass in a sea

ANS : 4

75. Select the correct sequence for transport of sperm cells in male reproductive system
- 1) Testis → Epididymis → Vasa efferentia → Rete testis → Inguinal canal → Urethra
 - 2) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus
 - 3) Seminiferous tubules → Vas efferentia → Epididymis → Inguinal canal → Urethra
 - 4) Testis → Epididymis → Vasa efferentia → Vas deferens → Ejaculatory duct → Inguinal canal → Urethra → Urethral meatus

ANS : 2

76. Which of the following protocols did aim for reduction emission of chlorfluorocarbons into the atmosphere?
- 1) Montreal Protocol
 - 2) Kyoto Protocol
 - 3) Gothenburg Protocol
 - 4) Geneva Protocol

ANS : 1

77. The correct sequences of phases of cell cycle is:
- 1) $M \rightarrow G_1 \rightarrow G_2 \rightarrow S$
 - 2) $G_1 \rightarrow G_2 \rightarrow S \rightarrow M$
 - 3) $S \rightarrow G_1 \rightarrow G_2 \rightarrow M$
 - 4) $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$

ANS : 4

78. What is the fate of the male gametes discharged in the synergid?
- 1) One fuses with the egg, other(s) degenerate (s) in the synergid
 - 2) All fuse with the egg
 - 3) One fuses with the egg, other(s) fuse (s) with synergid nucleus
 - 4) One fuses with the egg and other fuses with central cell nuclei

ANS : 4

79. Which of the following pair of organelles does not contain DNA
- 1) Mitochondria and Lysosomes
 - 2) Chloroplast and Vacuoles
 - 3) Lysosomes and Vacuoles
 - 4) Nuclear envelopes and Mitochondria

ANS : 3

80. Which of the following glucose transporters is inulin-dependent?
- 1) GLUT I
 - 2) GLUT II
 - 3) GLUT III
 - 4) GLUT IV

ANS : 4

81. Conversion of glucose to glucose - 6-phosphate, the first irreversible reaction of glycolysis, is catalysed by:
- 1) Aldolase
 - 2) Hexokinase
 - 3) Enolase
 - 4) Phosphofructokinase

ANS : 2

82. Variations caused by mutation, as proposed by Hugo de Vries, are:
- 1) Random and Directional
 - 2) Random and directionless
 - 3) Small and directional
 - 4) Small and directionless

ANS : 2

83. Which of the following statements regarding mitochondria is incorrect?
- 1) Outer membrane is permeable to monomers of carbohydrates, fats and proteins
 - 2) Enzymes of electron transport are embedded in outer membrane
 - 3) Inner membrane is convoluted with infoldings.
 - 4) Mitochondrial matrix contains single circular DNA molecules and ribosomes.

ANS : 2

84. Select the correct sequences or organs in the alimentary canal of cockroach starting from mouth:
- 1) Pharynx \rightarrow Oesophagus \rightarrow Crop \rightarrow Gizzard \rightarrow Ileum \rightarrow Colon \rightarrow Rectum
 - 2) Pharynx \rightarrow Oesophagus \rightarrow Gizzard \rightarrow Crop \rightarrow Ileum \rightarrow Colon \rightarrow Rectum
 - 3) Pharynx \rightarrow Oesophagus \rightarrow Gizzard \rightarrow Ileum \rightarrow Crop \rightarrow Colon \rightarrow Rectum
 - 4) Pharynx \rightarrow Oesophagus \rightarrow Ileum \rightarrow Crop \rightarrow Gizzard \rightarrow Colon \rightarrow Rectum

ANS : 1

85. Select the hormone-releasing Intra-Uterine Devices
- 1) Vaults, LNG-20
 - 2) Multiload 375, Progestasert
 - 3) Progestasert, LNG-20
 - 4) Lippes Loop, Multiload 375

ANS : 3

86. Concanavalin A is:
- 1) An alkaloid
 - 2) An essential oil
 - 3) A lectin
 - 4) A pigment

ANS : 3

87. DNA precipitation out of a mixture of biomolecules can be achieved by treatment with:
- 1) Isopropanol
 - 2) Chilled ethanol
 - 3) Methanol at room temperature
 - 4) Chilled chloroform

ANS : 2

88. Which of the following factors is responsible for the formation of concentrated urine?
- 1) Low levels of antidiuretic hormone
 - 2) Maintaining hyperosmolarity towards inner medullary interstitium in the kidney
 - 3) Secretion of erythropoietin by Juxtaglomerular complex
 - 4) Hydrostatic pressure during glomerular filtration

ANS : 2

89. What would be the heart rate of a person if the cardiac output is 5L, blood volume in the ventricles at the end of diastole is 100 mL and at the end of ventricular systole is 50 mL?
- 1) 50 beats per minute
 - 2) 75 beats per minute
 - 3) 100 beats per minute
 - 4) 150 beats per minute

ANS : 3

90. Select the incorrect statement
- 1) Inbreeding increases homozygosity
 - 2) Inbreeding is essential to evolve purelines in any animal
 - 3) Inbreeding selects harmful recessive genes that reduce fertility and productivity
 - 4) Inbreeding helps in accumulation of superior genes and eliminators of undesirable genes

ANS : 3

91. Match the following genes of the Lac operon with their respective products:
- | | |
|-----------|----------------------------|
| a) i gene | i. β - galactosidase |
| b) z gene | ii. Permease |
| c) a gene | iii. Repressor |
| d) y gene | iv. Transacetylase |
- Select the correct option:

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

ANS : 3

92. Which of the following features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology?
- 1) Genetic code is not ambiguous
 - 2) Genetic code is redundant
 - 3) Genetic code is nearly universal
 - 4) Genetic code is specific

ANS : 3

93. Match the following hormones with the respective disease:
- | | |
|-------------------|------------------------|
| a) Insulin | i. Addison's diseases |
| b) Thyroxin | ii. Diabetes insipidus |
| c) Corticoids | iii. Acromegaly |
| d) Growth Hormone | iv. Goitre |
| | v. Diabetes mellitus |

Select the correct option:

- | a | b | c | d | a | b | c | d |
|-------|----|----|-----|-------|----|-----|-----|
| 1) v | i | ii | iii | 2) ii | iv | iii | i |
| 3) iv | iv | i | iii | 4) ii | iv | i | iii |

ANS : 3

94. Colostrum, the yellowish fluid, secreted by mother during the mineral days of lactation is very essential to impart immunity to the newborn infants because it contains:
- 1) Natural killer cells
 - 2) Monocytes
 - 3) Macrophages
 - 4) Immunoglobulin A

ANS : 4

95. Placentation, in which ovules develop on the inner wall of the ovary or in peripheral part, is:
- 1) Basal
 - 2) Axile
 - 3) Parietal
 - 4) Free central

ANS : 3

96. Cells in G_0 phase:
- 1) Exit the cell cycle
 - 2) Enter the cell cycle
 - 3) Suspend the cell cycle
 - 4) Terminate the cell cycle

ANS : 1

97. Respiratory Quotient (RQ) value of tripalmitin is:
- 1) 0.9
 - 2) 0.7
 - 3) 0.07
 - 4) 0.09

ANS : 2

98. Select the correct group of biocontrol agents.
- 1) Bacillus thuringiensis, Tobacco mosaic virus, Aphids
 - 2) Trichoderma, Bcuvovirus, Bacillus thuringiensis
 - 3) Oscillatoria, Rhizobium, Trichoderma
 - 4) Nostoc, Azospirillum, Nucleopolyhedrovirus

ANS : 2

99. Match the Column-I with Column-II

Column-I

- a) P - wave
- b) QRS complex
- c) T - wave
- d) Reduction in the size of T-wave

Column-II

- i. Depolarisation of ventricles
- ii. Repolarisation of ventricles
- iii. Coronary ischemia
- iv. Depolarisation of atria
- v. Repolarisation of atria

- | | a | b | c | d | | a | b | c | d |
|----|----------|----------|----------|----------|----|----------|----------|----------|----------|
| 1) | iv | i | ii | iii | 2) | iv | i | ii | v |
| 3) | ii | i | v | iii | 4) | ii | iii | v | iv |

ANS : 1

100. Match the following structures with their respective location in organs:

- a) Crypts of Lieberkuhn
- b) Glisson's Capsule
- c) Islets of Langerhans
- d) Bruner's Glands

- i. Pancreas
- ii. Duodenum
- iii. Small intestine
- iv. Liver

Select the correct option from the following:

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

ANS : 3

101. Which of the following contraceptive methods do involve a role of hormone?

- 1) Lactational amenorrhea, Bills, Emergency contraceptives
- 2) Barrier method, Lactational amenorrhea, pills
- 3) CuT, Pills, Emergency contraceptives
- 4) Pills, Emergency contraceptives, Barrier methods

ANS : 1

102. Due to increasing air-borne allergens and pollutants, many people in urban areas are suffering from respiratory disorder causing wheezing due to:

- 1) Benign growth on mucous lining of nasal cavity
- 2) Inflammation of bronchi and bronchioles
- 3) Proliferation of fibrous tissues and damage of the alverolar walls
- 4) Reduction in the secretion of surfactants by pneumocytes

ANS : 2

103. A gene locus has two alleles A, a. If the frequency of dominant allele A is 0.4, then what will be the frequency of homozygous dominant, heterozygous and homozygous recessive individuals in the population?

- 1) 0.36 (AA); 0.48 (Aa); 0.16(aa)
- 2) 0.16 (AA); 0.24 (Aa); 0.36(aa)
- 3) 0.16 (AA); 0.48 (Aa); 0.36 (aa)
- 4) 0.16 (AA); 0.36 (Aa); 0.48 (aa)

ANS : 3

104. How does steroid hormone influence the cellular activities?

- 1) Changing the permability of the cell membrane
- 2) Binding to DNA and forming a gene-hormone complex
- 3) Activating cyclic AMP located on the well membrane
- 4) Using aquaporin channels as second messenger

ANS : 2

105. In some plants, the female gamete develops into embryo without fertilization. This phenomenon is known as:

- | | |
|-------------|--------------------|
| 1) Autogamy | 2) Parthenocarpy |
| 3) Syngamy | 4) Parthenogenesis |

ANS : 4

106. Which one of the following statements regarding post-fertilization development in flowering plants is incorrect?

- 1) Ovary develops into fruit
- 2) Zygote develops into embryo
- 3) Central cell develops into endosperm
- 4) Ovules develop into embryo sac

ANS : 4

107. Match the following organism with the products they produce:

- | | |
|-----------------------------|-----------------|
| a) Lactobacillus | i. Cheese |
| b) Saccharomyces cerevisiae | ii. Curd |
| c) Aspergillus niger | iii. Bread |
| d) Acetobacter aceti | iv. Acetic Acid |

Select the correct option:

- | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|
| a | b | c | d | a | b | c | d |
| 1) ii | iv | v | iii | 2) ii | iv | iii | v |
| 3) iii | iv | v | i | 4) ii | i | iii | v |

ANS : 2

108. Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 100 mL respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL?

- | | |
|------------|------------|
| 1) 1500 mL | 2) 1700 mL |
| 3) 2200 mL | 4) 2700 mL |

ANS : 1

109. Purines found both in DNA and RNA are:

- 1) Adenine and thymine
- 2) Adenine and guanine
- 3) Guanine and cytosine
- 4) Cytosine and thymine

ANS : 2

110. The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by:

- 1) T.H. Morgan
- 2) Gregor J. Mendel
- 3) Alfred Sturtevant
- 4) Sutton Boveri

ANS : 3

111. The concept "Onmis cellula-ecellula" regarding cell division was first proposed by

- 1) Rudlof Virchow
- 2) Theodore Schwann
- 3) Schleiden
- 4) Aristotle

ANS : 1

112. Phloem in gymnosperms lacks:

- 1) Aluminous cells and sieve cells
- 2) Sieve tubes only
- 3) Companion cells only
- 4) Both sieve tube and companion cells

ANS : 4

113. Match the following organisms with their respective characteristics

- | | |
|------------------|------------------------|
| a) Pila | i) Flame cell |
| b) Bombyx | ii) Comb plates |
| c) Pleurobrachia | iii) Radula |
| d) Taenia | iv) Malpighian tubules |

Select the correct option from the following

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

ANS : 2

114. It takes very long time for pineapple plants to produce flowers. Which combination of hormones can be applied to artificially induce flowering in pineapple plants throughout the year to increase yield?

- 1) Auxin and Ethylene
- 2) Gibberellin and Cytokinin
- 3) Gibberellin and Abscisic acid
- 4) Cytokinin and Abscisic acid

ANS : 1

115. Which of the following pairs of gases is mainly responsible for green house effect?

- 1) ozone and Ammonia
- 2) Oxygen and Nitrogen
- 3) Nitrogen and Sulphur dioxide
- 4) Carbon dioxide and Methane

ANS : 4

116. Which of the following is true for Golden rice?

- 1) It is Vitamin A enriched, with a gene from daffodil
- 2) It is pest resistant, with a gene form Bacillus thuringiensis
- 3) it is drought tolerant, developed using Agrobacterium vector.
- 4) It has yellow grains, because of a gene introduced from a primitive variety of rice

ANS : 1

117. Which of the following immune responses is responsible for rejection of kidney graft?

- 1) Auto-immune response
- 2) Humoral immune response
- 3) Inflammatory immune response
- 4) Cell-mediated immune response

ANS : 4

118. Which of the statements given below is not true about formation of Annual Rings in trees?
- 1) Annual rings is combination of spring wood and autumn wood produced in a year
 - 2) Differential activity of cambium causes light and dark bands of tissue-early and late wood respectively.
 - 3) Activity of cambium depends upon variation in climate
 - 4) Annual rings are not prominent in trees of temperate region

ANS : 4

119. What is the direction of movement of sugars in phloem?
- 1) Non-multidirectional
 - 2) Upward
 - 3) Downward
 - 4) Bi-directional

ANS : 4

120. Polyblend, a fine powder of recycled modified plastic, has proved to be a good material for:
- 1) Making plastic sacks
 - 2) Use as a fertilizer
 - 3) Construction of roads
 - 4) Making tubes and pipes

ANS : 3

121. What map unit (Centimorgan) is adopted in the construction of genetic maps?
- 1) A unit of distance between two expressed genes, representing 10% cross over.
 - 2) A unit of distance between two expressed genes, representing 100% cross over
 - 3) A unit of distance between genes on chromosomes, representing 1% cross over
 - 4) A unit of distance between genes on chromosomes, representing 50% cross over.

ANS : 3

122. Consider the following statements
(A) Coenzyme or metal ion that is tightly bound to enzyme protein is called prosthetic group
(B) A complete catalytic active enzyme with its bound prosthetic group is called apoenzyme
Select the correct option
- 1) Both A and B are true
 - 2) A is true but B is false
 - 3) Both A and B are false
 - 4) A is false but B is true

ANS : 3

123. Which of the following can be used as a biocontrol agent in the treatment of plant disease?
- 1) Trichoderma
 - 2) Chlorella
 - 3) Anabaena
 - 4) Lactobacillus

ANS : 1

124. Pinus seed cannot germinate and establish without fungal association. This is because:
- 1) Its embryo is immature
 - 2) it has obligate association with mycorrhizae
 - 3) It has very hard seed coat
 - 4) Its seeds contain inhibitors that prevent germination

ANS : 2

125. Which of the following is a commercial blood cholesterol lowering agent?
- 1) Cyclosporin A
 - 2) Stain
 - 3) Streptokinase
 - 4) Lipases

ANS : 2

126. Identify the correct pair representing the causative agent of typhoid fever and the confirmatory test for typhoid.
- 1) Plasmodium vivax/UTI test
 - 2) Streptococcus pneumonia/ Widal test
 - 3) Salmonella typhi/ Anthrone test
 - 4) Salmonella typhi / Widla test

ANS : 4

127. Match Column-I with Column-II

| Column-I | Column-II |
|---------------|--|
| a) Saprophyte | i) Symbiotic association of fungi with plant roots |
| b) Parasite | ii) Decomposition of dead organic materials |
| c) Lichens | iii) Living on living plants or animals |
| d) Mycorrhiza | iv) Symbiotic association of algae and fungi |

Choose the correct answer from the option give below

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

ANS : 4

128. In a species, the weight of newborn ranges from 2 to 5 kg . 97% of the newborn with an average weight between 3 to 3.3 kg survive whereas 99% of the infants born with weights from 2 to 2.5 kg or 4.5 to 5 kg die. Which type of selection process is taking place?
1) Directional Selection
2) Stabilizing Selection
3) Disruptive Selection
4) Cyclical Selection

ANS : 2

129. Following statements describe the characteristics of the enzyme Restriction Endonuclease. Identify the incorrect statement
1) The enzyme cuts DNA molecule at identified position within the DNA
2) The enzyme binds DNA at specific sites and cuts only one of the two strands.
3) The enzyme cuts the sugar-phosphate backbone at specific sites one each strand.
4) The enzyme recognizes a specific palindromic nucleotide sequence in the DNA

ANS : 2

130. Select the incorrect statement
1) Male fruit fly heterogametic
2) In male grasshoppers, 50% of sperms have no sex-chromosome
3) In domesticated fowls, sex of progeny depends on the type of sperm rather than egg
4) Human males have one of their sex-chromosome much shorter than the other

ANS : 3

131. Which of the following statements is incorrect?
1) Viroids lack a protein coat
2) Viruses are obligate parasites
3) Infective constituent in viruses is the protein coat
4) Prions consist of abnormally folded proteins

ANS : 3

132. Identify the cells whose secretion protects the lining of gastro-intestinal tract from various enzymes
1) Chief Cells 2) Goblet Cells
3) oxyntic Cells 4) Duodenal Cells

ANS : 2

133. The Earth Summit held in Rio de Janeiro in 1992 was called:
1) To reduce CO₂ emissions and global warming
2) For conservation of biodiversity and sustainable utilization of its benefits
3) To asses threat posed to native species by invasive weed species
4) For immediate steps to discontinue use of CFC that were damaging the ozone layer

ANS : 2

134. What triggers activation of protoxin to active Bt toxin of Bacillus thuringiensis in boll worm?
1) Body temperature
2) Moist surface of midgut
3) Alkaline pH of gut
4) Acidic pH of stomach

ANS : 3

135. Which part of the brain is responsible for thermoregulation?
1) Cerebrum
2) Hypothalamus
3) Corpus callosum
4) medulla oblongata

ANS : 2

NEET EXAMINATION – 2019 (CODE P-5)

CHEMISTRY

HELD ON 05-05-2019 (TIME : 02.00 PM TO 05.00 PM)

136. Match the Xenon compounds in Column-I with its structure in Column -II and assign the correct code

| Column-I | Column-II |
|----------------------|---------------------------|
| a. XeF ₄ | i. pyramidal |
| b. XeF ₆ | ii. Square planar |
| c. XeOF ₄ | iii. distorted octahedral |
| d. XeO ₃ | iv. Square pyramidal |

Code :

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

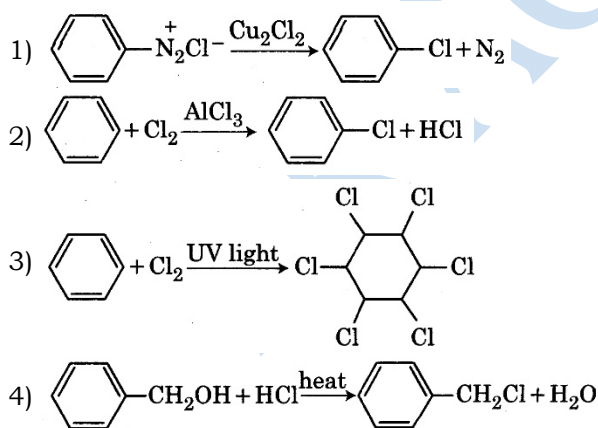
ANS : 2

137. Which is the correct thermal stability order for H₂E (E=O, S, Se, Te and Po) ?

- 1) H₂S < H₂O < H₂Se < H₂Te < H₂Po
2) H₂O < H₂S < H₂Se < H₂Te < H₂Po
3) H₂Po < H₂Te < H₂Se < H₂S < H₂O
4) H₂Se < H₂Te < H₂Po < H₂O < H₂S

ANS : 3

138. Among the following, the reaction that proceeds through an electrophilic substitution, is



ANS : 2

139. Enzymes that utilize ATP in phosphate transfer require an alkaline earth metal (M) as the cofactor M is

- 1) Be 2) Mg 3) Ca 4) Sr

ANS : 2

140. Which of the following reactions are disproportionation reaction ?

- (a) $2\text{Cu}^+ \rightarrow \text{Cu}^{2+} + \text{Cu}^0$
(b) $3\text{MnO}_4^{2-} + 4\text{H}^+ \rightarrow 2\text{MnO}_4^- + \text{MnO}_2 + 2\text{H}_2\text{O}$
(c) $2\text{KMnO}_4 \xrightarrow{\Delta} \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$
(d) $2\text{MnO}_4^- + 3\text{Mn}^{2+} + 2\text{H}_2\text{O} \rightarrow 5\text{MnO}_2 + 4\text{H}^+$
- 1) (a) and (b) only 2) (a), (b) and (c)
3) (a), (c) and (d) 4) (a) and (d) only

ANS : 1

141. The method used to remove temporary hardness of water is

- 1) Calgon's method
2) Clark's method
3) Ion-exchange method
4) Synthetic resins method

ANS : 2

142. For the chemical reaction $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$

the correct option is

- 1) $-\frac{1}{3} \frac{d[\text{H}_2]}{dt} = -\frac{1}{2} \frac{d[\text{NH}_3]}{dt}$
2) $-\frac{d[\text{N}_2]}{dt} = 2 \frac{d[\text{NH}_3]}{dt}$
3) $-\frac{d[\text{N}_2]}{dt} = \frac{1}{2} \frac{d[\text{NH}_3]}{dt}$
4) $3 \frac{d[\text{H}_2]}{dt} = 2 \frac{d[\text{NH}_3]}{dt}$

ANS : 3

143. For the second period elements the correct increasing order of first ionisation enthalpy is

- 1) Li < Be < B < C < N < O < F < Ne
2) Li < B < Be < C < O < N < F < Ne
3) Li < B < Be < C < N < O < F < Ne
4) Li < Be < B < C < O < N < F < Ne

ANS : 2

144. For a cell involving one electron $E_{\text{cell}}^- = 0.59\text{V}$ at 298K, the equilibrium constant for the cell reaction is

$$\left[\text{Given that } \frac{2.303RT}{F} = 0.059 \text{ at } T = 298\text{K} \right]$$

- 1) 1.0×10^2 2) 1.0×10^5 3) 1.0×10^{10} 4) 1.0×10^{30}

ANS : 3 (Hint : $E_{\text{cell}}^0 = \frac{0.0591}{n} \log k_c$)

145. The magnate and permanganate ions are tetrahedral, due to :

- 1) The π -bonding involves overlap of p-orbitals of oxygen with d-orbital of manganese
- 2) There is no π -bonding
- 3) The π -bonding involves overlap of p-orbitals of oxygen with p-orbitals of manganese
- 4) The π -bonding involves overlap of d-orbitals of oxygen with d-orbitals of manganese

ANS : 1

146. The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber's process is

- 1) 10 2) 20 3) 30 4) 40

ANS : 3 (Hint : $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$)

147. A gas at 350K and 15 bar has molar volume 20 percent smaller than that for an ideal under the same conditions. The correct option about the gas and its compressibility factor (Z) is

- 1) $Z > 1$ and attractive forces are dominant
- 2) $Z > 1$ and repulsive force are dominant
- 3) $Z < 1$ and attractive forces are dominant
- 4) $Z < 1$ and repulsive forces are dominant

ANS : 3 (Hint : $Z = \frac{V_{\text{real}}}{22.4}$)

148. Which will make basic buffer ?

- 1) 50 mL of 0.1M NaOH + 25 mL of 0.1M CH_3COOH
- 2) 100 mL of 0.1M CH_3COOH + 100mL of 0.1M NaOH
- 3) 100 mL of 0.1M HCl + 200 mL of 0.1M NH_4OH
- 4) 100 mL of 0.1M HCl + 100 mL of 0.1M NaOH

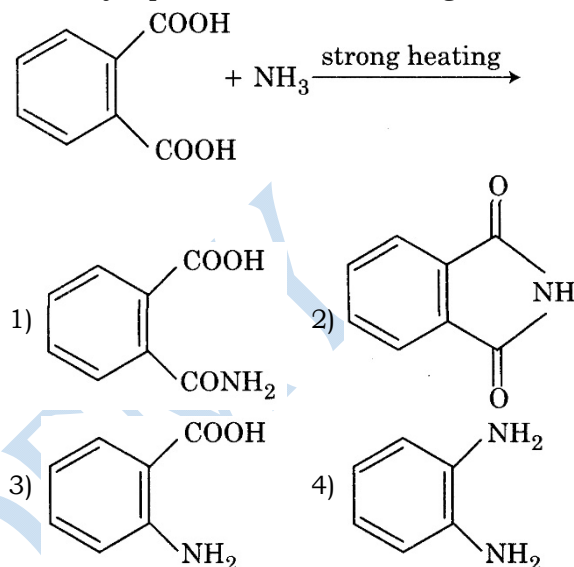
ANS : 3

149. If the rate constant for a first order reaction is k, the time (t) required for the completion of 99% of the reaction is given by

- 1) $t = 0.693/k$
- 2) $t = 6.909/k$
- 3) $t = 4.606/k$
- 4) $t = 2.303/k$

ANS : 3

150. The major product of the following reaction is



ANS : 2

151. Conjugate base for Bronsted acids H_2O and HF are

- 1) OH^- and H_2F^+ , respectively
- 2) H_3O^+ and F^- , respectively
- 3) OH^- and F^- , respectively
- 4) H_3O^+ and H_2F^+ , respectively

ANS : 3

152. Under isothermal condition, a gas at 300K expands from 0.1L to 0.25L against a constant external pressure of 2 bar. The work done by the gas is (Give that 1L bar = 100J)

- 1) -30J 2) 5 kJ 3) 25 J 4) 30 J

ANS : 1 (Hint : $W = -P_{\text{ext}} \Delta V$)

153. Which of the following species is not stable ?

- 1) $[\text{SiF}_6]^{2-}$
- 2) $[\text{GeCl}_6]^{2-}$
- 3) $[\text{Sn}(\text{OH})_6]^{2-}$
- 4) $[\text{SiCl}_6]^{2-}$

ANS : 4

154. Which mixture of the solutions will lead to the formation of negatively charged colloidal $[AgI]I^-$ sol. ?

- 1) 50 ml of 1M $AgNO_3$ +50mL of 1.5M KI
- 2) 50 ml of 1M $AgNO_3$ +50 mL of 2M KI
- 3) 50 ml of 2M $AgNO_3$ +50 mL of 1.5M KI
- 4) 50 ml of 0.1M $AgNO_3$ +50 mL of 0.1M KI

ANS : 1 & 2

155. Which one is malachite from the following ?

- 1) $CuFeS_2$
- 2) $Cu(OH)_2$
- 3) Fe_3O_4
- 4) $CuCO_3.Cu(OH)_2$

ANS : 4

156. Which of the following is incorrect statement ?

- 1) PbF_4 is covalent in nature
- 2) $SiCl_4$ is easily hydrolysed
- 3) GeX_4 (X=F, Cl, Br, I) is more stable than GeX_2
- 4) SnF_4 is ionic in nature

ANS : 1

157. The non-essential amino acid among the following is

- 1) valine
- 2) leucine
- 3) alanine
- 4) lysine

ANS : 3

158. Match the following

- | | |
|----------------------|-----------------------------------|
| (a) Pure nitrogen | (i) Chlorine |
| (b) Haber process | (ii) Sulphuric acid |
| (c) Contact process | (iii) Ammonia |
| (d) Deacon's process | (iv) Sodium azide or Barium azide |

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

ANS : 4

159. Among the following, the narrow spectrum antibiotic is

- 1) penicillin G
- 2) ampicillin
- 3) amoxicillin
- 4) chloramphenicol

ANS : 1

160. Which of the following is an amphoteric hydroxide ?

- 1) $Sr(OH)_2$
- 2) $Ca(OH)_2$
- 3) $Mg(OH)_2$
- 4) $Be(OH)_2$

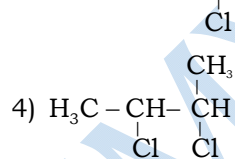
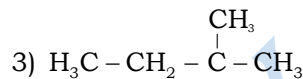
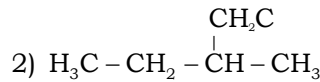
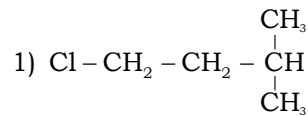
ANS : 4

161. Which of the following diatomic molecular species has only π bonds according to Molecular Orbital Theory ?

- 1) O_2
- 2) N_2
- 3) C_2
- 4) Be_2

ANS : 3

162. An alkene "A" on reaction with O_3 and $Zn-H_2O$ gives propanone and ethanol in equimolar ratio. Addition of HCl to alkene "A" gives "B" as the major product. The structure of product "B" is



ANS : 3

163. The biodegradable polymer is

- 1) nylon-6, 6
- 2) nylon 2-nylon 4
- 3) nylon-6
- 4) Buna-S

ANS : 2

164. The number of sigma (σ) and pi (π) bonds in pent-2-en-4-yne is

- 1) 10σ bonds and 3π bonds
- 2) 8σ bonds and 5π bonds
- 3) 11σ bonds and 2π bonds
- 4) 13σ bonds and no π bonds

ANS : 1

165. The correct order of the basic strength of methyl substituted amines in aqueous solution is

- 1) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$
- 2) $(CH_3)_3N > CH_3NH_2 > (CH_3)_2NH$
- 3) $(CH_3)_3N > (CH_3)_2NH > CH_3NH_2$
- 4) $CH_2NH_2 > (CH_3)_2NH > (CH_3)_3N$

ANS : 1

166. What is the correct electronic configuration of the central atom in $K_4[Fe(CN)_6]$ based on crystal field theory ?

- 1) $t_{2g}^4 e_g^2$
- 2) $t_{2g}^6 e_g^0$
- 3) $e^3 t_2^3$
- 4) $e^4 t_2^2$

ANS : 2

167. Among the following, the one that is not a green house gas is

- 1) nitrous oxide 2) methane
3) ozone 4) sulphur dioxide

ANS : 4

168. A compound is formed by cation C and anion A. The anions form hexagonal close packed (hcp) lattice and the cations occupy 75% of octahedral voids. The formula of the compound is

- 1) C₂A₃ 2) C₃A₂ 3) C₃A₄ 4) C₄A₃

ANS : 3

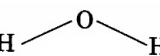
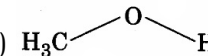
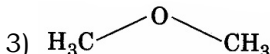
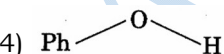
C A
 $\frac{3 \times N}{4}$ N
Hint : 3 : 4
 C₃A₄

169. For an ideal solution, the correct option is

- 1) $\Delta_{\text{mix}} S = 0$ at constant T and P
2) $\Delta_{\text{mix}} V \neq 0$ at constant T and P
3) $\Delta_{\text{mix}} H = 0$ at constant T and P
4) $\Delta_{\text{mix}} G = 0$ at constant T and P

ANS : 3

170. The compound that is most difficult to protonate is

- 1)  2) 
3)  4) 

ANS : 4

171. 4d, 5p, 5f and 6p orbitals are arranged in the order of decreasing energy. The correct option is

- 1) 5f > 6p > 5p > 4d 2) 6p > 5f > 5p > 4d
3) 6p > 5f > 4d > 5p 4) 5f > 6p > 4d > 5p

ANS : 1

172. The mixture that forms maximum boiling azeotrope is

- 1) Water + Nitric acid
2) Ethanol + Water
3) Acetone + Carbon disulphide
4) Heptane + Octane

ANS : 1

173. In which case change in entropy is negative ?

- 1) Evaporation of water
2) Expansion of a gas at constant temperature
3) Sublimation of solid to gas
4) $2\text{H(g)} \rightarrow \text{H}_2\text{(g)}$

ANS : 4

174. pH of a saturated solution of Ca(OH)₂ is 9. The solubility product (K_{sp}) of Ca(OH)₂ is

- 1) 0.5×10^{-15} 2) 0.25×10^{-10}
3) 0.125×10^{-15} 4) 0.5×10^{-10}

ANS : 1

175. Which of the following series of transitions in the spectrum of hydrogen atom falls in visible region ?

- 1) Lyman series 2) Balmer series
3) Paschen series 4) Brackett series

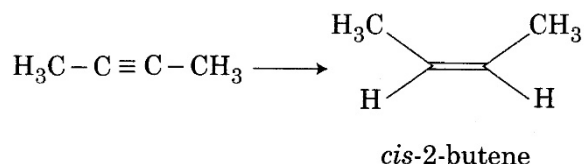
ANS : 2

176. Identify the incorrect statement related to PCl₅ from the following

- 1) Three equatorial P-Cl bonds make an angle of 120° with each other
2) Two axial P-Cl bonds make an angle of 180° with each other
3) Axial P-Cl bonds are longer than equatorial P-Cl bonds
4) PCl₅ molecule is non-reactive

ANS : 4

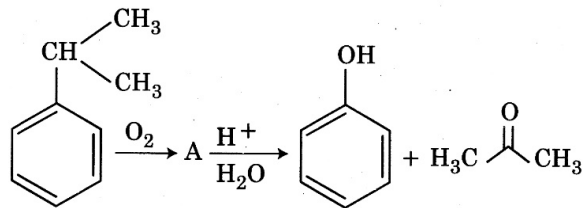
177. The most suitable reagent for the following conversion, is



- 1) Na/Liquid NH₃ 2) H₂, Pd/C, quinolone
3) Zn/HCl 4) Hg²⁺/H⁺, H₂O

ANS : 2

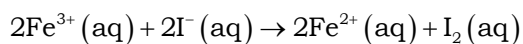
178. The structure of intermediate A in the following reaction, is



- 1)
- 2)
- 3)
- 4)

ANS : 2

179. For the cell reaction



$E_{\text{cell}}^{-} = 0.24\text{V}$ at 298K. The standard Gibbs energy ($\Delta_r G^{-}$) of the cell reaction is

[Given that Faraday constant $F = 96500 \text{ C mol}^{-1}$]

- 1) $-46.32 \text{ kJ mol}^{-1}$ 2) $-23.16 \text{ kJ mol}^{-1}$
3) $46.32 \text{ kJ mol}^{-1}$ 4) $23.16 \text{ kJ mol}^{-1}$

ANS : 1 (Hint : $\Delta G^{\circ} = -nFE_{\text{cell}}^{\circ}$)

180. The correct structure of tribromooctaoxide is

- 1)
- 2)
- 3)
- 4)

ANS : 1