

NEET MODEL QUESTION PAPER 9

NATIONAL TESTING AGENCY
Excellence in Assessment





BIOLOGY

1. The enzyme of C_3 cycle which converts 1, 3-Bis. PGA to G-3-P belongs to the class
 - 1) transferases
 - 2) lyases
 - 3) isomerases
 - 4) oxidoreductases
2. Select the incorrect statement?
 - 1) Botanical garden have collection of living plants for reference
 - 2) Herbaria serve as quick referral systems in taxonomical studies
 - 3) Museums have collections of all living plants and animals for study and reference
 - 4) Key is used for identification of plants and animals based on similarities and dissimilarities
3. Organism which produces cyclosporine – A belongs to
 - 1) streptomycetes
 - 2) actinomycetes
 - 3) ascomycetes
 - 4) deuteromycetes
4. Lower molars in human dentition usually have
 - 1) Four roots
 - 2) Three roots
 - 3) Two roots
 - 4) Single root
5. Plasma pyrolysis technology is useful for controlling
 - 1) radioactive waste
 - 2) agriculture waste
 - 3) fossil fuel waste
 - 4) plastic waste
6. At which level of vertebral column, trachea divides and forms bronchus?
 - 1) 4th thoracic vertebrae
 - 2) 5th thoracic vertebrae
 - 3) 7th thoracic vertebrae
 - 4) 7th cervical vertebrae
7. The following is considered as man-made ecosystem
 - 1) estuary
 - 2) crop field
 - 3) grass land
 - 4) forest
8. Which phytohormone helps to overcome the apical dominance
 - 1) Auxin
 - 2) Gibberellin
 - 3) ABA
 - 4) Cytokinin
9. Which of the following is likely to have the highest levels of DDT deposition in its body?
 - 1) seagull
 - 2) crab
 - 3) eel
 - 4) phytoplankton
10. Which one of the following is correct?
 - 1) Serum = Blood + Fibrinogen
 - 2) Lymph = Plasma + RBC + WBC
 - 3) Blood = Plasma + RBC + WBC + Platelets
 - 4) Plasma = Blood - Lymphocytes
11. Chanda and Bastar are well known for
 - 1) ex situ conservation
 - 2) trees and wildlife venerated to give total protection
 - 3) conduction of historic convention on biological diversity



- 4) where the chipko movement started
- 12.** Archaeobacteria differ from other eubacteria
- 1) In having a different cell wall structure
 - 2) Cell membrane contains branched chain lipids
 - 3) Cell wall does not contain peptidoglycan but contain pseudomurein
 - 4) All
- 13.** In correct match of the following transgenic plants?
- 1) basmati rice – tolerant to abiotic stresses
 - 2) flavr-savr tomato-pest resistance
 - 3) golden rice – vitamin – A enriched
 - 4) Bt. Cotton – pest resistance
- 14.** Which of the following are not meiospores?
- 1) Ascospores of *Neurospora* and Basidiospores of *Agaricus*
 - 2) Ascospores of *Aspergillus* and Oospores of *Albugo*
 - 3) Oospores of *Albugo* and Zoospores of *Chlamydomonas*
 - 4) Conidia of *Penicillium* and Sporangiospores of *Rhizopus*
- 15.** Which of the following is an observation of Alexander Von Humboldt?
- 1) species richness increases with increased explored area
 - 2) causing a species to become extinct affects the proper functioning of ecosystem
 - 3) plots with more species showed year – to year variation in total biomass
 - 4) approximately 7 million species are found on the Earth
- 16.** Lymph capillaries present in the intestinal villi are called
- 1) Lacteals
 - 2) Lymph ducts
 - 3) Lymph vessels
 - 4) Peri tubular capillaries
- 17.** In P^{BR322} restriction enzymes can cleave this region of DNA
- 1) with in ‘ori’ and ‘tet^R’ genes
 - 2) with in ‘amp^R’ and ‘tet^R’ genes
 - 3) with in ‘ori’ and ‘amp^R’
 - 4) with in ‘ori’ and ‘rop’
- 18.** In urinary system, aldosterone takes part in retention of
- 1) K^+
 - 2) Na^+
 - 3) Water
 - 4) both 2 & 3
- 19.** Correct statement w.r.t. to sticky ends formed after cutting by E.co RI
- 1) consists of four base pairs
 - 2) consists of 5^1TTAA3^1
 - 3) consists of 5^1AATT3^1
 - 4) consists of $3^1AATT 5^1$
- 20. Which is not true for viroids**
- 1) They are smaller than viruses
 - 2) They contain dsRNA as a genetic material
 - 3) RNA has low molecular weight
 - 4) It causes potato spindle tuber disease
- 21.** The following is more stable
- 1) food chain
 - 2) food web
 - 3) food pyramid
 - 4) food availability
- 22.** Statement I : Red fibres can also be called aerobic



Statement 2: These muscles contain plenty of mitochondria which can utilize the large amounts of oxygen stored in them.

- 1) Both statement I and statement II are correct
- 2) Both statement I and statement II are correct incorrect
- 3) Statement – I is correct but II is incorrect
- 4) Statement – I is incorrect but II is correct

23. The source organism for the commercial production of statins is a

- 1) unicellular prokaryote, heterotrophy
- 2) unicellular eukaryote, heterotrophy
- 3) multicellular eukaryote, autotroph
- 4) multicellular eukaryote, heterotrophy

24. Statement – I : 8th, 9th and 10th pairs of ribs are false ribs

Statement – II: 8th, 9th and 10th pairs of ribs donot articulate directly with the sternum

- 1) Both the statements are true
- 2) Both the statements are false
- 3) Statement – I is true, statement – II is false
- 4) Statement – I is false, statement – II is true

25. Detritus food chain

- 1) begins with the death of organisms
- 2) does not start with a transducer
- 3) forms much larger fraction of terrestrial ecosystem
- 4) more than one option is correct

26. Filamentous brown alga is

- 1) Spirogya
- 2) Ulothrix
- 3) Ectocarpus

4) All

27. Orchid

- a. is a commensal on manga tree
- b. is a parasite on hedge plant
- c. shows mutualism with bumblebee
- d. is an amensal for wasp

identify the correct

- 1) a and b
- 2) a and c
- 3) a and d
- 4) c and d

28. Match the Column – I with Column – II

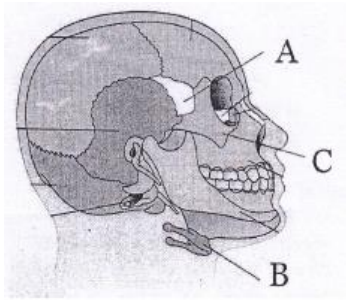
Column – I	Column – II
A. Seed habit precursor	i. <i>Cycas</i>
B. Haplo diplontic life cycle	ii. <i>Pinus</i>
C. Absence of flagellated gametes	iii. <i>Funaria</i>
D. Coralloid roots	iv. <i>Poly siphonia</i>
	v. <i>Selaginella</i>

	A	B	C	D
1)	v	iii	iv	i
2)	ii	iii	iv	i
3)	ii	iii	iv	i
4)	ii	iv	iii	i

29. Different varieties of cheese are known by these characteristics

- 1) taste
- 2) flavor
- 3) texture
- 4) all of these

30. Observe the following diagram and identify A, B & C



- 1) A-Zygomatic bone, B-Hyoid bone & C-Sphenoid bone
- 2) A-Sphenoid bone, B-Hyoid bone & C-Zygomatic bone
- 3) A-Sphenoid bone, B-Z Zygomatic bone & C-Hyoid bone
- 4) A-Frontal, B-Occipital & C-Zygomatic bone

31. Identify the incorrect statement from the following

- 1) opuntia exhibits photosynthetic activity with its flattened stem
- 2) kangaroo rat meets all its water requirements through internal fat oxidation
- 3) snail exhibits hibernation during winter is an example of escape in time
- 4) desert lizard basks in the sun and absorb heat is an example of physiological adaption

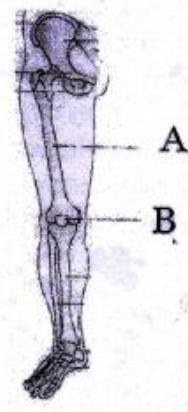
32. Stem tendrils are found in

- 1) Nepenthes
- 2) Gourds
- 3) Gloriosa
- 4) All

33. Mean annual precipitation is more in

- 1) alpine tundra
- 2) temperate forest
- 3) grassland
- 4) tropical forest

34. Study the following diagram and identify A & B

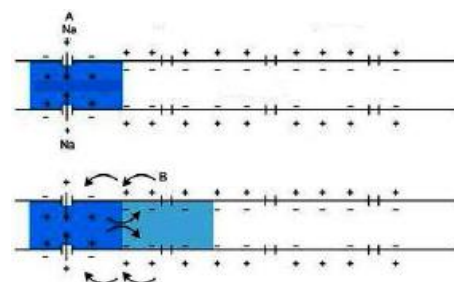


- 1) A = Humerus, B=Patella
- 2) A=Femur, B=Tarsal
- 3) A=Femur, B=Patella
- 4) A=Tibia, B=Patella

35. One of the following terms is not related to the process of tissue culture technique.

- 1) micro-propagation
- 2) in vivo culture
- 3) somaclones
- 4) autoclaving

36. Observe the following diagram and find the correct explanation in the given options



- 1) A current flows on the inner surface from site B to site A
- 2) A current flows on the inner surface from site A to site B
- 3) On the outer surface current flows from site A to site B
- 4) Flow of current from site A to site B on the inner surface and from site B



to site A on the outer surface cannot complete the circuit of current flow.

37. Gene therapy is suitable for

- 1) ADA deficiency
- 2) rheumatoid arthritis
- 3) allergic bronchitis
- 4) Hepatitis-B

38. Epigynous flowers are found in

- 1) Rose
- 2) Solanum
- 3) Guava
- 4) Allium

39. Match the following with reference to genetic code

List –I (codon)	List –II (amino acid)
A) CCC	1. lysine
B) AAA	2. glycine
C) UUU	3. proline
D) GGG	4. Phenyl alanine
1) A-3, B-1, C-4, D-2	
2) A-3, B-1, C-2, D-4	
3) A-3, B-1, C-4, D-1	
4) A-3, B-4, C-2, D-1	

40. How many plants belongs to family fabacea

Makoi, Sem, Lupin, Potato, Onion, Mulaithi, Aloe, Tulip, Ashwagandha

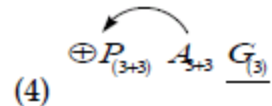
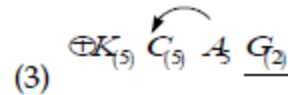
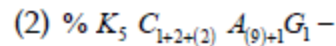
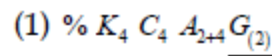
- 1) 5
- 2) 6
- 3) 2
- 4) 3

41. The following animal culture during flowering period is beneficiary even for crop yields also

- 1) apiculture
- 2) pisciculture
- 3) sericulture

4) both 1 and 2

42. Identify the correct floral formula of *Solanum*



43. A state in which the body produces antibodies that attack its own tissues, leading to the deterioration and in some cases to the destruction of such tissue is called

- 1) self tolerance
- 2) type I hypersensitivity
- 3) immunological memory
- 4) auto immune disorder

44. Ploidy of perisperm, endosperm, cotyledon of typical angiospermic plants respectively

- 1) $2n, n, n$
- 2) $3n, 3n, 2n$
- 3) $2n, 3n, 2n$
- 4) $2n, 3n, n$

45. During DNA replication Okazaki fragments are used to elongate

- 1) the leading strand towards replication fork
- 2) the lagging strand towards replication fork
- 3) the leading strand away from replication fork
- 4) the lagging strand away from replication fork

46. Sensory endocrine centre of the brain is

- 1) Corpus collosum



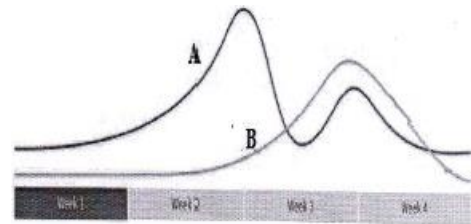
- 2) Crura cerebri
 - 3) Cerebral cortex
 - 4) Hypothalamus
- 47.** The following is a hallucinogen
- 1) morphine
 - 2) marijuana
 - 3) atropine
 - 4) heroin
- 48.** Sella turcica lodges
- 1) pituitary gland
 - 2) pineal gland
 - 3) thyroid gland
 - 4) thymus gland
- 49.** Paratope is
- 1) a portion of antigen
 - 2) a structure found towards N-terminus of an antibody
 - 3) made with two light chains
 - 4) found in crystalizable fragment of antibody
- 50.** Protein hormone(s) secreted by thyroid gland is/are
- 1) T_3 hormone
 - 2) T_4 hormone
 - 3) Thyro calcitonin
 - 4) All the above
- 51.** The following was not used by Messelson and stahl in their experiments
- 1) Radioactive isotope ^{15}N
 - 2) Cesium chloride
 - 3) Centrifugation
 - 4) extraction of the DNA that remained as double stranded helices
- 52.** Pollination occur within a single flower is
- 1) Geintonogamy
 - 2) Xenogamy

- 3) Allogamy
- 4) Autogamy

53. The following is a water borne disease/disorder

- 1) malaria
- 2) filarial
- 3) diarrhea
- 4) pyorrhea

54. Observe the following graph with respect to menstrual cycle and identify A and B



- 1) A-Oestrogen; B-Progesterone
- 2) A-FSH; B-LH
- 3) A-Progesterone; B-Oestrogen
- 4) A-LH; B-FSH

55. The skull of baby chimpanzee is more like

- 1) adult human skull than adult chimpanzee skull
- 2) adult chimpanzee skull than adult human skull
- 3) equally similar to both adult chimpanzee and adult human skulls
- 4) adult monkey skull than adult human skull

56. In flowering plants, the male gametes are carried to female gamete by

- 1) Wind
- 2) Insects
- 3) Pollen tube
- 4) Water

57. The biochemical nature of transforming principle as concluded by Frederic Griffith is



- 1) proteins
- 2) DNA
- 3) RNA
- 4) none of these

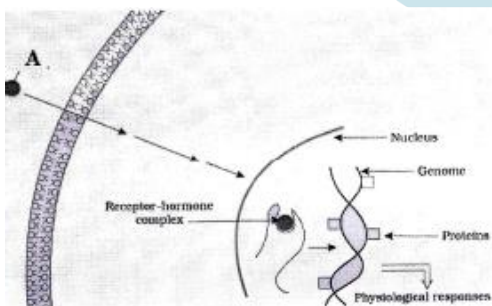
58. The female and male sex organs of *Chara* respectively are

- 1) Archegonium and Antheridium
- 2) Gynoecium and Androecium
- 3) Oogonium and Antheridium
- 4) Antheridium and Archegonium

59. 5-methyl uracil is a constituent of the genetic material of the genetic material of

- 1) *E. coli*
- 2) HIV
- 3) TMV
- 4) 2 and 3

60. Study the following mechanism of hormonal action and identify the suitable hormones applicable for 'A'



- 1) Cortisol or Testosterone or Oestrogen
- 2) Insulin or Glucagon or Gastrin
- 3) Epienephrine or Thyroxine
- 4) FSH or LH or PRL

61. Identify the correct combination

- 1) directional selection-more individuals acquire peripheral character on both the sides
- 2) anthropogenic evolution of biston betularia
- 3) convergent evolution of flying squirrel and flying phalanger

- 4) Stabilizing selection more individuals acquire value other than the mean character

62. Which of the following is not true about uterus

- 1) It is attached to the pelvic wall
- 2) It is an inverted pear shaped structure
- 3) It opens into vagina through cervix
- 4) It forms birth canal along with cervix

63. Which of the following is not a dinosaur?

- 1) tyrannosarus
- 2) ophiosaurus
- 3) stegosaurus
- 4) brachiosaurus

64. Zona pellucid disappears

- 1) after fertilization
- 2) before blastocyst formation
- 3) before implantation
- 4) after morula formation

65. Statement not related to linkage

- 1) linked genes are present on the same chromosome
- 2) linked genes never undergo crossing over
- 3) linkage is inversely proportional to the distance between the genes
- 4) number of linkage groups is equal to haploid number of chromosomes

66. Match the Column – I with Column – II

Column – I	Column – II
A. Endospores	i. Chlamydomonas
B. Exospores	ii. Dryopteris
C. Sporophyll	iii. Rhizopus
D. Zoospores	iv. Penicillium

	A	B	C	D
1)	i	ii	iii	iv
2)	ii	iii	i	iv
3)	iv	iii	ii	i
4)	iii	iv	ii	i



- 67.** Which of the following vectors are widely used in HGP?
- 1) lambda phage and M13 vectors
 - 2) Phagemid and shuttle vectors
 - 3) BAC and YAC
 - 4) phasmid and cosmid
- 68.** Which of the following have been found to be very effective as emergency contraceptive as they could be used to avoid possible pregnancy due to rape if given within 72 hours?
- A. Administration of progestogens
 - B. Progestogen-estrogen combination
 - C. IUDs inserted within 72 hours of coitus
- 1) A only
 - 2) A & B only
 - 3) B only
 - 4) A, B and C
- 69.** Incorrect statement of the following
- 1) F_1 plants in monohybrid cross, in pea are phenotypically and genotypically same
 - 2) F_2 plants of in monohybrid cross in pea show two types of phenotypes and three types of genotypes
 - 3) F_2 plants of monohybrid cross in Lentil show three types of genotypes and three types of phenotypes
 - 4) F_2 plants of dihybrid cross in pea shows, nine types of phenotypes and four types of genotypes
- 70.** Which of the following functions is related to an organelle that contain cristae as one of the component?
- 1) Osmoregulation
 - 2) Production of cellular chemical energy
 - 3) Carbon assimilation
 - 4) Packaging of materials

71. Male honey bee is

- 1) Triploid
- 2) Diploid
- 3) Polyploid
- 4) Haploid

72. Select incorrect combinations from the following

- 1) Biomacro – molecules – Nucleic acids Proteins, Polysaccharides
- 2) Amino acids – Glycine, Alanine, Serine
- 3) Genetic RNAs – m RNA, r – RNA, t – RNA
- 4) Polysaccharides – Starch, Inulin Glycogen

73. Match the columns

	Column – I		Column –II
A	Thalassemia	i	Autosomal non-disjunction
B	Down syndrome	ii	Qualitative problem
C	Klinefelter syndrome	iii	Quantitative problem
D	Sickle cell anaemia	iv	Allosomal non-disjunction

- 1) A – iii, B- i, C – iv, D – ii
- 2) A – ii, B – i, C – iv, D – iii
- 3) A – iii, B – iv, C – i, D – ii
- 4) A – ii, B – iv, C – i, D – iii

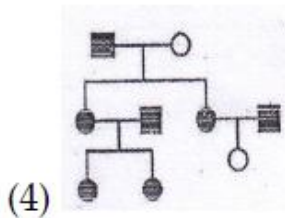
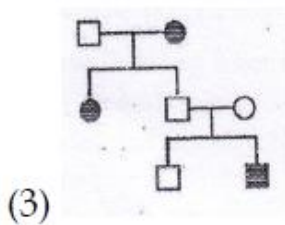
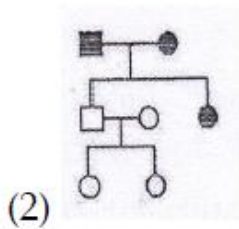
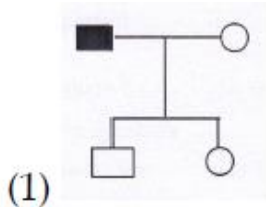
74. A bivalent consists of

- 1) Two chromosomes and 2 DNA molecules only
- 2) Two chromatids and 2 DNA molecules only
- 3) Four chromatids and 4 DNA molecules only
- 4) Two chromosomes, two chromatids and two DNA molecules only



75. What is the ratio of contrasting traits studied by Mendel in pea, representing flowers, pod and seed?

76. Which of the following pedigree can be for haemophilia?



77. The following step is obligatory in all types of artificial hybridization experiments

- 1) Always selection of unisexual parents
- 2) Emasculation
- 3) Bagging
- 4) All these

78. Which of the following is not a part of stele?

- 1) Pericycle
- 2) Pith
- 3) Endodermis
- 4) Vascular bundles

79. The procedure IUI results

- 1) In vivo fertilization
- 2) Still births
- 3) Test tube babies
- 4) In vitro fertilization

80. The genotype of a person with sickle-cell trait is

- 1) $Hb^A Hb^A$
- 2) $Hb^S Hb^S$
- 3) $Hb^A Hb^S$
- 4) none of these

81. Identify the incorrect statement w.r.t. pollination

- 1) In a normal chasmogamous bisexual flower, complete autogamy is rather rare
- 2) Xenogamy is the only method for dioecious plant
- 3) Geitonogamy alone occurs in monoecious plants
- 4) Cleistogamous flowers produce assured seed – set even in the absence of pollinators

82. Which of the following vascular tissue element is absent in monocot stem?

- 1) Endodermis
- 2) Pericycle
- 3) Phloem parenchyma
- 4) All

83. this substance is not related to the structure of pollen grain

- 1) Callose
- 2) Sporopollenin
- 3) Pectin
- 4) Cellulose

84. Select mismatch from the following

- 1) Collenchyma – Unevenly thickened cell walls



- 2) Sclerenchyma – Thick lignified cell walls
 - 3) Bark – All tissues present outside the secondary xylem
 - 4) Intra fascicular cambium – Primary meristem
- 85.** Ectopic pregnancy means
- 1) Pregnancy during late reproductive age
 - 2) Fertilization in fallopian tube
 - 3) Pregnancy in which the fetus develops outside the uterus
 - 4) Pregnancy in which the fetus develops inside uterus
- 86.** The term hot dilute soup was given by
- 1) Haldane
 - 2) Uray
 - 3) Oparin
 - 4) None of the above
- 87.** The following is not the function of an oral pill
- 1) Inhibits ovulation
 - 2) Inhibits implantation
 - 3) Alerts the cervical mucous
 - 4) Stimulates the phagocytes to kill sperms
- 88.** S I: The essence of Darwinian theory about evolution is natural selection
S II: Branching descent and natural selection are the two key concepts of Darwinian theory
- (1) Both I and II are not true
 - (2) Both I and II are true
 - (3) I is true but II is not true
 - (4) I is not true but II is true
- 89.** In which of the following sets, chromosome number is same?

- 1) Gamete in potato, Zygote in rice, Endosperm cell of onion
- 2) Zygote in potato, Gamete in rice, Endosperm cell of onion
- 3) Zygote in rice, Endosperm cell in potato and Endosperm cell of onion
- 4) Zygote in onion, endosperm cell in potato, Zygote in rice

90. The correct evolutionary sequence of mammals is

- 1) Synapsids → pelycosaurs → Therapsids → Mammals
- 2) Pelycosaurus → Therapsida → Synapsids → Mammals
- 3) Sauropsids → Thecodont → Synapsids → Mammals
- 4) None of the above

PHYSICS

- 91.** When a p-n junction diode is reverse biased the flow of current across the junction is mainly due to
- 1) diffusion of charges
 - 2) drift of charges
 - 3) depends on the nature of material
 - 4) both drift and diffusion of charges
- 92.** A particle of mass M is situated at the centre of a spherical shell of same mass and radius a. the gravitational potential at a point situated at a/2 distance from the centre will be
- 1) $-\frac{4GM}{a}$
 - 2) $-\frac{3GM}{a}$
 - 3) $-\frac{2GM}{a}$
 - 4) $-\frac{GM}{a}$
- 93.** Optical fibres transmit light along its axis, by the process of
- 1) total internal reflection
 - 2) refraction
 - 3) interference
 - 4) diffraction
- 94.** Both Earth and Moon are subject to the gravitational force of the sun. As



observed from the sun, the orbit of the Moon

- 1) will be elliptical
- 2) will not be strictly elliptical because the total gravitational force on it is not central
- 3) is not elliptical but will necessarily be a closed curve
- 4) deviates considerably from, being elliptical due to influence of planets other than Earth

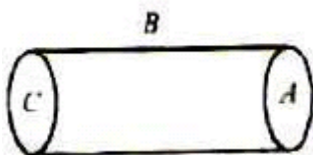
95. Two flat circular coils have a common center, but their planes are at right angles to each other. The inner coil has 150 turns and radius of π cm. The outer coil has 400 turns and a radius of 2π cm. The magnitude of the resultant magnetic induction at the common centers of the coils when a current of 200mA is sent through each of them is

- 1) 10^{-3} Wb/m^2
- 2) $2 \times 10^{-3} \text{ Wb/m}^2$
- 3) $5 \times 10^{-3} \text{ Wb/m}^2$
- 4) $7 \times 10^{-3} \text{ Wb/m}^2$

96. A force is given by $F = bt^2$, where, t is time, the dimensions of a and b are respectively

- 1) $[MLT^{-4}]$ and $[MLT_1]$
- 2) $[MLT^{-1}]$ and $[MLT^0]$
- 3) $[MLT^{-3}]$ and $[MLT^{-4}]$
- 4) $[MLT^{-3}]$ and $[MLT^0]$

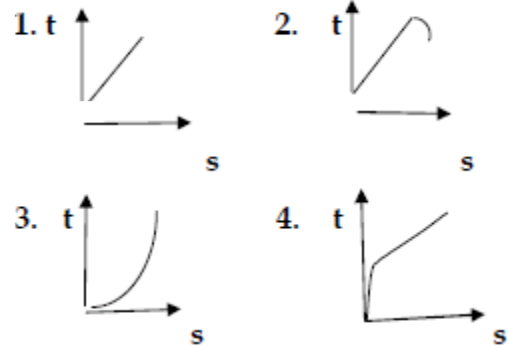
97. A hollow cylinder has a charge q coulomb within i. If ϕ is the electric flux in units of voltmeter associated with the curved surface B, the flux linked with the plane surface A in units of voltmeter will be



- 1) $\frac{q}{2\epsilon_0}$
- 2) $\frac{\phi}{3}$
- 3) $\frac{q}{\epsilon_0} - \phi$

4) $\frac{1}{2} \left(\frac{q}{\epsilon_0} - \phi \right)$

98. which of the following time displacement graph is not possible in nature?



99. A photo electric cell is illuminated by a point source of light 1m away. when the source is shifted to 2m, then

- 1) number of electrons emitted is a quarter of the initial number
- 2) each emitted electron carries one quarter of the initial energy
- 3) number of electrons emitted is half the initial number
- 4) each emitted electron carries half the initial energy

100. The wet ability of a surface by a liquid depends primarily on

- 1) density
- 2) angle of contact between the surface and the liquid
- 3) viscosity
- 4) surface tension

101. A uniform magnetic field acts at right angles to the direction of motion of electron. as a result, the electron moves in a circular path of radius 2 cm. If the speed of electron is doubled, then the radius of the circular path will be

- 1) 2.0 cm
- 2) 0.5 cm
- 3) 4.0 cm
- 4) 1.0 cm

102. A principle undergoes simple harmonic motion having time period T. the time taken in $3/8$

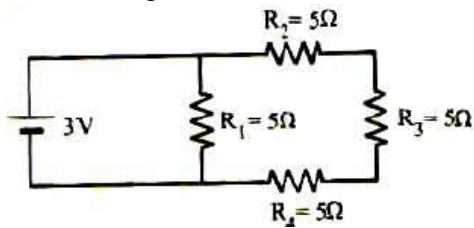
- 1) $\frac{3}{8}T$



- 2) $\frac{5}{8}T$
3) $\frac{5}{12}T$
4) $\frac{7}{12}T$
- 103.** When an electron jumps from the fourth orbit to the second orbit, one gets the
- 1) second line of lyman series
 - 2) second line of paschen series
 - 3) second line of balmer series
 - 4) first line of Pfund series
- 104.** The angular velocity of a body changes from ω_1 to ω_2 without applying torque but by changing moment of inertia. the ratio of initial radius of gyration to the final radius of gyration is
- 1) $\omega_1 : \omega_2$
 - 2) ω_2^2 to ω_1^2
 - 3) $\sqrt{\omega_2} : \sqrt{\omega_1}$
 - 4) $\frac{1}{\omega_2} : \frac{1}{\omega_1}$
- 105.** Two coherent monochromatic light beams of intensities I and $4I$ are superimposed. The maximum and minimum possible intensities in the resulting beam are
- 1) $5I$ and I
 - 2) $5I$ and $3I$
 - 3) $9I$ and I
 - 4) $9I$ and $3I$
- 106.** The work function of aluminium is 4.2 eV. If two photons each of energy 3.5 eV strike an electron of aluminium, then emission of electron will
- 1) depend upon the density of the surface
 - 2) possible
 - 3) not possible
 - 4) none of these
- 107.** Let E_a be the electric field due to a dipole in its axial plane distant l and E_q be the field in the equatorial plane distant l' , then the relation between E_a and E_q will be
- 1) $E_a = 4E_q$
 - 2) $E_q = 2E_a$
 - 3) $E_a = 2E_q$
 - 4) $E_q = 3E_a$
- 108.** If a capacitor of capacitance 'C' is connected in series with an inductance L, then the angular frequency will be
- 1) $\sqrt{\frac{1}{LC}}$
 - 2) $\sqrt{\frac{L}{C}}$
 - 3) LC
 - 4) \sqrt{LC}
- 109.** If the cold junction of a thermo-couple is kept at 0°C and the hot junction is kept at $T^\circ\text{C}$ then the relation between neutral temperature (T_n) and temperature of inversion (T_i) is
- 1) $T_n = 2T_i$
 - 2) $T_n = T_i - T$
 - 3) $T_n = T_i + T$
 - 4) $T_n = T_i/2$
- 110.** Two wires A and B of the same material, having radii in the ratio $1 : 2$ and carry currents in the ratio $4 : 1$ the ratio of drift speed of electron in A and B is
- 1) $16 : 1$
 - 2) $1 : 16$
 - 3) $1 : 4$
 - 4) $4 : 1$
- 111.** The oscillating electric and magnetic field vectors of electromagnetic wave are oriented along
- 1) the same direction and in phase
 - 2) the same direction but have a phase difference of 90°
 - 3) mutually perpendicular directions and are in phase
 - 4) mutually perpendicular directions but has a phase difference of 90°
- 112.** If for gas $\frac{R}{C_v} = 0.67$, this gas is made up of molecules which are
- 1) diatomic
 - 2) mixture of diatomic and polyatomic molecules
 - 3) monoatomic
 - 4) polyatomic



113. The value of current I in the circuit shown in figure is



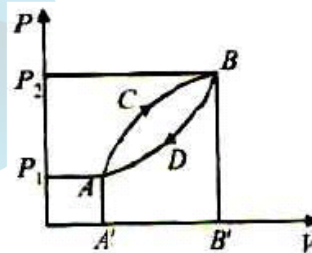
- 1) 1.8 A
 - 2) 0.8 A
 - 3) 0.2 A
 - 4) 1.6 A
114. The two nearest harmonics of a tube closed at one end and open at other end are 220 Hz and 260 Hz. What is the fundamental frequency of the system?
- 1) 20 Hz
 - 2) 30 Hz
 - 3) 40 Hz
 - 4) 10 Hz
115. When a wave travels in a medium the particles displacement is given by the equation $y = 0.03 \sin \pi(2t - 0.01x)$, where x and y are in seconds. the wavelength of the wave is
- 1) 200 m
 - 2) 100 m
 - 3) 20 m
 - 4) 10 m
116. A metallic bar is heated from 0°C to 100°C . The coefficient of linear expansion is 10^{-5}K^{-1} . What will be the percentage increase in length?
- 1) 0.001%
 - 2) 0.1%
 - 3) 1%
 - 4) 10%
117. A man is watching two trains, one leaving and the other coming with equal speed of 4m/s. If they sound their whistles each of frequency 240Hz, the number of beats heard by man (velocity of sound in air = 320 m/s) will be equal to
- 1) 12
 - 2) 0
 - 3) 3

4) 6

118. A rough vertical board has an acceleration a along the horizontal so that a block of mass pressing against it does not fall. The coefficient of friction between block and the board is



- 1) $> \frac{a}{g}$
 - 2) $< \frac{a}{g}$
 - 3) $= \frac{a}{g}$
 - 4) $> \frac{g}{a}$
119. A thermodynamic system is taken from state A to B ACB and is brought back to A along BDA as shown in the PV diagram. the net work done during the complete cycle is given by the area



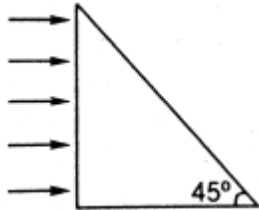
- 1) $P_1ACBP_2P_1$
 - 2) $ACBB'A'A$
 - 3) $ACBDA$
 - 4) $ADBB'A'A$
120. Electric lines of force about a negative point charge are
- 1) circular, anti-clockwise
 - 2) circular, clockwise
 - 3) radial, inwards
 - 4) radial outwards
121. the height at which the acceleration due to gravity becomes $g/9$ (where g = the acceleration due to gravity on the surface of the earth) in terms of R , the radius of the earth is
- 1) $\frac{R}{\sqrt{2}}$
 - 2) $R/2$
 - 3) $\sqrt{2}R$



4) $2R$

122. A beam of light consisting of red, green and blue colours is incident on a right angled prism. The refractive indices of the material of the prism for the above red, green and blue wavelength are 1.39, 1.44 and 1.47 respectively.

The prism will:



- 1) Separate the red colour from the green and blue colours
- 2) Separate the blue colour from red and green colours
- 3) Separate all the three colours from each other
- 4) not separate even partially any colour from the other two colours

123. An electric bulb marked 40W and 200V, is used in a circuit of supply voltage 100V. Now its power is

- 1) 10W
- 2) 20W
- 3) 40W
- 4) 100W

124. Rainbow is formed due to

- 1) scattering and refraction
- 2) internal reflection and dispersion
- 3) reflection only
- 4) diffraction and dispersion

125. The kinetic theory of gases

- 1) explains the behavior of an ideal gas
- 2) describes the motion of a single atom or molecule
- 3) relates the temperature of the gas with K.E of atoms of the as
- 4) all of the above

126. A thin prism P_1 with angle 4° and made from the glass of refractive index 1.54 is combined with another thin prism P_2 made from glass of refractive index 1.72 to produce dispersion without deviation. the angle of the prism P_2 is

1) 5.33°

2) 4°

3) 3°

4) 2.6°

127. Under a constant torque the angular momentum of a body changes from A to $4A$ in 4 second. The torque on the body will be

1) $1A$

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

3) $\frac{4}{3}A$

4) $\frac{3}{4}A$

128. Interference is possible in

- 1) light waves only
- 2) sound waves only
- 3) both light and sound waves
- 4) neither light nor sound waves

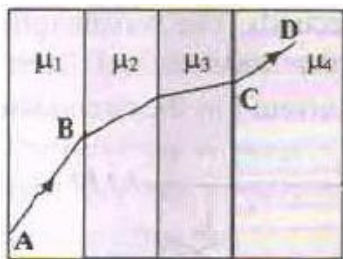
129. The meniscus of a liquid contained in one of the limbs of a narrow U-tube is held in an electromagnet with the meniscus in line with the field. The liquid is seen to rise. This indicates that the liquid is

- 1) ferromagnetic
- 2) paramagnetic
- 3) diamagnetic
- 4) non-magnetic

130. A gun fires two bullets at 60° and 30° with horizontal. the bullets strike at some horizontal. The bullets strike at some horizontal distance. The ratio of maximum height for the two bullets is in the ratio of

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

131. A ray of light passes through four transparent media with refractive indices μ_1, μ_2, μ_3 and μ_4 as shown in the figure. the surfaces of all media are parallel. If the emergent ray CD is parallel to the incident ray AB , we must have



- 1) $\mu_1 = \mu_2$
 - 2) $\mu_2 = \mu_3$
 - 3) $\mu_3 = \mu_4$
 - 4) $\mu_4 = \mu_1$
- 132.** A generator has an e.m.f of 440 Volt and internal resistance of 400 Ohm. Its terminals are connected to a load of 4000 Ohm the voltage across the load is
- 1) 200 volt
 - 2) 440 volt
 - 3) 200 volt
 - 4) 400 volt
- 133.** A sphere of radius R has uniform volume charge density. the electric potential at a point ($r < R$) is
- 1) due to the charge inside a sphere of radius r only
 - 2) due to the entire charge of the sphere
 - 3) due to the charge in the spherical shell of inner and outer radii r and R, only
 - 4) independent of r
- 134.** A uniform electric field pointing in in positive x-direction exists in a region. Let A be the origin; B be the point on the x-axis at $x = +1$ cm and C be the point on the y-axis at $y = +1$ cm. then the potentials at the points A, B and C satisfy
- 1) $V_A < V_B$
 - 2) $V_A > V_B$
 - 3) $V_A > V_C$
 - 4) $V_A > V_C$
- 135.** What is the acceleration of a projectile at its highest point
- 1) maximum
 - 2) minimum
 - 3) zero
 - 4) g

CHEMISTRY

136. Which of the following property decreases down the 18th group elements?

- 1) Boiling point
- 2) Ionization potential
- 3) Solubility in water
- 4) Atomic radius

137. 10 grams of limestone on heating produces 1.12 litres of CO_2 at STP. Percent purity of limestone is

- 1) 100%
- 2) 75%
- 3) 60%
- 4) 50%

138. In an atom two electrons revolve around the nucleus in an orbit of radius R and 4. The ratio of time taken by them to complete one revolution is

- 1) 1 : 4
- 2) 4 : 1
- 3) 1 : 8
- 4) 8 : 7

139. In a Bohr's model of an atom, when an electron jumps from $n = 1$ to $n = 3$, how much energy will be absorbed?

- 1) 2.389×10^{-12} ergs
- 2) 0.239×10^{-10} ergs
- 3) 2.15×10^{-11} ergs
- 4) 0.1936×10^{-10} ergs

140. Which of the following has greatest tendency to convert from +3 state to +2 state?

- 1) Cr
- 2) Fe
- 3) Sc
- 4) Mn

141. Consider the following sets of quantum numbers:

	n	l	m	s
i)	3	0	0	+1/2
ii)	2	1	-1	+1/2
iii)	4	3	-2	-1/2
iv)	2	0	-1	-1/2
v)	3	2	0	+1/2

Which of the following set of quantum number is not possible

- 1) ii

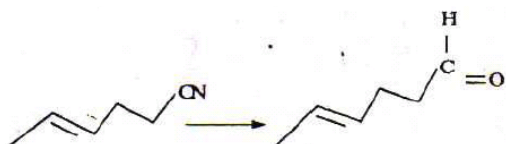


- 2) iv
3) i
4) v
- 142.** Which of the following is incorrect
- 1) Least volatile hydride of VIA group elements is H_2S
 - 2) SO_2 can act like reducing agent
 - 3) TeO_2 is an oxidizing agent
 - 4) SE_6 is chemically inert
- 143.** Regarding schottky defect, correct statement is:
- 1) density of the crystal is increased
 - 2) unequal number of cations and anions are missing from the lattice
 - 3) an ion leaves its normal site and occupies an interstitial site
 - 4) equal number of cations and anions are missing from the lattice
- 144.** effective atomic number of iron in the complex $K_4[Fe(CN)_6]$ is
- 1) 37
 - 2) 36
 - 3) 35
 - 4) 34
- 145.** If 0.15g of a solute, dissolved in 15g of solvent, is boiled at a temperature higher by $0.216^\circ C$, than that of the pure solvent. The molecular weight of the substance (Molal elevation constant for the solvent is $2.16^\circ C$) is
- 1) 10.1
 - 2) 100
 - 3) 1.01
 - 4) 1000
- 146.** The complex which absorbs light of longest wavelength is:
- 1) $[NiCl_4]^{2-}$
 - 2) $[Ni(CO)_4]$
 - 3) $[Ni(CN)_4]^{2-}$
 - 4) $[Ni(H_2O_4)]^{2+}$
- 147.** A solution containing 10g per dm^3 of urea (molecular mass = $60 g mol^{-1}$) is isotonic with a 5% solution of a non volatile solute. Then molecular weight of nonvolatile solute is:
- 1) $200 g mol^{-1}$
 - 2) $250 g mol^{-1}$
 - 3) $300 g mol^{-1}$
 - 4) $350 g mol^{-1}$
- 148.** Acidic salt among the following is:
- 1) NaH_2PO_2
 - 2) $Na_2H_2P_2O_7$
 - 3) Na_3PO_4
 - 4) Na_2HPO_3
- 149.** What is the entropy change (in $JK^{-1}mol^{-1}$) when one mole of ice is converted into water at $0^\circ C$? (the enthalpy change for the conversion of ice to liquid water is $6.0 kJ mol^{-1}$ at $0^\circ C$)
- 1) 20.13
 - 2) 2.013
 - 3) 2.198
 - 4) 21.98
- 150.** Select the correct statement
- 1) Hydration of alkynes gives carbonyl compounds
 - 2) Hydration of alkenes gives alcohols
 - 3) Cyanides on hydrolysis gives carboxylic acids
 - 4) All of above
- 151.** If K_1 and K_2 are the respective equilibrium constants for the two reactions,
- $$XeF_{6(g)} + H_2O_{(g)} \rightarrow XeF_{4(g)} + 2H_{(g)}$$
- $$XeO_{4(g)} + XeF_{6(g)} \rightarrow XeOF_{4(g)} + XeO_3F_{2(g)}$$
- The equilibrium constant of the reaction
- $$XeO_{4(g)} + 2HF_{(g)} \rightarrow XeO_3F_{2(g)} + H_2O_{(g)}$$
- will be
- 1) K_1/K_2
 - 2) $K_1 \cdot K_2$
 - 3) $K_1/(K_2)^2$
 - 4) K_2/K_1
- 152.** The observed dipole moment of a compound 'AB' is 1.2 Debye and A-B bond length is $1A^\circ$, then the percent ionic character in AB is:
- 1) 25%
 - 2) 50%
 - 3) 75%
 - 4) 66.6%

153. The solubility product of AgI at 25°C is $1.0 \times 10^{-16} \text{ mol}^2 \text{ L}^{-2}$. the solubility of of AgI in 10^{-4} N solution of KI at 25°C is approximately (in mol L^{-1})

- 1) 1.0×10^{-16}
- 2) 1.0×10^{-12}
- 3) 1.0×10^{-10}
- 4) 1.0×10^{-8}

154.



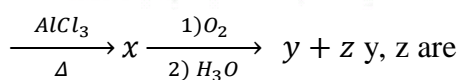
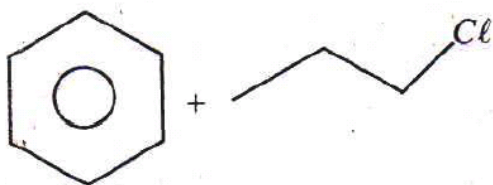
This conversion is best brought about by

- 1) DIBAL – H
- 2) LiAlH_4
- 3) $\text{CrO}_2\text{Cl}_2/\text{ether}$
- 4) $\text{CrO}_3 / \text{acetone}$

155. XeF_6 acts like a Fluoride acceptor with:

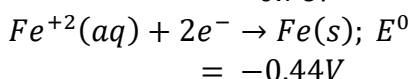
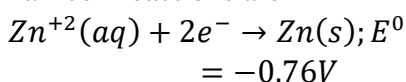
- 1) PF_5
- 2) SbF_5
- 3) AsF_5
- 4) CsF

156.

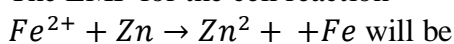


- 1) Phenol, Aniline
- 2) Phenol, Acetone
- 3) Acetone, Benzaldehyde
- 4) Aniline, Acetaldehyde

157. Reduction potential for the following half cell reactions are

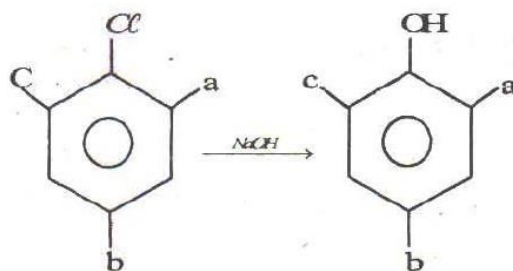


The EMF for the cell reaction



- 1) -0.22 V
- 2) $+1.20 \text{ V}$
- 3) -1.20 V
- 4) $+0.32 \text{ V}$

158.



This conversion will be very fast, if a, b and c respectively are

- 1) $-\text{CH}_3, -\text{NO}_2, -\text{OH}$
- 2) $-\text{NO}_2, -\text{NO}_2, -\text{CH}_3$
- 3) $-\text{NO}_2, -\text{NO}_2, -\text{NO}_2$
- 4) $-\text{NO}_2, -\text{CH}_3, -\text{COOH}$

159. Equivalent conductances of Ba^{2+} and Cl^- ions are 127 and $76 \text{ ohm}^{-1} \text{ cm}^2. \text{eq}^{-1}$ respectively. Equivalent conductance of BaCl_2 at infinite dilution in $\text{ohm}^{-1} \text{ cm}^2. \text{eq}^{-1}$ is

- 1) 203 V
- 2) 101.5
- 3) 20.3
- 4) 279

160. Statement – I : Fructose contain a reducing sugar

Statement – II : Fructose contain a keto group

- 1) Both S – I and S – II are correct
- 2) Both S – I and S – II are wrong
- 3) S – I is correct but S – II is wrong
- 4) S – I wrong but S – II is correct

161. The experimental data for the reaction $2\text{A} + \text{B}_2 \rightarrow 2\text{AB}$ is

Experiment	[A]	[B ₂]	Rate (mole.lit ⁻¹ s ⁻¹)
1	0.50	0.50	1.6×10^{-4}
2	0.50	1.00	3.2×10^{-4}
3	1.00	1.00	3.2×10^{-4}

The rate equation for the above data is

- 1) $\text{Rate} = k[\text{A}]^2[\text{B}]^2$
- 2) $\text{Rate} = k[\text{A}]^2[\text{B}]$
- 3) $\text{Rate} = k[\text{B}_2]$
- 4) $\text{Rate} = k[\text{B}_2]^2$

162. Nylon, 6 – 6 is a polymer of :

- 1) Ethylene glycol & Terephthalic acid



- 2) Hexamethylene diamine & Adipic acid
3) 1, 3 – butadiene & Formaldehyde
4) Phenol & Formaldehyde
- 163.** Compressibility factor expression for H_2 behaving as real gas is
- 1) $1 - a/b$
 - 2) $\left(1 - \frac{a}{RTV}\right)$
 - 3) $\left(1 + \frac{Pb}{RT}\right)$
 - 4) $\frac{RTV}{1-a}$
- 164.** The ore ‘Galena’ is concentrated by
- 1) Hydraulic washing
 - 2) Electromagnetic separation
 - 3) Froth flotation
 - 4) distillation
- 165.** A plot of $\log(x/m)$ versus $\log p$ for the absorption of a gas on a solid gives a straight line with slope equal to
- 1) $\log K$
 - 2) $-\log K$
 - 3) n^2
 - 4) $1/n$
- 166.** Gold number is least for:
- 1) Starch
 - 2) Gelatin
 - 3) Gum Arabic
 - 4) Haemoglobin
- 167.** The method of zone refining of metals is based on the principle of
- 1) greater mobility of the pure metal than that of the impurity
 - 2) higher melting point of the impurity than that of the pure metal
 - 3) greater noble character of the solid metal than that of the impurity
 - 4) greater solubility of the impurity in the molten state than in the solid
- 168.** For which of the following reactions, the units of reaction rate and rate constants is same?
- 1) zero order
 - 2) 1st order
 - 3) 2nd order
 - 4) 3rd order
- 169.** Which of the following monomers gives the polymer neoprene on polymerization?
- 1) $CH_2 = CHCl$
 - 2) $CCL_2 = CCL_2$
 - 3) $CH_2 = \overset{Cl}{\underset{|}{C}} - CH = CH_2$
 - 4) $CF_2 = CF_2$
- 170.** Copper crystallizes in to F.C.C lattice with an edge length of 361 pm. Then the radius of copper atom is
- 1) 108 pm
 - 2) 127 pm
 - 3) 157 pm
 - 4) 181 pm
- 171.** The gold number of A, B, C and D are 0.04, 0.002, 10 and 25. The protecting power of A, B, C and D are
- 1) $A > B > C > D$
 - 2) $B > A > C > D$
 - 3) $D > C > B > A$
 - 4) $C > A > B > D$
- 172.** When aq. NaCl is electrolysed using inert electrode then
- 1) P^H of the resulting solution further decreases
 - 2) P^H of resulting solution remain same
 - 3) P^H of the resulting solution further increases
 - 4) Na at cathode and O_2 at anode obtained
- 173.** ‘X’ is substance which combines chemically with impurities associated with ore to form easily fusible mass ‘Y’. Here X and Y are
- 1) Flux, Slag
 - 2) Slag, Flux
 - 3) Gangue, Slag
 - 4) Reductant, flux
- 174.** The electro chemical equivalent of a divalent metal is 2×10^{-4} g/c. Then the atomic weight of metal is:
- 1) 38.6
 - 2) 123.5
 - 3) 64.5
 - 4) 78.3



175. Nessler's reagent is used to detect the presence of

- 1) CrO_4^{2-}
- 2) PO_4^{3-}
- 3) MnO_4^-
- 4) NH_4^+

176. The concentration term without units and independent of temperature is

- 1) mole fraction
- 2) Molality
- 3) Molarity
- 4) None

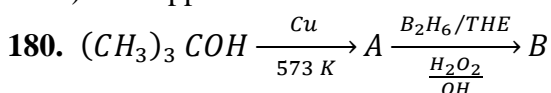
177. The carbonyl group in the structure of glucose has been identified by its reaction with:

- 1) 2,4-DNP
- 2) Con. HNO_3
- 3) HI / Red Phosphorous
- 4) Acetic anhydride

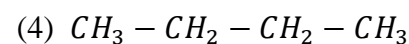
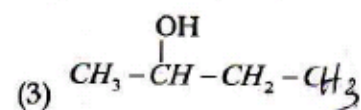
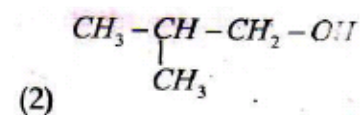
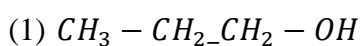
178. HX is a weak mono basic whose degree of ionization is 0.3. Then the freezing point of 0.2 m aqueous solution is [K_f of water = 1.85 km^{-1}]

179. 100 ml of a sample of water requires 0.98 mg of $K_2Cr_2O_7$ in presence of the H_2SO_4 for the oxidation of dissolved organic matter in it. The COD of the water sample is

- 1) 1.6 ppm
- 2) 6.4 ppm
- 3) 3.2 ppm
- 4) 78.4 ppm



'B' is





BIOLOGY

1 - 10	4	3	4	3	4	2	2	4	1	3
11 - 20	2	4	2	4	1	1	2	4	3	2
21 - 30	2	1	2	1	4	3	2	2	4	2
31 - 40	4	2	4	3	2	2	1	3	1	4
41 - 50	1	3	4	3	4	4	3	1	2	3
51 - 60	1	4	3	1	1	3	4	3	1	1
61 - 70	3	4	2	3	2	4	3	4	4	2
71 - 80	4	3	1	3	2	1	3	3	1	3
81 - 90	3	3	1	3	3	1	4	2	1	1

PHYSICS

91 - 100	2	2	1	2	1	3	4	2	1	2
101 - 110	3	3	3	3	3	3	3	1	4	1
111 - 120	3	4	2	1	1	2	4	4	3	3
121 - 130	4	1	1	2	4	3	4	3	2	2
131 - 135	4	4	1	2	4					

CHEMISTRY

136 - 140						2	4	3	4	4
141 - 150	2	1	4	2	2	1	3	2	4	4
151 - 160	4	1	2	1	4	2	4	3	1	1
161 - 170	3	2	3	3	4	2	4	1	3	2
171 - 180	2	3	1	1	4	1	1	2	1	2

TM