NEET – 2019

Time: 3 Hours **Total Marks: 720**

General Instructions:

1. The test is of **3 hours** duration.
2. The Test Paper contains **180** questions. There are **three** parts in the question paper consisting of **Physics and Chemistry** having **45** questions each and **Biology** with **90 questions.**
3. Each question carries **4 marks**. For each correct response, the candidate will get **4 marks**. For each incorrect response, **1 mark** will be deducted from the total scores. The maximum marks are **720**.
4. Out of the four options given for each question, only one option is the correct answer. If more than one response is marked in any question, it will be treated as wrong response and marked up for wrong response will be deducted.
5. No deduction from the total score will be made if no response is indicated for an item in the answer box.
6. Use of Electronic/Manual Calculator is prohibited.

Biology

Q.1 From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, is first observed in :

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

Q.2 Extrusion of second polar body from egg nucleus occurs :

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

Q.3 DNA precipitation out of a mixture of bimolecules can be achieved by treatment with :

(1) Methanol at room temperature
(2) Chilled chloroform
(3) Isopropanol
(4) Chilled ethanol

Q.4 Due to increasing air-borne allergens and pollutants, many people in urban areas are suffering from respiratory disorder causing wheezing due to :

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

Q.5 The Earth summit held in Rio de Janeiro in 1992 was called :

(1) to assess threat posed to native species by invasive weed species
(2) for immediate steps to discontinue use of CFCs that were damaging the ozone layer
(3) to reduce CO_2 emissions and global warming
(4) for conservation of biodiversity and sustainable utilization of its benefit

Q.6 Match the hominids with their correct brain size :

(a) *Homo habilis*	(i) 900 cc
(b) *Homo neanderthalensis*	(ii) 1350 cc
(c) *Homoerectus*	(iii) 650-800 cc
(d) *Homosapiens*	(iv) 1400 cc

Select the correct option.

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

Q.7 How does steroid hormone influence the cellular activities ?

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

Q.8 Expressed Sequence Tags (ESTs) refers to :

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

Q.9 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) Gibberellin and Abscicic acid
(2) Cytokinin and Abscisic acid
(3) Auxin and Ethylene
(4) Gibberellin and Cytokinin

Q.10 Which of the following ecological pyramids is generally inverted?

(1) Pyramid of biomass in a forest
(2) Pyramid of biomass in a sea
(3) Pyramid of numbers in grassland
(4) Pyramid of energy

Q.11 Which of the following pair of organelles does not contains DNA ?

(1) Lysosomes and Vacuoles
(2) Nuclear envelope and Mitochondria
(3) Mitochodria and Lysosomes
(4) Chloroplast and Vacuoles

Q.12 Select the correct sequence for transport of sperm cells in male reproductive system :

(1) Seminiferous tubules → Vasa efferentia → Epididymis → Inguinal canal → Urethra
(2) Testis → Epididymis → Vasa efferentia → Vas deferens → Ejaculatory duct → Inguinal canal → Urethra → Urethral meatus
(3) Testis → Epididymis → Vasa efferentia → Rate testis → Inguinal canal → Urethra
(4) Seminiferous tubules → Rete testis → Vasa efferentia → Epididymis → Vas deferens → Ejaculatory duct → Urethra → Urethral meatus

Q.13 Match the following hormones with the respective disease :

(a) Insulin	(i) Addison's disease
(b) Thyroxin	(ii) Diabetes insipidus
(c) Corticoids	(iii) Acromegaly
(d) Growth Hormones	(iv) Goitre
	(v) Diabetes mellitus

Select the correct option.

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

Q.14 Persistent nucellus in the seed is known as

(1) Hilum (2) Tegmen (3) Chalaza (4) Perisperm

Q.15 Pinus seed cannot germinate and establish without fungal association. This is because :

(1) it has very hard seed coat
(2) Its seed contain inhibitors that prevent germination
(3) its embryo is immature
(4) it has obligate association with mycorrhizae

Q.16 Cells in G_0 phase :

(1) suspend the cell cycle
(2) terminate the cell cycle
(3) exit the cell cycle
(4) enter the cell cycle

Q.17 Match the following structures with their respective location in organs :

(a) Crypts of Lieberkuhn	(i) Pancreas
(b) Glisson's capsule	(ii) Duodenum
(c) Islets of Langerhans	(iii) Small intestine
(d) Brunner's Glands	(iv) Liver

Select the correct option.

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

Q.18 Grass leaves curl inward during very dry weather. Select the most appropriate reason from the following :

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

Q.19 Consider the following statements :

(A) Coenzyme of 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 false
(2) (A) is false but (B) is true
(3) Both (A) and (B) are true
(4) (A) is true but (B) is false

Q.20 Respiratory Quotient (RQ) value of tripalmitin is :

(1) 0.07 (2) 0.09 (3) 0.9 (4) 0.7

Q.21 Which of the following statements is incorrect ?

(1) Infective constituent in viruses is the protein coat

(2) Prions consist of abnormally folded proteins

(3) Viroids lack a protein coat

(4) Viruses are obligate parasites

Q.22 Phloem in gymnosperms lacks :

(1) Companion cells only

(2) Both sieve tubes and companion cells

(3) Albuminous cells and sieve cells

(4) Sieve tubes only

Q.23 Under which of the following conditions will there be no change in the reading frame of following mRNA ? 5' AACAGCGGUGCUAUU 3'

(1) Insertion of A and G at 4^{th} and 5^{th} positions respectively

(2) Deletion of GGU from 7^{th}, 8^{th} and 9^{th} positions

(3) Insertion of G at 5^{th} positions

(4) Deletion of G from 5^{th} positions

Q.24 Identify the cells whose secretion protects the lining of gastro-intestinal tract from various enzymes.

(1) Oxyntic Cells (2) Duodenal Cells (3) Chief Cells (4) Goblet Cells

Q.25 What is the site of perception of photoperiod necessary for induction of flowering in plants ?

(1) Shoot apex (2) Leaves (3) Lateral buds (4) Pulvinus

Q.26 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) 100 beats per minute (2) 125 beats per minute

(3) 50 beats per minute (4) 75 beats per minute

Q.27 Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 1000 mL respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL ?

(1) 2200 mL (2) 2700 mL (3) 1500 mL (4) 1700 mL

Q.28 Placentation, in which ovules develop on the inner wall of the ovary or in peripheral part, is :
(1) Parietal (2) Free central (3) Basal (4) Axile

Q.29 Which of these following methods is the most suitable for disposal of nuclear waste ?
(1) Dump the waste within rocks under deep ocean
(2) Bury the waste within rocks deep below the Earth's surface
(3) Shoot the waste into space
(4) Bury the waste under Antarctic ice-cover

Q.30 Which of the following statement is incorrect ?
(1) Conidia are produced exogenously and ascospores endogenously.
(2) Yeasts have filamentous bodies with long thread-like hyphae.
(3) Morels and truffles are edible delicacies.
(4) Clauiceps is a source of many alkaloids and LSD.

Q.31 Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production of enzymes?
(1) Industrial oven (2) Bioreactor (3) BOD incubator (4) Sludge digester

Q.32 Match the following organisms with the products they produce:

(a)	Lactobacillus	(i)	Cheese
(b)	Saccharomyces cerevisiae	(ii)	Curd
(c)	Aspergillus niger	(iii)	Citric Acid
(d)	Acetobacter aceti	(iv)	Bread
		(v)	Acetic Acid

Select the correct option

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

Q.33 Select the incorrect statement.
(1) Inbreeding selects harmful recessive genes that reduce fertility and productivity.
(2) Inbreeding helps in accumulation of superior genes and elimination of undesirable genes.
(3) Inbreeding increases homozygosity.
(4) Inbreeding is essential to evolve purelines in any animal.

Q.34 Which of the following immune responses is responsible for rejection of kidney graft?
(1) Inflammatory immune response
(2) Cell-mediated immune response
(3) Auto-immune response
(4) Humoral immune response

Q.35 Which of the statements given below is not true about formation of Annual Rings in trees?
(1) Activity of cambium depends upon variation in climate.
(2) Annula ring are not prominent in trees of temperate region.
(3) Annula ring is a combination of spring wood and autumn wood produced in a year.
(4) Differential activity of cambium causes light and dark bands of tissue-early and late wood respectively

Q.36 Which of the following is true for Golden rice?
(1) It is drought tolerant, developed using Agrobacterium vector.
(2) It has yellow grains, because of a gene introduced from a primitive variety of rice.

Q.37 What is the genetic disorder in which an individual has an overall masculine development, gynaecomastia, and is sterile?
(1) Edward syndrome
(2) Down's syndrome
(3) Turner's syndrome
(4) Klinefelter's syndrome

Q.38 Which one of the following statements regarding post-fertilization development in flowering plants is incorrect?
(1) Central cell develop into endosperm
(2) Ovules develop into embryo sac
(3) Ovary develops into fruit
(4) Zygote develops into embryo

Q.39 Which of the following is the most important cause for animals and plants being driven to extinction?
(1) Economic exploitation
(2) Alien species invasion
(3) Habitat loss and fragmentation
(4) Drought and floods

Q.40 Which of the following contraceptive methods do involve a role of hormone?

(1) CuT, Pills, Emergency contraceptives

(2) Pills, Emergency contraceptives, Barrier methods

(3) Lactational amenorrhea, Pills, Emergency contraceptives

(4) Barrier method, Lactational amenorrhea, Pills

Q.41 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) Arthropoda, Mollusca and chordata

(2) Annelida, Mollusca and chordata

(3) Annelida, Arthropoda and chordate

(4) Annelida, Arthropoda and Mollusca

Q.42 Which of the following factors is responsible for the formation of concentrated urine?

(1) Secretion of erythropoietin by Juxtaglomerular complex.

(2) Hydrostatic pressure during glomerular filtration.

(3) Low levels of antidiuretic hormone.

(4) Maintaining hyperosmolarity towards inner medullary interstitum in the kidneys

Q.43 Match the following organisms with their respective characteristics:

(a)	Pila	(i)	Flame cells
(b)	Bombyx	(ii)	Comb plates
(c)	Pleurobrachia	(iii)	Radula
(d)	Taenia	(iv)	Malpighian Tubules

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

Q.44 Xylem translocates:

(1) Water, mineral salts and some organic nitrogen only

(2) Water, mineral salts, some organic nitrogen and hormones

(3) Water only

(4) Water and mineral salts only

Q.45 What is the direction of movement of sugars in phloem?

(1) Downward
(2) Bi-directional
(3) Non-multidirectional
(4) Upward

Q.46 The correct sequence of phases of cell cycle is:

(1)S G_1 G_2 M
(2)G_1 S G_2 M
(3)M G_1 G_2 S
(4)G_1 G_2 S M

Q.47 The shorter and longer arms of a submetacentric chromosome are referred to as:

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

Q.48 Which of the following can be used as a biocontrol agent in the treatment of plant disease?

(1) Anabaena (2) Lactobacillus (3) Trichoderma (4) Chlorella

Q.49 Which of the following glucose transporters is insulin-dependent?

(1) GLUT III (2) GLUT IV (3) GLUT I (4) GLUT II

Q.50 Purines found both in DNA and RNA are:

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

Q.51 Drug called 'Heroin' is synthesized by:

(1) glycosylation of morphine
(2) nitration of morphine
(3) methylation of morphine
(4) acetylation of morphine

Q.52 Select the correct option.

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

Q.53 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) 0.16(AA); 0.48 (Aa); 0.36(aa)
(2) 0.16 (AA); 0.36(Aa); 0.48(aa)
(3) 0.36 (AA); 0.48 (Aa); 0.16 (aa)
(4) 0.16 (AA); 0.24 (Aa); 0.36 (aa)

Q.54 Which of the following statements regarding mitochondria is **incorrect** ?

(1) Inner membrane is convoluted with infoldings
(2) Mitochondrial matrix contains single circular DNA molecule and ribosomes
(3) Outer membrane is permeable to monomers of carbohydrates, fats and proteins
(4) Enzymes of electron transport are embedded in outer membrane.

Q.55 Variations caused by mutation, as proposed by Hugo de Vries, are :

(1) small and directional
(2) small and directionless
(3) random and directional
(4) random and directionless

Q.56 Following statements describe the characteristics of the enzyme Restriction Endonuclease. Identify the **incorrect** statement.

(1) The enzyme cuts the sugar-phosphate backbone at specific sites on each strand
(2) The enzyme recognizes a specific palindromic nucleotide sequence in the D
(3) The enzyme cuts DNA molecule at identified position within the DNA
(4) The enzyme binds DNA at specific sites and cuts only one of the two strands

Q.57 Which part of the brain is responsible for thermoregulation? (1) Corpus callosum (2) Medulla oblongata (3) Cerebrum (4) Hypothalamus

Q.58 Use of an artificial kindney during hemodialysis 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) (c) and (d) are correct

(2) (a) and (d) are correct

(3) (a) and (b) are correct

(4) (b) and (c) are correct

Q.59 What triggers activation of protoxin to active Bt toxin of *Bacillus thuringiensis* in boll worm ?

(1) Alkaline pH of gut

(2) Acidic pH of stomach

(3) Body temperature

(4) Moist surface of midgut

Q.60 Which of the following protocols did aim for reducing emission of chlorofluorocarbons into the atmosphere?

(1) Gothenburg Protocol

(2) Geneva Protocol

(3) Montreal Protocol

(4) Kyoto Protocol

Q.61 Which of the following sexually transmitted diseases is **not** completely curable ?

(1) Genital herpes

(2) Chlamydiasis

(3) Gonorrhoea

(4) Genital warts

Q.62 Thiobacillus is a group of bacteria helpful in carrying out :

(1) Nitrification

(2) Denitrification

(3) Nitrogen fixation

(4) Chemoautotrophic fixation

Q.63 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) Ratio of F_2 is $\frac{1}{4}$ (Red) : $\frac{2}{4}$ (Pink) : $\frac{1}{4}$ (White)

(2) Law of Segregation does not apply in this experiment

(3) This experiment does not follow the Principle of Dominance

(4) Pink colour in F_1 is due to incomplete dominance

Q.64 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 5kg die. Which type of selection process is taking place ?

(1) Disruptive Selection
(2) Cyclical Selection
(3) Directional Selection
(4) Stabilizing Selection

Q.65 Concanavalin A is :

(1) a lectin (2) a pigment (3) an alkaloid (4) an essential oil

Q.66 Match the Column-I with Column-II :

Column-I	Column-II
(a) P-wave	(i) Depolarisation of ventricles
(b) QRS complex	(ii) Repolarisation of ventricles
(c) T-wave	(iii) Coronary ischemia
(d) Reduction in the size of T-wave	(iv) Depolarisation of atria
	(v) Repolarisation of atria

Select the correct option.

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

Q.67 Match the following genes of the Lac operon with their respective produces :

(a) i gene (i) -galactosidase
(b) z gene (ii) Permease
(c) a gene (iii) Repressor
(d) y gene (iv) Transacetylase

Select the correct option.

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

Q.68 Which of the following statements is not correct ?
(1) Lysosomes are membrane bound structures.
(2) Lysosomes are formed by the process of packaging in the endoplasmic reticulum.
(3) Lysosomes have numerous hydrolytic enzymes.
(4) The hydrolytic enzymes of lysosomes are active under acidic pH.

Q.69 In some plants, the female gamete develops into embryo without fertilization. This phenomenon is known as:
(1) Syngamy
(2) Parthenogenesis
(3) Autogamy
(4) Parthenocarpy

Q.70 Match Column-I with Column –II.

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

Choose the **correct** answer from the options given below :

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

Q.71 Which of the following is a commercial blood cholesterol lowering agent ?
(1) Streptokinase
(2) Lipases
(3) Cyclosporin A
(4) Statin

Q.72 Which of the following features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology ?

(1) Genetic code is nearly universal
(2) Genetic code is specific
(3) Genetic code is not ambiguous
(4) Genetic code is redundant

Q.73 The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in :

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

Q.74 Conversion of glucose to glucose-6phosphate, the first irreversible reaction of glycolysis, is catalyzed by

(1) Enolase (2) Phosphofructokinase (3) Aldolase (4) Hexokinase

Q.75 Which one of the following is not a method of in situ conservation of biodiversity?

(1) Botanical Garden
(2) Sacred Grove
(3) Biosphere Reserve
(4) Wildife Sanctuary

Q.76 The concept of "Omnis cellula-e cellula" regarding cell division was first proposed by :

(1) Schleiden
(2) Aristotle
(3) Rudolf Virchow
(4) Theodore Schwann

Q.77 Select the correct group of biocontrol agents

(1) Oscillatoria, Rhizobium, Trichoderma
(2) Nostoc, Azospirillium, Nucleopolyhedrovirus
(3) Bacillus thuringiensis, Tobacco mosaic virus, Aphids
(4) Trichoderma, Baculovirus, Bacillus thuringiensis

Q.78 Identify the correct pair representing the causative agent of typhoid fever and the confirmatory test for typhoid.

(1) Salmonella typhi/ Anthorone test
(2) Salmonella typhi/ Widal test
(3) Plasmodium vivax/ UTI test
(4) Streptococcus pneumoniae/ Widal test

Q.79 Select the incorrect statement.

(1) In domesticated fowls, sex of progeny depends on the type of sperm rather than egg.

(2) Human males have one of their sex-chromosome much shorter than the other.

(3) Male fruit fly is heterogametic

(4) In male grasshoppers, 50% of sperms have no sex-chromosome.

Q.80 Select the correct sequence of organs in the alimentary canal of cockroach starting from mouth :

(1) Pharynx Oesophagus Gizzard Ileum Crop Colon Rectum

(2) Pharynx Oesophagus Ileum Crop Gizzard Colon Rectum

(3) Pharynx Oesophagus Crop Gizzard Ileum Colon Rectum

(4) Pharynx Oesophagus Gizzard Crop Ileum Colon Rectum

Q.81 Colostrum, the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the newborn infants because it contains :

(1) Macrophages (2) Immunoglobulin A

(3) Natural killercells (4) Monocytes

Q.82 What is the fate of the male gametes discharged in the synergid ?

(1) One fuses with the egg, other (s) fuse (s) with synergid nucleus.

(2) One fuses with the egg and other fuses with central cell nuclei.

(3) One fuses with the egg, other (s) degenerate (s) in the synergid.

(4) All fuse with the egg.

Q.83 What map unit (Centimorgan) is adopted in the construction of genetic maps ?

(1) A unit of distance between genes on chromosomes, representing 1% cross over.

(2) A unit of distance between genes on chromosomes, representing 50% cross over.

(3) A unit of distance between two expressed genes, representing 10% cross over.

(4) A unit of distance between two expressed genes, representing 100% cross over.

Q.84 Select the horomone-releasing Intra-Uterine Devices.

(1) Progestasert, LNG-20 (2) Lippes Loop, Multiload 375

(3) Vaults, LNG-20 (4) Multiload 375, Progestasert

Q.85 Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus.

(1) Mangifera indica (2) Mangifera Indica

(3) Mangifera indica Car. Linn. (4) Mangifera Indica Linn

Q.86 Which of the following pairs of gases is mainly responsible for green house effect ?

(1) Nitrogen and Sulphur dioxide
(2) Carbon dioxide and Methane
(3) Ozone and Ammonia
(4) Oxygen and Nitrogen

Q.87 The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by :

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

Q.88 Which of the following statements in correct ?

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

Q.89 Which of the following muscular disorders is inherited?

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

Q.90 Polyblend, a fine powder of recycled modified plastic, has proved to be a good material for :

(1) Construction of roads
(2) Making tubes and pipes
(3) Making plastic sacks
(4) use as a fertilizer

PHYSICS

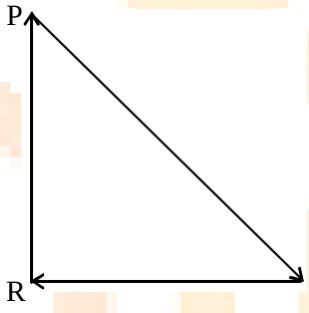
Q.91 Average velocity of a particle executing SHM in one complete vibration is :

(1) $\frac{A\omega^2}{2}$ (2) zero (3) $\frac{A\omega}{2}$ (4) $A\omega$

Q.92 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 glycerin (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)2:3 (2)3:4 (3)2:1 (4)1:2

Q.93 A particle moving with velocity V is acted by three forces shown by the vector triangle PQR. The velocity of the particle will :



(1) remain constant (2) change according to the smallest force $\vec{QR}$

(3) increase (4) decrease

Q.94 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)4:1 (2)1:4 (3)2:1 (4) 1:2

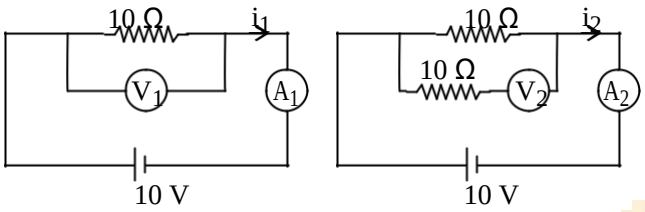
Q.95 Body A of mass 4m moving with speed u collides with another body B of mass 2m, at rest. The collision is head on and elastic in nature. After the collision the fraction of energy lost by the colliding body A is :

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

Q.96 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) 60º west (2) 45º west (3) 30º west (4) 0º

Q.97 In the circuits shown below, the readings of the voltmeters and the ammeters will be :



Circuit 1 **Circuit 2**

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

Q.98 A 800 turn coil of effective area 0.05 m^2 is kept perpendicular to a magnetic field 5×10^{-5} 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) 2×10^{-3} V (2) 0.02 V (3) 2 V (4) 0.2 V

Q.99 At a point A on the earth's surface the angle of dip, $\delta = +25°$. At a point B on the earth's surface the angle of dip, $\delta = -25°$. We can interpret that :

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

Q.100 An electron is accelerated through a potential difference of 10,000 V. Its de Broglie wavelength is, (nearly) :
($m_e = 9 \times 10^{-31}$ kg)

(1) 12.2×10^{-14} m (2) 12.2 nm (3) 12.2×10^{-13} m (4) 12.2×10^{-12} m

Q.101 The displacement of a 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) $A_0^2 + (A + B)^2$ (2) A+B (3) $A_0 + A^2 + B^2$ (4) $A^2 + B^2$

Q.102 α-particle consists of :

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

Q.103 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) zero as r increases for r < R, increases as r increases for r > R
(2) decreases as r increases for r < R and for r > R
(3) increases as r increases for r < R and for r > R
(4) zero as r increases for r < R, decreases as r increases for r > R

Q.104 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) –10% (2) 10% (3) $\frac{3}{13}$ % (4) 16%

Q.105 A force F = 20 + 10y acts on a particle in y-direction where F is in newton and y in meter. Work done by this force to move the particle from y = 0 to y = 1 m is :

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

Q.106 In which of the following processes, heat is neither absorbed nor released by a system ?

(1) isobaric (2) isochoric (3) isothermal (4) adiabatic

Q.107 In which of the following devices, the eddy current effect is **not** used ?

(1) electromagnet (2) electric heater

(3) induction furnace (4) magnetic braking in train

Q.108 The unit of thermal conductivity is :

(1) W m K^{-1} (2) W m^{-1} K^{-1} (3) J m $K^{b\,1}$ (4) J m^{-1} K^{-1}

Q.109 A body weighs 200 N on the surface of the earth. How much will it weigh half way down to the centre of the earth?

(1) 250 N (2) 100 N (3) 150 N (4) 200 N

Q.110 Two parallel infinite line charges with linear charge densities +λ C/m and –λ C/m are placed at a distance of 2R in free space. What is the electric field mid-way between the two line charges?

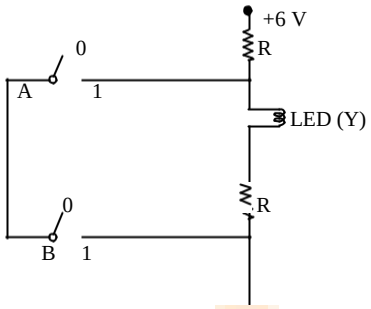
(1) $\frac{\lambda}{\pi \in_0 R}$ N/C (2) $\frac{\lambda}{2\pi \in_0 R}$ N/C (3) zero (4) $\frac{2\lambda}{\pi \in_0 R}$ N/C

Q.111 A mass m is attached to a thin wire and whirled in a vertical circle. The wire is most likely to break when :

(1) the mass is at the lowest point (2) inclined at an angle of 60° from vertical

(3) the mass is at the highest point (4) the wire is horizontal

Q.112



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

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

Q.113 A block of mass 10 kg is in contact against the inner wall of a hollow cylindrical drum of radius 1 m. 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 : ($g = 10\ m/s^2$)

(1) 10 rad/s (2) 10 π rad/s (3) 10 rad/s (4) $\frac{10}{2\pi}$ rad/s

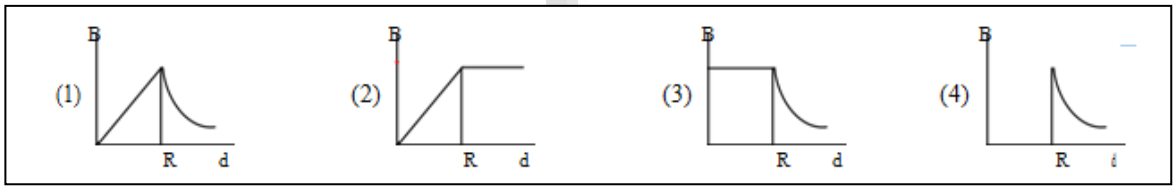
Q.114 A small hole of area of cross-section 2 mm^2 is present near the bottom of a fully filled open tank of height 2 m. Taking $g = 10\ m/s^2$, the rate of flow of water through the open hole would be nearly :

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

Q.115 When an object is shot from the bottom of a long 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) $1:\sqrt{3}$ (2) $1:2\sqrt{3}$ (3) $1:\sqrt{2}$ (4) $\sqrt{2}:1$

Q.116 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 :



Q.117 A soap bubble, having radius of 1 mm, is blown from a detergent solution having a surface tension of 2.5×10^{-2} 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 m/s^2, density of water = 10^3 kg/m^3, the value of Z_0 is :

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

Q.118 The work done to raise a mass m from the surface of the earth to a height h, which is equal to the radius of the earth, is :

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

Q.119 Which of the following acts as a circuit protection device ?

(1) switch (2) fuse (3) conductor (4) inductor

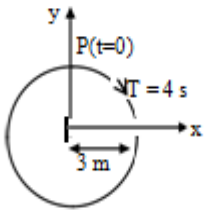
Q.120 Two particles A and B are moving in uniform circular motion in concentric circles of radii r_A and r_B with speed v_A and v_B respectively. Their time period of rotation is the same. The ratio of angular speed of A to that of B will be :

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

Q.121 A parallel plate capacitor of capacitance 20 μF 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) 60 μA, zero (2) zero, zero (3) zero, 60 μA (4) 60 μA, 60 μA

Q.122 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) $y(t) = 3\cos\frac{3\pi t}{2}$, where y in m (2) $y(t) = 3\cos\frac{\pi t}{2}$, where y in m

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

Q.123 For a p-type semiconductor, which of the following statements is true ?

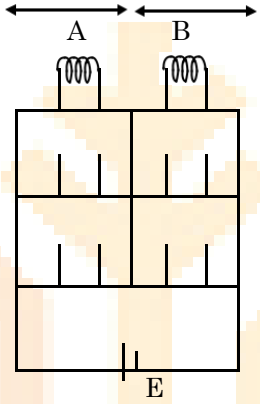
(1) Holes are the majority carriers and pentavalent atoms are the dopants

(2) Electrons are the majority carriers and pentavalent atoms are the dopants

(3) Electrons are the majority carriers and trivalent atoms are teh dopants

(4) Holes are the majority carriers and trivalent atoms are the dopants

Q.124 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)1:2 (2)2:1 (3)4:9 (4)9:4

Q.125 Increase in temperature of a gas filled in a container would lead to -

(1) decrease in its pressure

(2) decrease in intermolecular distance

(3) increase in its mass

(4) increase in its kinetic energy

Q.126 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) 0.05° (2) 0.1° (3) 0.266° (4) 0.15°

Q.127 The total energy of an electron in an atom in an orbit is –3.4 eV. Its kinetic and potential energies are, respectively -

(1) 3.4 eV, – 6.8 eV

(2) 3.4 eV, 3.4 eV

(3) – 3.4 eV, – 3.4 eV

(4) – 3.4 eV, – 6.8 eV

Q.128 Which colour of the light has the longest wavelength ?

(1) green
(2) violet
(3) red
(4) blue

Q.129 In total internal reflection when the angle of incidence is equal to the critical angle for the pair of media in contact, what will angle of refraction ?

(1) equal to angle of incidence (2) 90°
(3) 180° (4) 0°

Q.130 A disc of radius 2 m and 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) 2J (2) 1J (3) 3J (4) 30 kJ

Q. 131 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) $\frac{1}{2}$ Mg*l* (2) $\frac{1}{2}$ MgL (3) Mg*l* (4) MgL

Q.132 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) 12×10^{-4} Nm (2) 2×10^{6} Nm (3) 2×10^{-6} Nm (4) 2×10^{-3} Nm

Q.133 Two point charges A and B, having charges +Q and –Q respectively, are placed at certain distance apart and force acting between them is F. If 25 % charge of A is transferred to B, then force between the charges becomes-

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

Q.134 Pick the **wrong** answer in the context with rainbow.

(1) An observer can see a rainbow when his front is towards the sun

(2) Rainbow is a combined effect of dispersion, refraction and reflection of sunlight

(3) When the light rays undergo two internal reflections in a water drop, a secondary rainbow is formed

(4) The order of colours is reversed in the secondary rainbow

Q.135 A copper rod of 88 cm and an aluminium rod of unknown length have their increase in length independent of increase in temperature. The length of aluminium rod is ($\alpha_{Cu} = 1.7 \times 10^{-5}\ K^{-1}$ and $\alpha_{Al} = 2.2 \times 10^{-5}\ K^{-1}$)

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

CHEMISTRY

Q.136 In which case change in entropy is negative ?

(1) Sublimation of solid to gas (2) $2H(g) \rightarrow H_2(g)$

(3) Evaporation of water (4) Expansion of a gas at temperature

Q.137 For the chemical reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

(1) $\frac{d[N_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$ (2) $3\frac{d[H_2]}{dt} = 2\frac{d[NH_3]}{dt}$

(3) $\frac{1}{3}\frac{d[H_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$ (4) $\frac{d[N_2]}{dt} = 2\frac{d[NH_3]}{dt}$

Q.138 Which of the following diatomic molecular species has only bonds according to Molecular Orbital Theory?

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

Q.139 Which of the following is **incorrect** statement ?

(1) GeX_4(X = F, Cl, Br, I) is more stable than GeX_2

(2) SnF_4 is ionic in nature

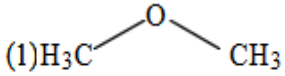
(3) PbF_4 is covalent in nature

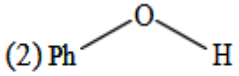
(4) $SiCl_4$ is easily hydrolysed

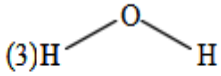
Q.140 Under isothermal condition, a gas at 300 K expands from 0.1 L to 0.25 L against a constant external pressure of 2 bar. The work done by the gas is [Given that 1 L bar = 100 J]

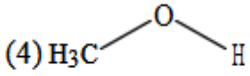
(1) 25 J (2) 30 J (3) –30 J (4) 5 kJ

Q.141 The compound that is most difficult to protonate is :

(1) 

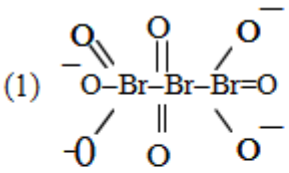
(2) 

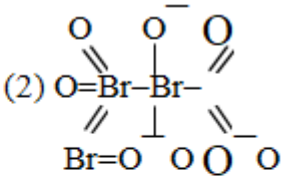
(3) 

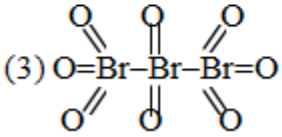
(4) 

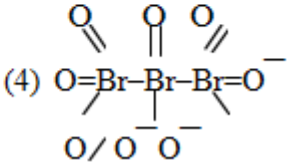
Q.142 Which of the following is an amphoteric hydroxide ?
(1) $Mg(OH)_2$ (2) $Be(OH)_2$
(3) $Sr(OH)_2$ (4) $Ca(OH)_2$

Q.143 The correct structure of tribromooctaoxide is -

(1) 

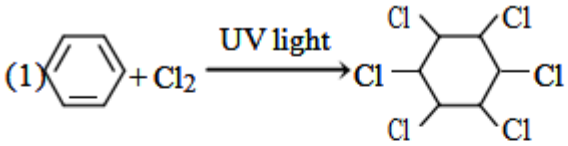
(2) 

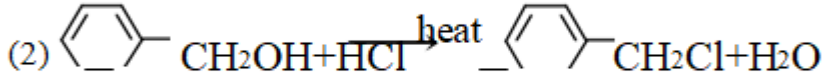
(3) 

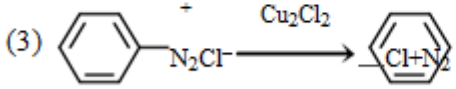
(4) 

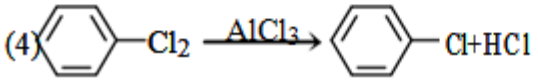
Q.144 The biodegradable polymer is -
(1) nylon-6 (2) Buna-S (3) nylon-6, 6 (4) nylon 2-nylon 6

Q.145 Among the following, the reaction that proceeds through an electrophilic substitution, is –

(1) 

(2) 

(3) 

(4) 

Q.146 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

Which of the following is the correct option ?

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

Q.147 The number of sigma ( ) and pi ( ) bonds in pent-2-en-4-yne is -

(1) 11 bonds and 2 bonds
(2) 13 bonds and no bond
(3) 10 bonds and 3 bonds
(4) 8 bonds and 5 bonds

Q.148 Enzymes that utilize ATP is phosphate transfer require an alkaline earth metal (M) as the cofactor. M is -

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

Q.149 Identify the incorrect statement related to PCl_5 from the following -

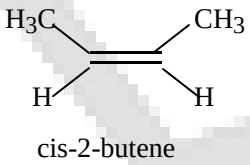
(1) Axial P–Cl bonds are longer than equatorial P–Cl bonds
(2) PCl_5 molecule is non-reactive
(3) Three equatorial P–Cl bonds make an angle of 120º with each other
(4) Two axial P–Cl bonds make an angle of 180º with each other

Q.150 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 = 4.606/k (2) t = 2.303/k (3) t = 0.693/k (4) t = 6.909/k

Q.151 The most suitable reagent for the following conversion, is :

$H_3C–C\equiv C–CH_3$



cis-2-butene

(1) Zn / HCl
(2) Hg^{2+} / H^+, H_2O
(3) Na / liquid NH_3
(4) H_2, Pd/C, quinoline

Q.152 The manganate and permanganate ions are tetrahedral due to -

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

Q.153 For a cell involving one electron $E_{cell} = 0.59$ V at 298 K, the equilibrium constant for the cell reaction is :

[Given that $\frac{2.303\ kT}{F} = 0.059$ V at T = 298 K]

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

Q.154 pH of a saturated solution of $Ca(OH)_2$ is 9. The solubility product (K_{sp}) of $Ca(OH)_2$ is -

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

Q.155 For an ideal solution, the correct option is -

(1) $_{mix}H = 0$ at constant T and P (2) $_{min}G = 0$ at constant T and P

(3) $_{mix}S = 0$ at constant T and P (4) $_{mix}V$ 0 at constant T and P

Q.156 A gas at 350 K and 15 bar has molar volume 20 percent smaller than that for an ideal gas 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 forces are dominant

(3) Z > 1 and attractive forces are dominant (4) Z > 1 and repulsive forces are dominant

Q.157 The correct order of the basic strength of methyl substituted amines in aqueous solution is -

(1) $(CH_3)_3N$. $(CH_3)_2NH > CH_3NH_2$ (2) $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3N$

(3) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$ (4) $(CH_3)_3N > CH_3NH_2 > (CH_3)_2NH$

Q.158 For the second period elements the correct increasing order of first ionization enthalpy is -

(1) Li < B < Be < C < N < O < F < Ne (2) Li < Be < B < C < O < N < F < Ne

(3) Li < Be < B < C < N < O < F < Ne (4) Li < B < Be < C < O < N < F < Ne

Q.159 Which mixture of the solution will lead to the formation of negatively charged colloidal [AgI] I^-

(1) 50 mL of 2 M $AgNO_3$ + 50 mL of 1.5 M KI (2) 50 mL of 0.1 M Ag NO_3 + 50 mL of 0.1 M KI

(3) 50 mL of 1 M $AgNO_3$ + 50 mL of 1.5 M KI (4) 50 mL of M Ag NO_3 + 50 mL of 2 M KI

Q.160 For the cell reaction

$2Fe^{3+}(aq) + 2I^-(aq) \rightarrow 2Fe^{2+}(aq) + I_2(aq)$

$E_{cell} = 0.24$ V at 298 K. The standard Gibbs energy ($_rG$) of the cell reaction is :

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

(1) 46.32 kJ mol^{-1} (2) 23.16 kJ mol^{-1} (3) –46.32 kJ mol^{-1} (4) –23.16 kJ mol^{-1}

Q.161 Which is the correct thermal stability order for H_2E (E = O, S, Se, Te and Po)?

(1) $H_2Po < H_2Te < H_2Se < H_2S < H_2O$ (2) $H_2Se < H_2Te < H_2Po < H_2O < H_2S$

(3) $H_2S < H_2O < H_2Se < H_2Te < H_2Po$ (4) $H_2O < H_2S < H_2Se < H_2Te < H_2Po$

Q.162 The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber's process is :

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

Q.163 Which of the following series of transitions in the spectrum of hydrogen atom falls in visible region?

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

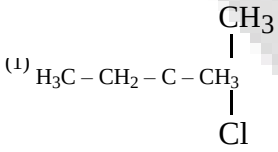
Q.164 A compound is formed by cation C and anion A. The anions form hexagonal close packed (hcp) lattice and the cations occupy 75% of octahedral voids. The formula of the compound is :

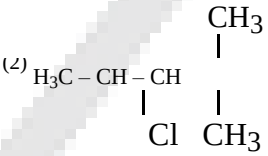
(1) C_3A_4 (2) C_4A_3 (3) C_2A_3 (4) C_3A_2

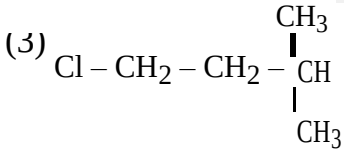
Q.165 The non-essential amino acid among the following is :

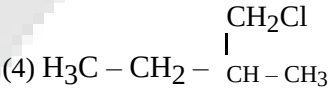
(1) alanine (2) lysine (3) valine (4) leucine

Q.166 An alkene "A" on reaction with O_3 and Zn + H_2O gives propanone and ethanal in equimolar ratio. Addition of HCl to alkene "A" gives "B" as the major product. The structure of product "B" is :

(1) 

(2) 

(3) 

(4) 

Q.167 Which of the following species is not stable?

(1) $[Sn(OH)_6]^{2-}$ (2) $[SiCl_6]^{2-}$ (3) $[SiF_6]^{2-}$ (4) $[GeCl_6]^{2-}$

Q.168 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 :

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

Q.169 Among the following, the one that is not a green house gas is :

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

Q.170 Which of the following reactions are disproportionation reaction?

(a) $2Cu^{+} \quad Cu^{2} + Cu^{0}$

(b) $3MnO^{2}_{4} + 4H^{+} \quad 2MnO_4^{-} + MnO_2 + 2H_2O$

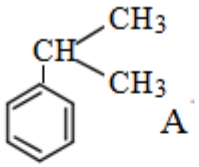
(c) $2KMnO_4 \; K_2MnO_4 + MnO_2 + O_2$

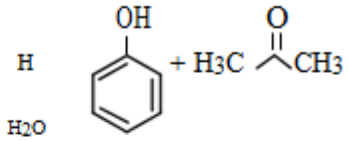
(d) $2MnO_4^{-} + 3Mn^{2+} + 2H_2O \quad 5MnO_2 + 4H$

Select the correct option from the following :

(1) (a), (c) and (d) (2) (a) and (d) only (3) (a) and (b) only (4) (a), (b) and (c)

Q.171 The structure of intermediate A in the following reaction, is :





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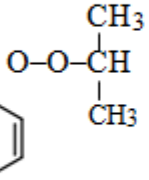

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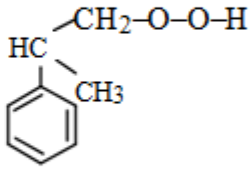

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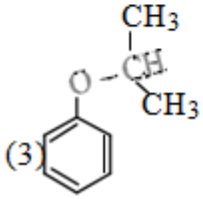

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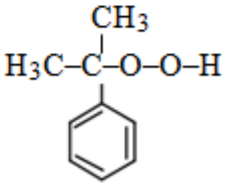


Q.172 The mixture that forms maximum boiling azeotrope is :

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

Q.173 What is the correct electronic configuration of the central atom in $K_4[Fe(CN)_6]$ based on crystal field theory?

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

Q.174 Conjugate base for Bronsted acids H_2O and HF are :

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

Q.175 Which will make basic buffer?

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

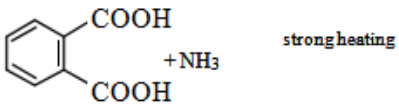
Q.176 4d, 5p, 5f and 6p orbitals are arranged in the order of decreasing energy. The correct option is :

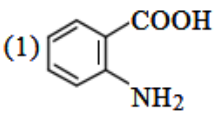
(1) 6p > 5f > 4d > 5p (2) 5f > 6p > 4d > 5p (3) 5f > 6p > 5p > 4d (4) 6p > 5f > 5p > 4d

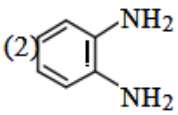
Q.177 Among the following, the narrow spectrum antibiotic is :

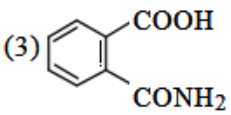
(1) amoxycillin
(2) chloramphenicol
(3) penicillin G
(4) ampicillin

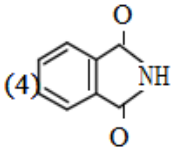
Q.178 The major product of the following reaction is :



(1) 

(2) 

(3) 

(4) 

Q.179. The method used to remove temporary hardness of water is :

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

Q.180. Which one is malachite from the following?

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