DUMET-2011 [SERIES 19]

BIOLOGY

Choose the correct (✓) answer:

1. The most important factor which determined the increase in human population in India during the 20th century:

    (1) Natality   (2) Mortality

    (3) Immigration   (4) Emigration

Ans. (1)

2. Vascular bundles in monocotyledons are considered closed because:

    (1) Xylem is surrounded all around by phloem

    (2) There are no vessels with perforations

    (3) A bundle sheath surrounds each bundle

    (4) There is no secondary growth

Ans. (4)

3. When there are two haploid nuclei per cell in some fungi before the formation of diploid, this stage is called:

    (1) Diplotene   (2) Diplophase

    (3) Dikaryophase   (4) Dikaryote

Ans. (3)

4. In blood group typing in human, if an allele contributed by one parent is I^A and an allele contributed by the other parent is i, the resulting blood group of the offspring will be:

    (1) A   (2) B

    (3) AB   (4) O

Ans. (1)

5. A population growing in a habitat with limited resources shows four phases of growth in the following sequence:

    (1) Acceleration - deceleration - lag phase - asymptote

    (2) Asymptote - acceleration - deceleration - lag phase

    (3) Lag phase - acceleration - deceleration - asymptote

    (4) Acceleration - lag phase - deceleration - asymptote

Ans. (3)

6. Necrosis in crops is due to the deficiency of:

    (1) Ca, K, S and Mo   (2) N, K, S and Mo

    (3) N, S, Fe and Zn   (4) Mg, S, Mn and Ca

Ans. (4)

7. Presence of bundle sheath is a characteristic of:

    (1) Xerophytic plants

    (2) Members of the grass family

    (3) C_4 plants

    (4) C_3 plants

Ans. (2)

8. Which one of the following would not lead to formation of clones?

    (1) Double fertilization

    (2) Apomixis

    (3) Vegetative reproduction

    (4) Tissue culture

Ans. (1)

9. A plant species which has been exploited for the production of Hirudin is:

    (1) *Brassica napus*   (2) *Zea mays*

    (3) *Solanun nigrum*   (4) *Oryza sativa*

Ans. (1)

10. The variation/difference in the offsprings of a species from their parents constitutes an important component of:

    (1) Genetics   (2) Speciation

    (3) Species fixation   (4) Heredity

Ans. (1)

11. If two pea plants having red (dominant) coloured flowers with unknown genotypes are crossed, 75% of the flowers are red and 25% are white. The genotypic constitution of the parents having red coloured flowers will be:

    (1) Both homozygous

    (2) One homozygous and other heterozygous

    (3) Both heterozygous

    (4) Both hemizygous

Ans. (3)

12. If the total amount of adenine and thymine in a double-stranded DNA is 60% the amount of guanine in this DNA will be

    (1) 15%   (2) 20%

    (3) 30%   (4) 40%

Ans. (2)

13. The protein products of the following Bt toxin genes cryIAc and cryIIAb are responsible for controlling:
    (1) Bollworm   (2) Roundworm
    (3) Moth   (4) Fruit fly

Ans. (1)

14. In a flowering plant, the pollen tube first arrives in:
    (1) Egg   (2) An antipodal cell
    (3) A synergid   (4) Central cell

Ans. (3)

15. A peculiar odor that prevails in marshy areas and cow-sheds is on account of a gas produced by:
    (1) Mycoplasma   (2) Archaebacteria
    (3) Slime moulds   (4) Cyanobacteria

Ans. (2)

16. A germplasm collection is a:
    (1) Collection of specimens of all the species of an area in a herbarium or botanical garden
    (2) Collection of modern varieties of a crop
    (3) Collection of plants or seeds having diverse alleles of all genes in a crop
    (4) Collection of seeds or pollen of rare and threatened species of a group or area

Ans. (3)

17. Walter Sutton is famous for this contribution to:
    (1) Genetic engineering
    (2) Totipotency
    (3) Quantitative genetics
    (4) Chromosomal theory of inheritance

Ans. (4)

18. The reaction, Amino acid + ATP $\rightarrow$ Aminoacyl-AMP + P-P depicts:
    (1) Amino acid assimilation
    (2) Amino acid transformation
    (3) Amino acid activation
    (4) Amino acid translocation

Ans. (3)

19. The problem of blindness in poor countries can be taken care of by using the following:
    (1) Golden rice   (2) Transgenic tomato
    (3) Transgenic maize   (4) Bt brinjal

Ans. (1)

20. The transcription of any gene is the indication of its:
    (1) Induction   (2) Activity
    (3) Stimulation   (4) Hypersensitivity

Ans. (2)

21. In C_4 plants, the bundle sheath cells:
    (1) Have thin walls to facilitate gaseous exchange
    (2) Have large intercellular spaces
    (3) Are rich in PEP carboxylase
    (4) Have a high density of chloroplasts

Ans. (4)

22. In root nodules of legumes, leg-haemoglobin is important because it:
    (1) Transports oxygen to the root nodule
    (2) Acts as an oxygen scavenger
    (3) Provides energy to the nitrogen fixing bacterium
    (4) Acts as a catalyst in transamination

Ans. (2)

23. Darwin judged the fitness of an individual by:
    (1) Ability to defend itself
    (2) Strategy to obtain food
    (3) Number of offspring
    (4) Dominance over other individuals

Ans. (1)

24. Which of the following statements is wrong?
    (1) Pollen grains remain viable for several months because their outer covering is made of sporopollenin
    (2) No enzyme can degrade sporopollenin
    (3) Pollen grains are well represented in fossil strata due to sporopollenin
    (4) Pollen wall has cavities containing proteins

Ans. (4)

25. In plant biotechnology, PEG is used in:
    (1) Protoplast isolation   (2) Cell culture preparation
    (3) Protoplast fusion   (4) Hardening

Ans. (3)

26. A regulatory body working under MoEF for the release of transgenic crops is:
    (1) NBPGR   (2) GEAC
    (3) NSC   (4) NIPGR

Ans. (2)

27. Analogous structures are:
    (1) Anatomically different but performing similar functions
    (2) Anatomically similar but performing different functions
    (3) Anatomically similar and functioning similarly
    (4) Anatomically different and functioning differently

Ans. (1)

28. A polygenic trait is controlled by 3 genes A, B and C. In a cross AaBbCcX AaBbCc, the phenotypic ratio of the offsprings was observed as:
    1 : 6 : x : 20 : x : 6 : 1
    What is the possible value of x?
    (1) 3   (2) 9
    (3) 15   (4) 25

Ans. (3)

29. A transgenic rice (Golden rice) has been developed for increased content of:
    (1) Vitamin A   (2) Vitamin B_1
    (3) Vitamin C   (4) Vitamin D

Ans. (1)

30. When the conditions are dry, a grass leaf curls inward to minimize water loss due to presence of:

   (1) Thick cuticle   (2) Large xylem cavities

   (3) Parallel venation (4) Bulliform cells

Ans. (4)

31. Long, ribbon-like pollen grains are seen in some:

   (1) Aquatic plants   (2) Wind-pollinated grasses

   (3) Gymnosperms   (4) Bird-pollinated flowers

Ans. (1)

32. At present the concentration of CO_2 in the atmosphere is about:

   (1) 100 ppm   (2) 240 ppm

   (3) 380 ppm   (4) 520 ppm

Ans. (3)

33. Littoral zone is located along the :

   (1) High mountains   (2) Sea

   (3) Rivers   (4) Desert

Ans. (2)

34. Which of the following is used as a bioweapon?

   (1) *Bacillus subtilis*   (2) *Bacillus licheniformis*

   (3) *Bacillus thuringiensis* (4) *Bacillus anthracis*

Ans. (4)

35. The chromosome constitution 2n - 2 of an organism represents:

   (1) Monosomic   (2) Nullisomic

   (3) Haploid   (4) Trisomic

Ans. (2)

36. Meristem culture is practised in horticulture to get:

   (1) Somaclonal variation (2) Haploids

   (3) Virus-free plants   (4) Slow-growing callus

Ans. (3)

37. Tendrils in plants are an example of:

   (1) Convergent evolution (2) Adaptive radiation

   (3) Divergent evolution   (4) Co-evolution

Ans. (1)

38. Leghemoglobin is:

   (1) An oxygen carrier in human blood

   (2) A protein used as food supplement

   (3) An oxygen scavenger in root nodules

   (4) A plant protein with high lysine content

Ans. (3)

39. Stomatal opening is affected by:

   (1) Nitrogen concentration, carbon dioxide concentration and light

   (2) Carbon dioxide concentration, temperature and light

   (3) Nitrogen concentration, light and temperature

   (4) Carbon dioxide concentration, nitrogen concentration and temperature

Ans. (2)

40. Taxonomic hierarchy refers to:

   (1) Step-wise arrangement of all categories for classification of plants and animals

   (2) A group of senior taxonomists who decide the nomenclature of plants and animals

   (3) A list of botanists or zoologists who have worked on taxonomy of a species or group

   (4) Classification of a species based on fossil record

Ans. (1)

41. Which of the following get accumulated in the vacuoles of guard cells during stomatal opening?

   (1) Water, calcium and magnesium

   (2) Starch, potassium and chloride ions

   (3) Malate, sodium and potassium ions

   (4) Malate, potassium and chloride ions

Ans. (4)

42. Which of the following is the most accepted theory for movement of water through plants?

   (1) Cohesion theory   (2) Capilarity

   (3) Passive transport (4) Root pressure

Ans. (1)

43. Scutellum in a caryopsis represents:

   (1) Outermost layer of endosperm

   (2) A sheath that protects that radicle

   (3) The place where the seed is attached to raphe

   (4) A cotyledon

Ans. (4)

44. In an annual ring, the light coloured part is known as :

   (1) Early wood   (2) Late wood

   (3) Heartwood   (4) Sapwood

Ans. (1)

45. Natural cytokinins are synthesized in tissues that are:

   (1) Senescent   (2) Dividing rapidly

   (3) Storing food material (4) Differentiating

Ans. (2)

46. Resemblance of one organism to another for protection and hiding is:

   (1) Mimicry   (2) Predation

   (3) Adaptation   (4) Camouflage

Ans. (1)

47. Spirochetes are:

   (1) A class of insects (2) A class of viruses

   (3) Bacteria   (4) Fungi

Ans. (3)

48. The metachromatic granules are:

   (1) Present in plant cells at metaphase stage

   (2) Inclusion bodies in bacteria

   (3) Produced in insects during metamorphosis

   (4) Chromatophores in animal skin

Ans. (2,4)

49. The rough endoplasmic reticulum (RER) in the cells are because of the presence of:
    (1) Mitochondria associated with ER
    (2) Ribosomes on the surface of ER
    (3) Volutin granules on the surface of ER
    (4) Sulphur granules on the surface of ER
Ans. (2)

50. Elaioplasts store:
    (1) Starch   (2) Proteins
    (3) Fats   (4) Essential amino acids
Ans. (3)

51. Aggregates of lymphoid tissue present in the distal portion of the small intestine are known as:
    (1) Villi   (2) Peyer's patches
    (3) Rugae   (4) Choroid plexus
Ans. (2)

52. Mendel's principle of segregation means that the germ cells always receive:
    (1) One pair of alleles
    (2) One quarter of the genes
    (3) One of the paired alleles
    (4) Any pair of alleles
Ans. (3)

53. Rotenone is a:
    (1) Bioherbicide
    (2) Commonly used biofertilizer
    (3) Bioinsecticide
    (4) Juvenile hormone
Ans. (3)

54. Which of the following vitamins has some physiological effects similar to those of parathormone?
    (1) Vitamin A   (2) Vitamin D
    (3) Vitamin C   (4) Vitamin B
Ans. (2)

55. Somatostatin:
    (1) Stimulates glucagon release while inhibits insulin release
    (2) Stimulates release of insulin and glucagon
    (3) Inhibits release of insulin and glucagon
    (4) Inhibits glucagon release while stimulates insulin release
Ans. (3)

56. Hiccups can be best described as:
    (1) Forceful sudden expiration
    (2) Jerky incomplete inspiration
    (3) Vibration of the soft palate during breathing
    (4) Sign of indigestion
Ans. (2)

57. ELISA assay:
    (1) Uses complement mediated cells lysis
    (2) Uses a radiolabelled second antibody
    (3) Involves addition of substrate which is converted into coloured end product
    (4) Requires red blood cells
Ans. (3)

58. "Complete competitors cannot coexist" is true for:
    (1) Character displacement
    (2) Competitive exclusion
    (3) Primary succession
    (4) Secondary succession
Ans. (2)

59. mRNA directs the building of proteins through a sequence of:
    (1) Introns   (2) Codons
    (3) Exons   (4) Anticodons
Ans. (2)

60. Foramen ovale:
    (1) Connects the two atria in the fetal heart
    (2) Is a condition in which the heart valves do not completely close
    (3) Is a shallow depression in the interventricular septum
    (4) Is a connection between the pulmonary trunk and the aorta in the fetus
Ans. (1)

61. Which of the following is a gram-negative bacterium?
    (1) *Escherichia coli*
    (2) *Bacillus subtilis*
    (3) *Streptomyces coelicolor*
    (4) *Ampycolatopsis orientalis*
Ans. (1)

62. What is meant by the term "Darwin fitness"?
    (1) The ability to survive and reproduce
    (2) High aggressiveness
    (3) Healthy appearance
    (4) Physical strength
Ans. (1)

63. Absence of one sex chromosome causes:
    (1) Turner's syndrome   (2) Klinefelter's syndrome
    (3) Down's syndrome   (4) Tay-Sach's syndrome
Ans. (1)

64. Comparing small and large cells, which statement is correct?
    (1) Small cells have a small surface area per volume ratio
    (2) Exchange rate of nutrients is fast with large cells
    (3) Small cells have a large surface area per volume ratio
    (4) Exchange rate of nutrients is slow with small cells
Ans. (3)

65. Which one of the following animals shows discontinuous distribution?
   (1) Green muscles   (2) Bats
   (3) Lung fishes   (4) Pacific salmons
Ans. (3)

66. The number of autosomes in human primary spermatocyte is:
   (1) 46   (2) 44
   (3) 23   (4) 22
Ans. (2)

67. The most abundant molecule in cell is:
   (1) Water   (2) Carbohydrate
   (3) Lipid   (4) Protein
Ans. (1)

68. How many chromosomes will the cell have at G_1, after S and after M phase respectively, if it has 14 chromosomes at interphase?
   (1) 14, 14, 7   (2) 14, 14, 14
   (3) 7, 7, 7   (4) 7, 14, 14
Ans. (2)

69. The Golgi apparatus:
   (1) Is found only in animals
   (2) Is found in prokaryotes
   (3) Is a site of rapid ATP production
   (4) Modifies and packages proteins
Ans. (4)

70. Glycolysis:
   (1) Takes place in the mitochondria
   (2) Produces no ATP
   (3) Has no connection with electron transport chain
   (4) Reduces two molecules of NAD^+ for every glucose molecule processed
Ans. (4)

71. Total number of all species of organisms in a given region is known as the region's
   (1) Biota   (2) Flora
   (3) Fauna   (4) Diversity
Ans. (4)

72. The arthropod exoskeleton is composed of:
   (1) Several kinds of polysaccharides
   (2) Layers of proteins and a polysaccharide called chitin
   (3) Several kinds of proteins
   (4) Single complex protein called arthropodin
Ans. (2)

73. Which of the following groups is absolutely essential functional component of the ecosystem?
   (1) Producers
   (2) Producers and herbivores
   (3) Producers and detritivores
   (4) Detritivores
Ans. (3)

74. Phagocytosis and pinocytosis are collectively termed as:
   (1) Endocytosis   (2) Suspension feeding
   (3) Omnivores   (4) Mucous trap
Ans. (1)

75. PCR proceeds in three distinct steps governed by temperature, they are in order of:
   (1) Denaturation, Annealing, Synthesis
   (2) Synthesis, Annealing, Denaturation
   (3) Annealing, Synthesis, Denaturation
   (4) Denaturation, Synthesis, Annealing
Ans. (1)

76. Corpus luteum releases:
   (1) Estrogen
   (2) Progesterone
   (3) Estrogen and progesterone
   (4) Androgen
Ans. (3)

77. Which of the following organs is devoid of glands?
   (1) Uterus   (2) Vagina
   (3) Vulva   (4) Oviduct
Ans. (2)

78. Primary spermatocyte differs from spermatogonium in:
   (1) Number of chromosomes
   (2) Size and volume
   (3) DNA content
   (4) Size of chromosomes
Ans. (2)

79. In human, cleavage divisions are:
   (1) Slow and synchronous
   (2) Fast and synchronous
   (3) Slow and asynchronous
   (4) Fast and asynchronous
Ans. (3)

80. The basic unit of study in Ecology is:
   (1) Population   (2) Organism
   (3) Community   (4) Species
Ans. (2)

81. Chimera is produced due to:
   (1) Somatic mutations (2) Reverse mutations
   (3) Lethal mutations   (4) Pleiotropic mutations
Ans. (1)

82. Maltose gives rise to 2 molecules of:
   (1) Fructose   (2) Lactose
   (3) Glucose   (4) Sucrose
Ans. (3)

83. In a lake, phytoplankton grow in abundance in:
   (1) Littoral zone   (2) Limnetic zone
   (3) Profundal zone   (4) Benthic region
Ans. (2)

84. Sigmoid growth curve is represented by:
    (1) $dN/dt = rN$
    (2) $dN/dt = rN(1 - N/K)$
    (3) $Nt = No + B + I - D - E$
    (4) $dN/dt = 1 - N/K$

Ans. (2)

85. Beadle and Tatum showed that each kind of mutant bread mould they studied lacked a specific enzyme. Their experiments demonstrated that:
    (1) Cells need specific enzymes in order to function
    (2) Genes are made of DNA
    (3) Genes carry information for making proteins
    (4) Enzymes are required to repair damaged DNA information

Ans. (3)

86. DNA has equal number of adenine and thymine residues (A=T) and equal number of guanine and cytosine (G=C). These relationships are known as:
    (1) Chargaff's rule
    (2) Coulomb's law
    (3) Le Chatelier's principle
    (4) Van't Hoff plot

Ans. (1)

87. 'Balancing selection' promotes:
    (1) Homozygotes
    (2) Heterozygotes
    (3) Polyploids
    (4) Recessive traits

Ans. (2)

88. Vomiting centre is located in the:
    (1) Medulla oblongata
    (2) Stomach and sometimes in duodenum
    (3) GI tract
    (4) Hypothalamus

Ans. (1)

89. How many bio-geographical regions are present in India?
    (1) 3
    (2) 4
    (3) 7
    (4) 10

Ans. (4)

90. Vital stains are employed to study:
    (1) Living cells
    (2) Frozen tissues
    (3) Fresh tissues
    (4) Preserved tissues

Ans. (1)

91. Which of the following organs in earthworm neutralizes humic acid present in humus?
    (1) Typhosole
    (2) Calciferous glands
    (3) Intestinal caecum
    (4) Gizzard

Ans. (2)

92. Fertilized eggs of *P. americana* are encased in:
    (1) Ootheca
    (2) Cocoon
    (3) Genital chamber
    (4) Phallomere

Ans. (1)

93. Insufficient quantities of antidiuretic hormone in blood lead to:
    (1) Diabetes mellitus
    (2) Glycosuria
    (3) Diabetes insipidus
    (4) Uremia

Ans. (3)

94. Sphincter of Oddi guards:
    (1) Hepato-pancreatic duct
    (2) Common bile duct
    (3) Pancreatic duct
    (4) Cystic duct

Ans. (1)

95. Graveyard for RBCs is:
    (1) Liver
    (2) Spleen
    (3) Kidney
    (4) Lymph glands

Ans. (2)

96. Blood cells involved in inflammatory reactions are:
    (1) Basophils
    (2) Neutrophils
    (3) Eosinophils
    (4) Monocytes

Ans. (1)

97. To obtain a standard ECG, a patient is connected to the machine with three electrodes:
    (1) One to each wrist and to the left ankle
    (2) One to each ankle and to the left wrist
    (3) One to each wrist and to the left chest region
    (4) One to each ankle and to the left chest region

Ans. (1)

98. The clavicle articulates with .... of scapula
    (1) Acromion process
    (2) Glenoid cavity
    (3) Acetabulum cavity
    (4) Ball and socket joint

Ans. (1)

99. The age of pyramid with broad base indicates "
    (1) High percentage of young individuals
    (2) Low percentage of young individuals
    (3) High percentage of old individuals
    (4) Low percentage of old individuals

Ans. (1)

100. Thymosin hormone is secreted by:
    (1) Thyroid gland
    (2) Parathyroid gland
    (3) Thymus gland
    (4) Hypothalamus

Ans. (3)

PHYSICS

101. Which of the following principles is being used in Sonar Technology?
    (1) Reflection of ultrasonic waves
    (2) Newton's laws of motion
    (3) Reflection of electromagnetic waves
    (4) Laws of thermodynamics
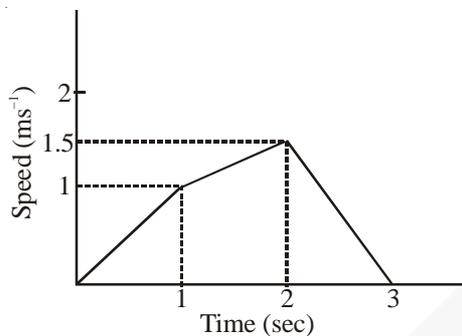
Ans (1)

102. What is the dimension of surface tension?
    (1) $[ML^1L^0]$
    (2) $[ML^1L^{-1}]$
    (3) $[ML^0L^{-2}]$
    (4) $[M^1L^0T^{-2}]$

Ans (3, 4)

103. The speed-time graph of a particle moving along a solid curve is shown below. The distance traversed by the particle from $t = 0$ to $t = 3$ is

    (1) $\dfrac{10}{2}$ sec
    (2) $\dfrac{10}{4}$ sec
    (3) $\dfrac{10}{3}$ sec
    (4) $\dfrac{10}{5}$ sec

Ans (2) it should be 10/4 metre

104. Which of the following is correct relation between an arbitrary vector $\overline{A}$ and null vector $\overline{O}$?
    (1) $\overline{A} + \overline{O} + \overline{A} \times \overline{O} = \overline{A}$
    (2) $\overline{A} + \overline{O} + \overline{A} \times \overline{O} \neq \overline{A}$
    (3) $\overline{A} + \overline{O} + \overline{A} \times \overline{O} = \overline{O}$
    (4) None of these

Ans (1)

105. An object is being thrown at a speed of 20 m/s in a direction 45° above the horizontal. The time taken by the object to return to the same level is
    (1) 20/g
    (2) 20g
    (3) $20\sqrt{2}/g$
    (4) $20\sqrt{2}$ g

Ans (3)

106. An object is moving on a plane surface with uniform velocity 10 ms^{-1} in presence of a force 10 N. The frictional force between the object and the surface is
    (1) 1 N
    (2) –10 N
    (3) 10 N
    (4) 100 N

Ans (2)

107. A body of mass M starts sliding down on the inclined plane where the critical angle is $\angle ACB = 30°$ as shown in figure. The coefficient of kinetic friction will
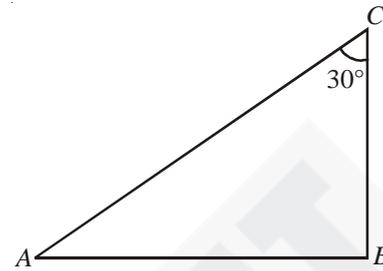
    (1) $Mg/\sqrt{3}$
    (2) $\sqrt{3}\,Mg$
    (3) $\sqrt{3}$
    (4) None of these

Ans (3)

108. In non-inertial frame, the second law of motion is written as
    (1) $F = ma$
    (2) $F = ma + F_P$
    (3) $F = ma - F_P$
    (4) $F = 2ma$
    where F_P is pseudo-force while a is the acceleration of the body relative to non-inertial frame

Ans (3)

109. The work done by an applied variable force $F = x + x^3$ from $x = 0$ m to $x = 2$ m, where x is displacement, is
    (1) 6 J
    (2) 8 J
    (3) 10 J
    (4) 12 J

Ans (1)

110. The coefficient of restitute, e, for a perfectly elastic collision is
    (1) 0
    (2) –1
    (3) 1
    (4) ∞

Ans (3)

111. A particle of mass m_1 moves with velocity v_1 and collides with another particle at rest of equal mass. The velocity of the second particle after the elastic collision is
    (1) $2v_1$
    (2) v_1
    (3) $-v_1$
    (4) 0

Ans (2)

112. The centre of mass of a solid cone along the line from the centre of the base to the vertex is at
    (1) One-fourth of the height
    (2) One-third of the height
    (3) One fifth of the height
    (4) None of these

Ans (1)

113. A solid cylinder is rolling without slipping on a plane having inclination θ and the coefficient of static friction μ_s. The relation between θ and μ_s is
    (1) $\tan\theta > 3\,\mu_s$
    (2) $\tan\theta \leq 3\,\mu_s$
    (3) $\tan\theta > 3\,\mu_s^2$
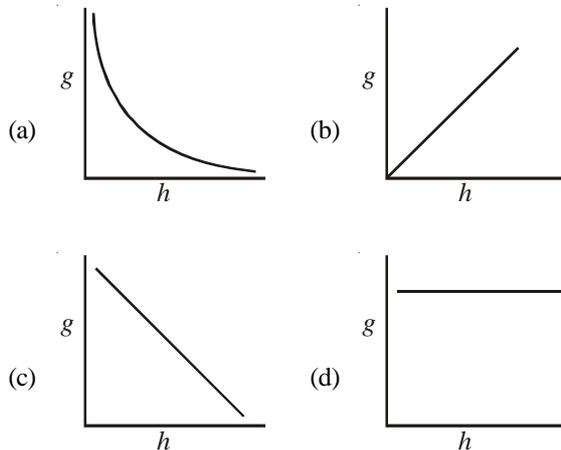   (4) None of these

Ans (2)

114. The reduced mass of two particles having masses m and $2m$ is

    (1) 2m   (2) 3m
    (3) 2m/3   (4) m/2

Ans (3)

115. Which of the following graphs shows the variation of acceleration due to gravity g with depth h from the surface of the earth?

    (1) (a)   (2) (b)
    (3) (c)   (4) (d)

Ans (3)

116. At what altitude (h) above the earth's surface would the acceleration due to gravity be one fourth of its value at the earth's surface?

    (1) $h = R$ (2) $h = 4R$
    (3) $h = 2R$ (4) $h = 16R$

    where, R is the radius of the earth

Ans (1)

117. According to C.E. van der Waal, the interatomic potential varies with the average interatomic distance (R) as

    (1) R^{-1} (2) R^{-2}
    (3) R^{-4} (4) R^{-6}

Ans (4)

118. A sphere of radius 3 cm is subjected to a pressure of 100 atm. Its volume decreases by 0.3 cc. What will be its bulk modulus?

    (1) $4\pi \times 10^5$ atm   (2) $4\pi \times 103^4$ atm
    (3) $4\pi \times 10^6$ atm   (4) $4\pi \times 10^8$ atm

(Correct answer is $4\pi \times 3 \times 10^3$)

119. A vertical tank with depth H is full with water. A hole is made on one side of the walls at a depth h below the water surface. At what distance from the foot of the wall does the emerging stream of water strike the foot?

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

    (3) $2(H-h)\sqrt{h/(H-h)}$ (4) $\sqrt{2h/(H-h)}$

Ans (3)

120. The mean free path of collision of gas molecules varies with its diameter (d) of the molecules as

    (1) d^{-1} (2) d^{-2}
    (3) d^{-3} (4) d^{-4}

Ans (2)

121. Consider two insulated chambers (A, B) of same volume connected by a closed knob, S. 1 mole of perfect gas is confined in chamber A. What is the change in entropy of gas when knob S is opened? $R = 8.31$ J mol^{-1}K^{-1}
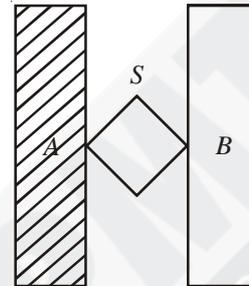
    (1) 1.46 J/K   (2) 3.46 J/K
    (3) 5.46 J/K   (4) 7.46 J/K

Ans (3)

122. A Carnot engine has efficiency 25%. It operates between reservoirs of constant temperatures with temperature difference of 80°C. What is the temperature of the low-temperature reservoir?

    (1) –25°C   (2) 25°C
    (3) –33°C   (4) 33°C

Ans (3)

123. During the phenomenon of resonance

    (1) The amplitude of oscillation becomes large
    (2) The frequency of oscillation becomes large
    (3) The time period of oscillation becomes large
    (4) All of the above

Ans (1)

124. The longitudinal wave can be observed in

    (1) Elastic media   (2) Inelastic media
    (3) Both of the above   (4) None of these

Ans (1)

125. The two waves of the same frequency moving in the same direction given rise to

    (1) Beats
    (2) Interference
    (3) Stationary waves
    (4) None of these

Ans (4)

126. Domestic electrical wiring has three wires

    (1) Positive, negative and neutral
    (2) Positive, negative and earth
    (3) Live, neutral and earth
    (4) Positive, negative and live

Ans (3)

127. Which of the following is not true?

   (1) For a point charge, the electrostatic potential varies as $1/r$

   (2) For a dipole, the potential depends on the position vector and dipole moment vector

   (3) The electric dipole potential varies as $1/r$ at large distance

   (4) For a point charge, the electrostatic field varies as $1/r^2$

Ans (3)

128. The mobility of charge carriers increases with

   (1) Increase in the average collision time

   (2) Increase in the electric field

   (3) Increase in the mass of the charge carriers

   (4) Decrease in the charge of the mobile carriers

Ans (1)

129. When an AC voltage is applied to a LCR circuit, which of the following is true?

   (1) I and V are out of phase with each other in R

   (2) I and V are in phase L while in C, they are out of phase

   (3) I and V are out of phase in both, C and L

   (4) I and V are out of phase in L and in phase in C

Ans (3)

130. For a medium with permittivity ε and permeability μ, the velocity of light is given by

   (1) $\sqrt{\dfrac{\mu}{\varepsilon}}$

   (2) $\sqrt{\mu\varepsilon}$

   (3) $\dfrac{1}{\sqrt{\mu\varepsilon}}$

   (4) $\sqrt{\dfrac{\varepsilon}{\mu}}$

Ans (3)

131. In optical fibres, the refractive index of the core is

   (1) Greater than that of the cladding

   (2) Equal to that of the cladding

   (3) Smaller than that of the cladding

   (4) Independent of that of the cladding

Ans (1)

132. For a wavelength of light 'λ' and scattering object of size 'a', all wavelengths are scattered nearly equally, if

   (1) $a = \lambda$ (2) $a \gg \lambda$

   (3) $a \ll \lambda$ (4) $a \geq \lambda$

Ans (2)

133. For a telescope having f_o as the focal length of the objective and f_e as the focal length of the eyepiece, the length of the telescope tube is

   (1) f_e (2) $f_o - f_e$

   (3) f_o (4) $f_o + f_e$

Ans (4)

134. If two sources have a randomly varying phase difference $\varphi(t)$, the resultant intensity will be given by

   (1) $\dfrac{1}{2I_0}$ (2) $\dfrac{I_0}{2}$

   (3) $2I_0$ (4) $\dfrac{I_0}{\sqrt{2}}$

Ans (3)

135. For an aperture of size 'a' illuminated by a parallel beam of light having wavelength λ, the Fresnel distance is

   (1) $\approx \dfrac{a}{\lambda}$ (2) $\approx \dfrac{a^2}{\lambda}$

   (3) $\approx a^2\lambda$ (4) $\approx \dfrac{a}{\lambda^2}$

Ans (2)

136. The maximum kinetic energy of the photoelectrons varies

   (1) Inversely with the intensity and is independent of the frequency of the incident radiation

   (2) Inversely with the frequency and is independent of the intensity of the incident radiation

   (3) Linearly with the frequency and the intensity of the incident radiation

   (4) Linearly with the frequency and is independent of the intensity of the incident radiation

Ans (4)

137. The work function for Al, K and Pt is 4.28 eV, 2.30 eV and 5.65 eV respectively. Their respective threshold frequencies would be

   (1) Pt > Al > K

   (2) Al > Pt > K

   (3) K > Al > Pt

   (4) Al > K > Pt

Ans (1)

138. When helium nuclei bombard beryllium nuclei, then

   (1) Electrons are emitted

   (2) Protons are emitted

   (3) Neutrons are emitted

   (4) Protons and neutrons are emitted

Ans (3)

139. When tow nuclei (with $A = 8$) join to form a heavier nucleus, the binding energy (B.E.) per nucleon of the heavier nuclei is

   (1) More than the B.E. per nucleon of the light nuclei

   (2) Same as the B.E. per nucleon of the light nuclei

   (3) Less than the B.E. per nucleon of the light nuclei

   (4) Double the B.E. per nucleon of the light nuclei

Ans (1)

140. In a reverse-biased *p-n* junction, when the applied bias voltage is equal to the breakdown voltage, then
    (1) Current remains constant while voltage increases sharply
    (2) voltage remains constant while current increases sharply
    (3) Current and voltage increase
    (4) Current and voltage decreases

Ans (2)

141. A charged cloud system produces an electric field in the air near the earth's surface. A particle of charge -2×10^{-9} C is acted on by a downward electrostatic force of 3×10^{-6} N when placed in this field. The gravitational and electrostatic force , respectively, exerted on a proton placed in this field are
    (1) 1.64×10^{-26} N, 2.4×10^{-16} N
    (2) 1.64×10^{-26} N, 1.5×10^{3} N
    (3) 1.56×10^{-18} N, 2.4×10^{-16} N
    (4) 1.5×10^{3} N, 2.4×10^{-16} N

Ans (1)

142. The frequency of oscillation of an electric dipole moment having dipole moment p and rotational inertia I, oscillating in a uniform electric field E is given by

    (1) $\left(\dfrac{1}{2\pi}\right)\sqrt{\dfrac{I}{pE}}$ (2) $\left(\dfrac{1}{2\pi}\right)\sqrt{\dfrac{pE}{I}}$

    (3) $(2\pi)\sqrt{\dfrac{pE}{I}}$ (4) $(2\pi)\sqrt{\dfrac{I}{pE}}$

Ans (2)

143. What is the net charge on a conducting sphere of radius 10 cm? Given that the electric field 15 cm from the center of the sphere is equal to 3×10^{3} N/C and is directed inward
    (1) -7.5×10^{-5} C   (2) -7.5×10^{-9} C
    (3) 7.5×10^{-5} C   (4) 7.5×10^{-9} C

Ans (2)

144. How many 1 µF capacitors must be connected in parallel to store a charge of 1 C with a potential of 110 V across the capacitors?
    (1) 990   (2) 900
    (3) 9090   (4) 909

Ans (3)

145. A 1250 W heater operates at 115 V. What is the resistance of the heating coil?
    (1) 16 Ω   (2) 13.5 Ω
    (3) 1250 Ω   (4) 10.6 Ω

Ans (4)

146. A proton traveling at 23° w.r.t. the direction of a magnetic field of strength 2.6 mT experiences a magnetic force of 6.5×10^{-17} N. What is the speed of the proton?
    (1) 2×10^{5} m/sec   (2) 4×10^{5} m/sec
    (3) 6×10^{5} m/sec   (4) 8×10^{5} m/sec

Ans (2)

147. What uniform magnetic field applied perpendicular to a beam of electrons moving at 1.3×10^{6} m/sec, is required to make the electrons travel in a circular arc of radius 0.35 m?
    (1) 2.1×10^{-5} G   (2) 6×10^{-5} T
    (3) 2.1×10^{-5} T   (4) 6×10^{-5} G

Ans (3)

148. A transformer has 500 primary turns and 10 secondary turns. If the secondary has a resistive load of 15 Ω, the currents in the primary and secondary respectively, are
    (1) 0.16 A, 3.2×10^{-3} A   (2) 3.2×10^{-3} A, 0.16 A
    (3) 0.16 A, 0.16 A   (4) 3.2×10^{-3} A, 3.2×10^{-3} A

Ans (2)

149. For a radio signal to travel 150 km from the transmitter to a receiving antenna, it takes
    (1) 5×10^{-4} sec   (2) 4.5×10^{-3} sec
    (3) 5×10^{-8} sec   (4) 4.5×10^{-6} sec

Ans (1)

150. In Young's double-slit experiment, if the distance between the slits is halved and the distance between the slits and the screen in doubled, the fringe width becomes
    (1) Half   (2) Double
    (3) Four times   (4) Eight times

Ans (3)

CHEMISTRY

151. In the given structure of a compound, the correct various bond moments direction involving are shown as
    (1) $Br \Leftarrow N \Leftarrow CH_2 \Rightarrow SiH_2 \Leftarrow CH_2 \Rightarrow O \Leftarrow CH_3$
    (2) $Br \Leftarrow N \Leftarrow CH_2 \Leftarrow SiH_2 \Leftarrow CH_2 \Rightarrow O \Leftarrow CH_3$
    (3) $Br \Leftarrow N \Rightarrow CH_2 \Leftarrow SiH_2 \Rightarrow CH_2 \Rightarrow O \Leftarrow CH_3$
    (4) $Br \Leftarrow N \Rightarrow CH_2 \Rightarrow SiH_2 \Leftarrow CH_2 \Rightarrow O \Rightarrow CH_3$

Ans. (3)

152. For the given alkane

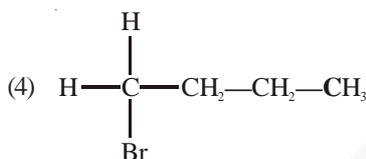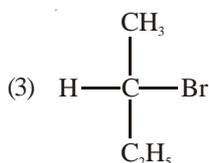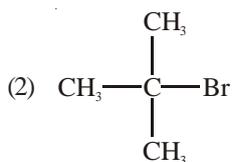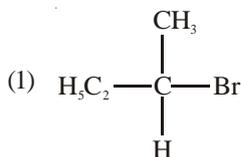   The IUPAC name is

(1) 1,1-dimethyl-5-ethyl octane

(2) 6-ethyl-2-methyl nonane

(3) 4-ethyl-8-methyl nonane

(4) 2-methyl,-6-propyl octane
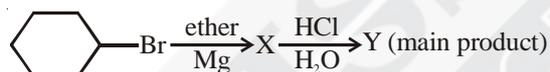
Ans. (2)

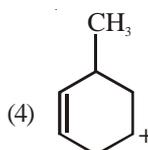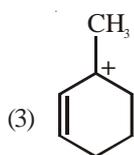153. Which will undergo S_N2 substitution reaction when treated with NaOH?

(1)

$$H_5C_2—\underset{\underset{H}{|}}{\overset{\overset{CH_3}{|}}{C}}—Br$$

(2)

$$CH_3—\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}—Br$$

(3)

$$H—\underset{\underset{C_2H_5}{|}}{\overset{\overset{CH_3}{|}}{C}}—Br$$

(4)

$$H—\underset{\underset{Br}{|}}{\overset{\overset{H}{|}}{C}}—CH_2—CH_2—CH_3$$

Ans. (4)

154. Given reaction

'Y' in the reaction is

(1) Hexane

(2) Cyclohexane

(3) Cyclohexylcyechlohexane

(4) Cyclohexylether

Ans. (2)

155. Most stable carbocation is
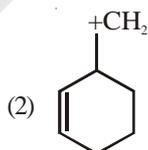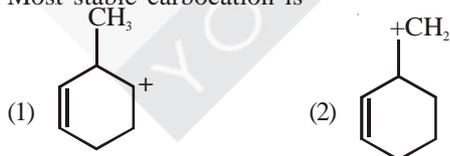
Ans. (3)

156. Which one of the following alkylbromides undergoes most rapid solvolysis in methanol solution to give corresponding methyl ether?
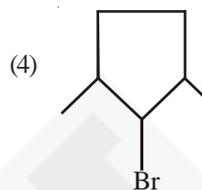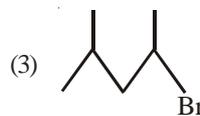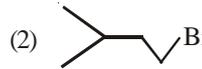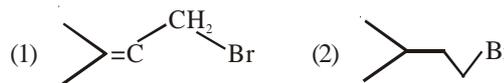
Ans. (1)

157. In the conversion of
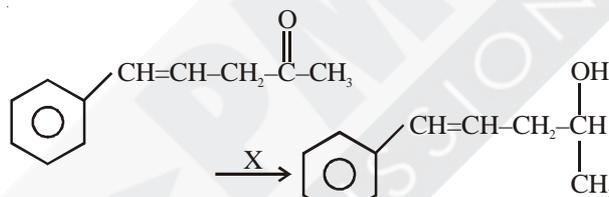
'X' is

(1) H_2/Pt   (2) Zn-Hg/HCl

(3) Li/NH_3 (4) $NaBH_4$

Ans. (4)

158. Which is not the correct statement about RNA and DNA?

(1) DNA is active in virus where RNA never appears in virus

(2) DNA exists as dimer while RNA is usually single stranded

(3) DNA contains deoxyribose as its sugar and RNA contains ribose

(4) RNA contains uracil in place of thymine (found in DNA) as a base

Ans. (1)

159 What is nature of glucose-glucose linkage in starch that makes its so susceptible to acid hydrolysis?

(1) Starch is hemiacetal

(2) Starch is acetal

(3) Starch is polymer

(4) Starch contains only few molecules of glucose

Ans. (2)

160. In the conversion
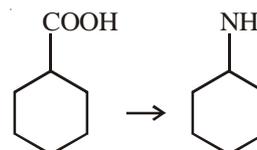
The sequence of the reagents used are

(1) (*i*) $SOCl_2$ (*ii*) N_3^- (*iii*) H_2O, heat

(2) (*i*) $SOCl_2$ (*ii*) NH_3

(3) (*i*) $SOCl_2$ (*ii*) NH_3 (*iii*) Heat

(4) (*i*) $SOCl_2$ (*ii*) KCN (*iii*) $LiAlH_4$

Ans. (1)
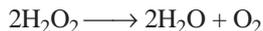
161. In the reaction
$$2H_2O_2 \longrightarrow 2H_2O + O_2$$
    (1) Oxygen is oxidised only
    (2) Oxygen is reduced only
    (3) Oxygen is neither oxidised nor reduced
    (4) Oxygen is both oxidised and reduced

Ans. (4)

162. Which of the following is not acid-base conjugate pair?
    (1) $HONO, NO_2^-$
    (2) $CH_3NH_3^+, CH_3NH_2$
    (3) $C_6H_5-COOH, C_6H_5COO^-$
    (4) H_3O^+, OH^-

Ans. (4)

163. Which one of the following has the strongest O–O bond?
    (1) O_2^+ (2) O_2^0
    (3) O_2^- (4) O_2^{2-}

Ans. (1)

164. For the reactions
    $I_2(aq) \rightleftharpoons I_2(oil)$ Equilibrium constant is K_1
    $I_2(oil) \rightleftharpoons I_2(ether)$ Equilibrium constant is K_2
    For the reaction
    $I_2(aq) \rightleftharpoons I_2(ether)$ Equilibrium constant is K_3
    The relation between K_1, K_2, K_3 is
    (1) $K_3 = K_1 + K_2$ (2) $K_3 = K_1 K_2$
    (3) $K_3 = K_1 / K_2$ (4) $K_3 = K_2 / K_1$
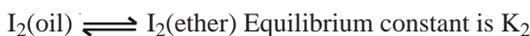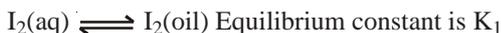
Ans. (2)

165. The geometry of electron pairs around I in IF_5 is
    (1) Octahedral   (2) Trigonal bipyramidal
    (3) Square pyramidal   (4) Pentagonal planar

Ans. (1)

166. Which statement is not correct?
    (1) Rate of an exothermic reaction increases with temperature
    (2) Solubility of NaOH increases with temperature
    (3) K_P for $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ increases with increase in pressure
    (4) For gaseous reaction $2B \rightarrow A$ K_P is smaller than K_C

Ans. (3)

167. Which change requires an oxidising agent?
    (1) $2S_2O_3^{2-} \rightleftharpoons S_4O_6^{2-}$ (2) $Zn^{2+} \rightleftharpoons Zn$
    (3) $ClO^- \rightleftharpoons Cl^-$ (4) $SO_3 \rightleftharpoons SO_4^{2-}$

Ans. (1)

168. Given the following reactions involving, A, B, C and D
    (i) $C + B^+ \rightarrow C^+ + B$
    (ii) $A^+ + D \rightarrow$ No reaction
    (iii) $C^+ + A \rightarrow$ No reaction
    (iv) $D + B^+ \rightarrow D^+ + B$
    The correct arrangement of A, B, C, D in order of their decreasing ability as reducing agent

    (1) $D > B > C > A$ (2) $A > C > D > B$
    (3) $C > A > B > D$ (4) $C > A > D > B$

Ans. (4)

169. Which ion has the largest radius?
    (1) Se^{2-} (2) F^-
    (3) O^{2-} (4) Rb^+

Ans. (1)

170. Which is correct statement about $Cr_2O_7^{2-}$ structure?
    (1) It has neither Cr–Cr bonds nor O–O bonds
    (2) It has one Cr–Cr bond and six O–O bonds
    (3) It has no Cr–Cr bond and has six O–O bonds
    (4) It has one Cr–Cr bond and seven Cr–O bonds

Ans. (1)

171. Which reaction, with the following values of ΔH, ΔS at 400 K is spontaneous and endothermic?
    (1) ΔH = –48 kJ; ΔS = + 135 J/K
    (2) ΔH = –48 kJ; ΔS = – 135 J/K
    (3) ΔH = +48 kJ; ΔS = + 135 J/K
    (4) ΔH = +48 kJ; ΔS = – 135 J/K

Ans. (3)

172. The correct decreasing order of dipolement in CH_3Cl, CH_3Br and CH_3F is
    (1) $CH_3F > CH_3Cl > CH_3Br$
    (2) $CH_3F > CH_3Br > CH_3Cl$
    (3) $CH_3Cl > CH_3F > CH_3Br$
    (4) $CH_3Cl > CH_3Br > CH_3F$

Ans. (3)

173. Given exothermic reaction
    $CoCl_4^{2-}(aq) + 6H_2O(l) \rightleftharpoons [Co(H_2O)_6]^{2+} + 4Cl^-$
    Which one of the following will decrease the equilibrium concentration of $CoCl_4^{2-}$?
    (1) Addition of HCl
    (2) Addition of $Co(NO_3)_2$
    (3) The solution in diluted with water
    (4) The temperature is increased
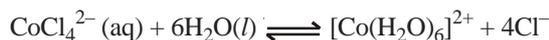
Ans. (3)

174. Hydrogen is prepared from H_2O by adding
    (1) Ca, which act as reducing agent
    (2) Al, which acts as oxidising agent
    (3) Ag, which acts as reducing agent
    (4) Au, which acts as oxidising agent

Ans. (1)

175. For preparing a buffer solution of pH = 7.0, which buffer system you will choose?
    (1) $H_3PO_4, H_2PO_4^-$ (2) $H_2PO_4^-, HPO_4^{2-}$
    (3) HPO_4^{2-}, PO_4^{3-} (4) H_3PO_4, PO_4^{3-}

Ans. (2)

176. Which element undergoes disproportionation in water?

   (1) Cl_2　　　　　　(2) F_2
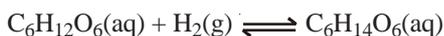
   (3) K　　　　　　　(4) Cs

Ans. (1)

177. Which one of the following species acts only as a base?

   (1) H_2S　　　　　　(2) HS^-

   (3) S^{2-}　　　　　　(4) H_2O

Ans. (3)

178. For the following reaction

   $C_6H_{12}O_6(aq) + H_2(g) \rightleftharpoons C_6H_{14}O_6(aq)$

   Which one of the following is not affected by the addition of catalyst?

   (1) Rate of forward reaction

   (2) Rate of backward reaction

   (3) Time required to reach the equilibrium

   (4) Spontaneity

Ans. (4)

179. Which is not the correct statement?

   (1) The S_8 ring is not planar

   (2) Oxygen is more electronegative than sulphur

   (3) SF_4 exists, but OF_4 does not exist

   (4) SO_3 and SO_3^{2-} both have trigonal planar geometry

Ans. (4)

180. Which can exist both as diastereoisomer and enantiomer?

   (1) $[Pt(en)_3]^{4+}$　　　(2) $[Pt(en)_2ClBr]^{2+}$

   (3) $[Ru(NH_3)_4)Cl_2]^0$　(4) $[PtCl_2Br_2]^0$

Ans. (2)

181. Number of isomeric forms (constitutional and stereoisomers) for $[Rh(en)_2(NO_2)SCN]^+$ are

   (1) Three　　　　　　(2) Six

   (3) Nine　　　　　　(4) Twelve

Ans. (4)

182. For transition metal octahedral complexes, the choice between high spin and low spin electronic configurations arises only for

   (1) d^1 to d^3 complexes　(2) d^4 to d^7 complexes

   (3) d^7 to d^9 complexes　(4) d^1, d^2 and d^8 complexes

Ans. (2)

183. For a chemical reaction of the type

   $A \rightleftharpoons B$, K = 2.0 and $B \rightleftharpoons C$, K = 0.01
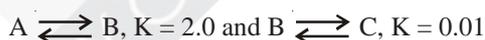
   Equilibrium constant for the reaction $2C \rightleftharpoons 2A$ is

   (1) 25　　　　　　　(2) 50

   (3) 2500　　　　　　(4) 4×10^{-4}

Ans. (3)

184. A chemical reaction proceeds into the following steps

   Step I　　　　　　$2A \rightleftharpoons X$ fast

   Step II　　　　　　$X + B \rightleftharpoons Y$ slow

   Step III　　　　　　$Y + B \rightleftharpoons$ Product fast

The rate law for the overall reaction is

   (1) rate = $k[A]^2$　　　(2) rate = $k[B]^2$

   (3) rate = $k[A][B]^2$　(4) rate = $k[A]^2[B]$

Ans. (4)

185. A solution is 0.1 M with respect to Ag^+, Ca^{2+}, Mg^{2+} and Al^{3+} which will precipitate at lowest concentration of $[PO_4^{3-}]$ when solution of Na_3PO_4 is added?

   (1) $Ag_3PO_4(K_{SP} = 1 \times 10^{-6})$

   (2) $Ca_3(PO_4)_2(K_{SP} = 1 \times 10^{-33})$

   (3) $Mg_3(PO_4)_2(K_{SP} = 1 \times 10^{-24})$

   (4) $AlPO_4(K_{SP} = 1 \times 10^{-20})$

Ans. (4)

186. In Tollen's test, aldehydes

   (1) are oxidised

   (2) are reduced to alcohol

   (3) neither reducer nor oxidised

   (4) precipitate Ag^+ as AgCl
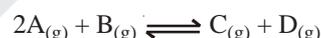
Ans. (1)

187. The half life time of 2g sample of radioactive nuclide 'X' is 15 min. The half time of 1 g sample of X is

   (1) 7.5 min　　　　　(2) 15 min

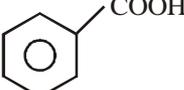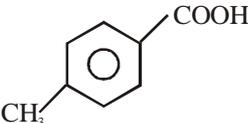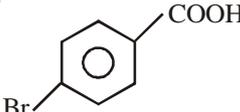   (3) 22.5 min　　　　(4) 30 min
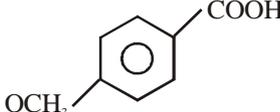
Ans. (2)

188. Given a gas phase reaction

   $2A_{(g)} + B_{(g)} \rightleftharpoons C_{(g)} + D_{(g)}$

   Which one of the following changes will affect the value of K_C?

   (1) Addition of inert gas

   (2) Addition of catalyst

   (3) Addition of reactants

   (4) Increasing in temperature

Ans. (4)

189. Lowest pka is associated with

Ans. (3)

190. Monobromination of 2-methylbutane gives how many distinct isomers?

   (1) One　　　　　　(2) Two

   (3) Three　　　　　(4) Four

Ans. (4)

191. α-(D) glucose ⇌ β-(D) glucose, equilibrium constant for this is 1.8. The percentage of α-(D) glucose at equilibrium is
    (1) 35.7   (2) 55.6
    (3) 44.4   (4) 64.3
Ans. (1)

192. Equal weights of CH_4 and H_2 are mixed in a container at 25°C. Fraction of total pressure exerted by methane is
    (1) $\dfrac{1}{2}$ (2) $\dfrac{1}{3}$
    (3) $\dfrac{1}{9}$ (4) $\dfrac{8}{9}$
Ans. (3)

193. In which one of the given formulae of xenon compounds there are five σ-bonds and three π-bobds in it?
    (1) XeFO   (2) XeF_2O_2
    (3) XeF_3O_2 (4) XeF_2O_3
Ans. (4)

194. More acidic than ethanol is
    (1) $CH_3CH_2CH_2CH_2CH_2CH_2CH_3$
    (2) $CH_3CO_2CH_2CH_3$
    (3) $CH_3COCH_2COCH_3$
    (4) CH_3COCH_3
Ans. (3)

195. Of the followings, the oxime of which shows geometrical isomerism, is
    (1) Acetone   (2) Diethylketone
    (3) Formaldehyde   (4) Benzaldehyde
Ans. (4)

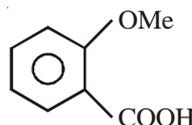196. Decreasing order of reactivity of hydrogen halide acid in the conversion of ROH → RX is
    (1) HCl > HBr > HI > HF
    (2) HI > HBr > HCl > HF
    (3) HF > HCl > HBr > HI
    (4) HF > HBr > HI > HCl
Ans. (2)

197. Which is correct statement?
    (1) o-Nitrobenzoic acid is stronger than 3,5 dinitrobenzoic acid in H_2O
    (2) Branched carboxylic acids are more acidic than unbranched acids
    (3)   is stronger acid than
    (4) Butanoic acid is stronger acid than succinic acid
Ans. (1)
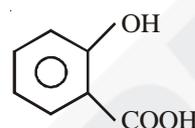
198. Maximum efficiency of a commercial refrigerator which operates between –10° (inside temperature) and 25°C (outside temperature) is
    (1) 13.3%   (2) 11.45%
    (3) 24.75%   (4) 20%
Ans. (2)

199. 1×10^{-3} m solution of $Pt(NH_3)_4Cl_4$ in H_2O shows depression in freezing point by 0.0054°C. The structure of the compound will be (Given K_{fp} (H_2O) = 1.860 km^{-1})
    (1) $[Pt(NH_3)_4]Cl_4$ (2) $[Pt(NH_3)_4Cl]Cl_3$
    (3) $[Pt(NH_3)_2Cl_2]Cl_2$ (4) $[Pt(NH_3)Cl_3]Cl$
Ans. (1)

200. The typical range of molar enthalpies for the strongest intermolecular (Hydrogen) bonds is
    (1) 200 – 300 kJ   (2) 300 – 500 kJ
    (3) 4 – 25 kJ   (4) 4 – 25 J
Ans. (3)

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