QUESTION & ANSWERS KEY FOR NEET 2020

[PHYSICS]
[CHEMISTRY]
[BIOLOGY]

1.

Which of the following refer to correct example(s) of organisms which have evolved due to changes in environment brough about by anthropogenic action?
(a) Darwin's Finches of Galapagos islands
(b) Herbicide resistant weeds
(c) Drug resistant eukaryotes
(d) Man created breeds of domesticated animals like dogs.
(1) (a) and (c)
(2) (b), (c) and (d)
(3) only (d)
(4) only (a)

Ans key: (2)

2.

Meiotic division of the secondary oocyte is completed:
(1) At the time of copulation
(2) After zygote formation
(3) At the time of fusion of a sperm with an ovum
(4) Prior to ovulation

Ans key: (3)

3.

Which of the following is correct about viroids?
(1) They have free RNA without protein coat
(2) They have DNA with protein coat
(3) They have free DNA without protein coat
(4) They have RNA with protein coat

Ans key: (1)

4.

The plant parts which consist of two generations-one within the other:
(a) Pollen grains inside the anther
(b) Germinated pollen grain with two male gametes.
(c) Seed inside the fruit
(d) Embryo sac inside the ovule

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

Ans key: (3)

5. Experimental verification of the chromosomal theory of inheritance was done by
(1) Sutton
(2) Boveri
(3) Morgan
(4) Mendel

Ans key: (3)

6.

Which of the following pairs is of unicellular algae?

(1) *Gelidium* and *Gracilaria*
(2) *Anabaena* and *Volvox*
(3) *Chlorella* and *Spirulina*
(4) *Laminaria* and *Sargassum*

Ans key: (3)

7.

Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their:

(1) Growth response
(2) Defence action
(3) Effect on reproduction
(4) Nutritive value

Ans key: (2)

8.

By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams?

(1) Mutational breeding
(2) Cross breeding
(3) Inbreeding
(4) Out crossing

Ans key: (2)

9.

The infectious stage of *Plasmodium* that enters the human body is:

(1) Sporozoites
(2) Female gametocytes
(3) Male gametocytes
(4) Trophozoites

Ans key: (1)

10.

The process responsible for facilitating loss of water in liquid form from the tip of grass blades at night and in early morning is:

(1) Root pressure
(2) Imbibition
(3) Plasmolysis
(4) Transpiration

Ans key: (1)

11.

From his experiments S. I. Miller produced amino acids by mixing the following in a closed flask:

(1) CH_3, H_2, NH_4 and water vapor at 800^0 C
(2) CH_4, H_2, NH_3 and water vapor at 600^0 C
(3) CH_3, H_2, NH_2 and water vapor at 600^0 C
(4) CH_4, H_2, NH_3 and water vapor at 800^0 C

Ans key: (4)

12.

In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is correct?

(1) Gross primary productivity is always more than net primary productivity.
(2) Gross primary productivity and Net primary productivity are one and same.
(3) There is no relationship between Gross primary productivity and Net primary productivity.
(4) Gross primary productivity is always less than net primary productivity.

Ans key: (1)

13.

The sequences that controls the copy number of the linked DNA in the vector, is termed:

(1) Ori site
(2) Palindromic sequence
(3) Recognition site
(4) Selectable marker

Ans key: (1)

14.

Cuboidal epithelium with brush border of microvilli is found in:

(1) ducts of salivary glands
(2) proximal convoluted tubule of nephron
(3) eustachian tube
(4) lining of intestine

Ans key: (2)

15.

The body of the ovule is fused within the funicle at:

(1) Micropyle
(2) Nucellus
(3) Chalaza
(4) Hilum

Ans key: (4)

16.

In light reaction, plastoquinone facilitates the transfer of electrons from:

(1) $Cytb_6f$ complex to PS-I
(2) PS-I to $NADP^+$
(3) PS-I to ATP synthase
(4) PS-II to $Cytb_6f$ complex

Ans key: (4)

17.

Match the following diseases with the causative organism and select the correct option.

	Column I		**Column II**
(a)	Typhoid	i)	*Wuchereria*
(b)	Pneumonia	ii)	*Plasmodium*
(c)	Filariasis	iii)	*Salmonella*
(d)	Malaria	iv)	*Haemophilus*

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

Ans key: (1)

18.

Match the following columns and select the correct option.

	Column I		**Column II**
(a)	*Clostridium butylicum*	i)	Cyclosporin-A
(b)	*Trichoderma polysporum*	ii)	Butyric Acid
(c)	*Monascus purpureus*	iii)	Citric Acid
(d)	*Aspergillus niger*	iv)	Blood cholesterol lowering agent

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

Ans key: (1)

19.

Which of the following statements are true for the phylum-Chordata?

(a) In Urochordata notochord extends from head to tail and it is present throughout their life.
(b) In Vertebrates notochord is present during the embryonic period only.
(c) Central nervous system is dorsal and hollow.
(d) Chordata is divided into 3 subphyla: Hemichordata, Tunicata and Cephalochordata

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

Ans key: (3)

20.

Goblet cells of alimentary canal are modified from:

(1) Columnar epithelial cells
(2) Chondrocytes
(3) Compound epithelial cells
(4) Squamous epithelial cells

Ans key: (1)

21.

Which of the following is not an inhibitory substance governing seed dormancy?

(1) Abscisic acid
(2) Phenolic acid
(3) Para-ascorbic acid
(4) Gibberellic acid

Ans key: (4)

22.

Name the enzyme that facilitates opening of DNA helix during transcription.

(1) DNA helicase
(2) DNA polymerase
(3) RNA polymerase
(4) DNA ligase

Ans key: (1)

23.

Match the following columns and select the correct option.

	Column I		**Column II**
(a)	Inhibitor of catalytic activity	i)	Ricin
(b)	Possess peptide bonds	ii)	Malonate
(c)	Cell wall material in fungi	iii)	Chitin
(d)	Secondary metabolite	iv)	Collagen

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

Ans key: (4)

24.

Bilaterally symmetrical and acoelomate animals are exemplified by:

(1) Platyhelminthes
(2) Aschelminthes
(3) Annelida
(4) Ctenophora

Ans key: (1)

25.

Presence of which of the following conditions in urine are indicative of Diabetes Mellitus?

(1) Uremia and Renal Calculi
(2) Ketonuria and Glycosuria
(3) Renal calculi and Hyperglycaemia
(4) Uremia and Ketonuria

Ans key: (2)

26.

Ray florets have:

(1) Superior ovary
(2) Hypogynous ovary
(3) Half inferior ovary
(4) Inferior ovary

Ans key: (4)

27.

Identify the substances having glycosidic bond and peptide bond, respectively in their structure:

(1) Glycerol, trypsin
(2) Cellulose, lecithin
(3) Inulin, insulin
(4) Chitin, cholesterol

Ans key: (3)

28.

Which of the following statements is not correct?

(1) The proinsulin has an extra peptide called C-peptide.
(2) The functional insulin has A and B chains linked together by hydrogen bonds.
(3) Genetically engineered insulin is produced in *E.Coli.*
(4) In man insulin is synthesized as a proinsulin.

Ans key: (2)

29.

Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of:

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

Ans key: (1)

30.

Identify the correct statement with regard to G_1 phase (Gap 1) of interphase.

(1) Reorganisation of all cell components takes place.
(2) Cell is metabolically active, grows but does not replicate its DNA.
(3) Nuclear Division takes place.
(4) DNA synthesis or replication takes place.

Ans key: (2)

31.

The QRS complex in a standard ECG represents

(1) Depolarisation of auricles
(2) Depolarisation of ventricles
(3) Repolarisation of ventricles
(4) Repolarisation of auricles

Ans key: (2)

32.

If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical

mammalian cells is 6.6×10^9 bp, then the length of the DNA is approximately:

(1) 2.5 meters
(2) 2.2 meters
(3) 2.7 meters
(4) 2.0 meters

Ans key: (2)

33.
Which of the following regions of the globe exhibits highest species diversity?

(1) Madagascar
(2) Himalayas
(3) Amazon forests
(4) Western Ghats of India

Ans key: (3)

34.
Which of the following is put into Anaerobic sludge digester for further sewage treatment?

(1) Floating debris
(2) Effluents of primary treatment
(3) Activated sludge
(4) Primary sludge

Ans key: (3)

35.
Dissolution of the synaptonemal complex occurs during:

(1) Zygotene
(2) Diplotene
(3) Leptotene
(4) Pachytene

Ans key: (2)

36.
Select the option including all sexually transmitted diseases.

(1) Gonorrhoea, Malaria, Genital herpes
(2) AIDS, Malaria, Filaria
(3) Cancer, AIDS, Syphilis
(4) Gonorrhoea, Syphilis, Genital herpes

Ans key: (4)

37.
Select the correct statement.

(1) Glucagon is associated with hypoglycemia.
(2) Insulin acts on pancreatic cells and adipocytes.
(3) Insulin is associated with hyperglycemia.
(4) Glucocorticoids stimulate gluconeogenesis.

Ans key: (4)

38.
The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are:

(1) Nitrate alone
(2) Ammonia and oxygen
(3) Ammonia and hydrogen
(4) Ammonia alone

Ans key: (3)

39.
In gel electrophoresis, separated DNA fragments can be visualized with the help of:

(1) Ethidium bromide in UV radiation
(2) Acetocarmine in UV radiation
(3) Ethidium bromide in infrared radiation
(4) Acetocarmine in bright blue light

Ans key: (1)

40.
In which of the following techniques, the embryos are transferred to assist those female who cannot conceive?

(1) GIFT and ZIFT
(2) ICSI and ZIFT
(3) GIFT and ICSI
(4) ZIFT and IUT

Ans key: (4)

41.
Select the correct match.

(1) Phenylketonuria – Autosomal dominant trait
(2) Sickle cell anaemia – Autosomal recessive trait, chromosome-11
(3) Thalassemia – X linked
(4) Haemophilia – Y linked

Ans key: (2)

42.
Which of the following is not an attribute of a population?

(1) Natality
(2) Mortality
(3) Species interaction
(4) Sex ratio

Ans key: (3)

43.
The oxygenation activity of RuBisCo enzyme in photorespiration leads to the formation of:

(1) 1 molecule of 3-C compound
(2) 1 molecule of 6-C compound
(3) 1 molecule of 4-C compound and 1 molecule of 2-C compound
(4) 2 molecules of 3-C compound

Ans key: (1) Partially correct

44.

Match the following concerning essential elements and their functions in plants:

Column I	Column II
(a) Iron	i) Photolysis of water
(b) Zinc	ii) Pollen germination
(c) Boron	iii) Required for chlorophyll biosynthesis
(d) Manganese	iv) IAA biosynthesis

Select the correct option:

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

Ans key: (2)

45.

Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells?

(1) Peroxisome
(2) Golgi bodies
(3) Polysomes
(4) Endoplasmic reticulum

Ans key: (2)

46. Select the correct events that occur during inspiration.

(a) Contraction of diaphragm
(b) Contraction of external inter-costal muscles
(c) Pulmonary volume decreases
(d) Intra pulmonary pressure increases
(1) (c) and (d)
(2) (a), (b) and (d)
(3) only (d)
(4) (a) and (b)

Ans key: (4)

47. The roots that originate from the base of the stem are

(1) Primary roots
(2) Prop roots
(3) Lateral roots
(4) Fibrous roots

Ans key: (4)

48. The ovary is half inferior in:

(1) Mustard
(2) Sunflower
(3) Plum
(4) Brinjal

Ans key: (3)

49. Match the following columns and select the correct option.

Column-I		Column-II	
(a)	Floating Ribs	(i)	Located between second and seventh ribs
(b)	Acromion	(ii)	Head of the Humerus
(c)	Scapula	(iii)	Clavicle
(d)	Glenoid cavity	(iv)	Do not connect with the sternum

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

Ans key: (3)

50. If the head of cockroach is removed, it may live for few days because:

(1) the cockroach does not have nervous system.
(2) the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.
(3) the head holds a $\frac{1}{3^{rd}}$ of a nervous system while the rest is situated along the dorsal part of its body.
(4) the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.

Ans key: (2)

51. Identify the incorrect statement,

(1) Sapwood is involved in conduction of water and minerals from root to leaf.
(2) Sapwood is the innermost secondary xylem and is lighter in colour.
(3) Due to deposition of tannins, resins, oils etc., heart wood is dark in colour.
(4) Heart wood does not conduct water but gives mechanical support.

Ans key: (2)

52. Bt cotton variety that was developed by the introduction of toxin gene of *Bacillus thuringiensis* (Bt) is resistant to:

(1) Fungal diseases
(2) Plant nematodes
(3) Insect predators
(4) Insect pests

Ans key: (4)

53. The number of substrate level phosphorylations in one turn of citric acid cycle is:

(1) One
(2) Two
(3) Three
(4) Zero

Ans key: (1)

54. Identify the wrong statement with regard to Restriction Enzymes.

(1) They cut the strand of DNA at palindromic sites.
(2) They are useful in genetic engineering.
(3) Sticky ends can be joined by using DNA ligases.
(4) Each restriction enzyme functions by inspecting the length of a DNA sequence.

Ans key: (1)

55. Flippers of Penguins and Dolphins are examples of:

(1) Convergent evolution
(2) Industrial melanism
(3) Natural selection
(4) Adaptive radiation

Ans key: (1)

56. Identify the wrong statement with reference to transport of oxygen.

(1) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.
(2) Higher H^+ conc, in alveoli favours the formation of oxyhaemoglobin.
(3) Low pCO_2 in alveoli favours the formation of oxyhaemoglobin.
(4) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2.

Ans key: (2)

57. Identify the wrong statement with reference to the gene 'I' that controls ABO blood groups.

(1) A person will have only two of the three alleles.
(2) When I^A and I^B are present together, they express same type of sugar.
(3) Allele 'i' does not produce any sugar.
(4) The gene (I) has three alleles.

Ans key: (2)

58. Identify the basic amino acid from the following.

(1) Glutamic Acid
(2) Lysine
(3) Valine
(4) Tyrosine

Ans key: (2)

59. Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop.

(1) Gibberellin
(2) Ethylene
(3) Abscisic acid
(4) Cytokinin

Ans key: (1)

60. Match the organism with its use in biotechnology.

(a)	*Bacillus thuringiensis*	(i)	Cloning vector
(b)	*Thermus aquaticus*	(ii)	Construction of first rDNA molecule
(c)	*Agrobacterium tumefaciens*	(iii)	DNA polymerase
(d)	*Salmonella typhimurium*	(iv)	Cry proteins

Select the correct option from the following:

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

Ans key: (1)

61. Which of the following statements is correct?

(1) Adenine pairs with thymine through one H-bond.
(2) Adenine pairs with thymine through three H-bonds.
(3) Adenine does not pair with thymine.
(4) Adenine pairs with thymine through two H-bonds.

Ans key: (4)

62. Match the following columns and select the correct option.

Column-I		**Column-II**	
(a)	Gregarious, polyphagous pest	(i)	Asterias
(b)	Adult with radial symmetry and larva with bilateral symmetry	(ii)	Scorpion
(c)	Book lungs	(iii)	Ctenoplana
(d)	Bioluminescence	(iv)	Locusta

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

Ans key: (1)

63. Which of the following would help in prevention of diuresis?

(1) Reabsorption of Na^+ and water from renal tubules due to aldosterone
(2) Atrial natriuretic factor causes vasoconstriction
(3) Decrease in secretion of renin by JG cells
(4) More water reabsorption due to undersecretion of ADH

Ans key: (1)

64. Choose the correct pair from the following

(1) Polymerases – Break the DNA into fragments
(2) Nucleases – Separate the two strands of DNA
(3) Exonucleases – Make cuts at specific positions within DNA
(4) Ligases – Join the two DNA molecules

Ans key: (4)

65. Identify the correct statement with reference to human digestive system.

(1) Serosa is the innermost layer of the alimentary canal.
(2) Ileum is a highly coiled part.
(3) Vermiform appendix arises from duodenum.
(4) Ileum opens into small intestine.

Ans key: (2)

66. Embryological support for evolution was disapproved by:

(1) Alfred Wallace
(2) Charles Darwin
(3) Oparin
(4) Karl Ernst von Baer

Ans key: (4)

67. Which of the following hormone levels will cause release of ovum (ovulation) from the graffian follicle?

(1) High concentration of Progesterone
(2) Low concentration of LH
(3) Low concentration of FSH
(4) High concentration of Estrogen

Ans key: (4)

68. The specific palindromic sequence which is recognized by EcoRI is :

(1) 5' - GGAACC - 3'
3' - CCTTGG - 5'
(2) 5' - CTTAAG - 3'
3' - GAATTC - 5'
(3) 5' - GGATCC - 3'
3' - CCTAGG - 5'
(4) 5' - GAATTC - 3'
3' - CTTAAG - 5'

Ans key: (4)

69. The first phase of translation is:

(1) Recognition of DNA molecule
(2) Aminoacylation of tRNA
(3) Recognition of an anti-codon
(4) Binding of mRNA to ribosome

Ans key: (2)

70. Floridean starch has structure similar to:

(1) Amylopectin and glycogen
(2) Mannitol and algin
(3) Laminarin and cellulose
(4) Starch and cellulose

Ans key: (1)

71. Strobili or cones are found in:

(1) *Pteris*
(2) *Marchantia*
(3) *Equisetum*
(4) *Salvinia*

Ans key: (3)

72. How many true breeding pea plant varieties did Mendel select as pairs which were similar except in one character with contrasting traits?

(1) 2
(2) 14
(3) 8
(4) 4

Ans key: (2)

73. Snow-blindness in Antarctic regions is due to:

(1) Inflammation of cornea due to high dose of UV-B radiation
(2) High reflection of light from snow
(3) Damage to retina caused by infra-red rays
(4) Freezing of fluids in the eye by low temperature

Ans key: (1)

74. The enzyme enterokinase helps in conversion of:

(1) trypsinogen into trypsin
(2) caseinogen into casein
(3) pepsinogen into pepsin
(4) protein into polypeptides

Ans key: (1)

75. Match the following with respect to meiosis:

(a)	Zygotene	(i)	Terminalization
(b)	Pachytene	(ii)	Chiasmata
(c)	Diplotene	(iii)	Crossing over
(d)	Diakinesis	(iv)	Synapsis

Select the correct option from the following:

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

Ans key: (1)

76. Which of the following statements about inclusion bodies is incorrect?

(1) These are involved in ingestion of food particles.
(2) They lie free in the cytoplasm.
(3) These represent reserve material in cytoplasm.
(4) They are not bound by any membrane.

Ans key: (1)

77. Match the following columns and select the correct option.

Column-I		Column-II	
(a)	Eosinophils	(i)	Immune response
(b)	Basophils	(ii)	Phagocytosis
(c)	Neutrophils	(iii)	Release histaminase, destructive enzymes
(d)	Lymphocytes	(iv)	Release granules containing histamine

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

Ans key: (4)

78. The transverse section of a plant shows following anatomical features:

(a) Large number of scattered vascular bundles surrounded by bundle sheath.
(b) Large conspicuous parenchymatous ground tissue.
(c) Vascular bundles conjoint and closed.
(d) Phloem parenchyma absent.
Identify the category of plant and its part:
(1) Monocotyledonous root
(2) Dicotyledonous stem
(3) Dicotyledonous root
(4) Monocotyledonous stem

Ans key: (4)

79. Match the following columns and select the correct option.

Column-I		Column-II	
(a)	Pituitary gland	(i)	Grave's disease
(b)	Thyroid gland	(ii)	Diabetes mellitus
(c)	Adrenal gland	(iii)	Diabetes insipidus
(d)	Pancreas	(iv)	Addison's disease

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

Ans key: (2)

80. Match the following columns and select the correct option.

Column-I		Column-II	
(a)	Placenta	(i)	Androgens
(b)	Zona pellucida	(ii)	Human Chorionic Gonadotropin (hCG)
(c)	Bulbo-urethral glands	(iii)	Layer of the ovum
(d)	Leydig cells	(iv)	Lubrication of the Penis

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

Ans key: (3)

81. In water hyacinth and water lily, pollination takes place by:

(1) water currents only
(2) wind and water
(3) insects and water
(4) insects or wind

Ans key: (4)

82. According to Robert May, the global species diversity is about:

(1) 20 million
(2) 50 million
(3) 7 million
(4) 1.5 million

Ans key: (3)

83. Match the following columns and select the correct option:

Column-I		Column-II	
(a)	6-15 pairs of gill slits	(i)	Trygon
(b)	Heterocercal caudal fin	(ii)	Cyclostomes
(c)	Air Bladder	(iii)	Chondrichthyes
(d)	Poison sting	(iv)	Osteichthyes

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

Ans key: (4)

84. The process of growth is maximum during:

(1) Lag phase
(2) Senescence
(3) Dormancy
(4) Log phase

Ans key: (4)

85. Match the following columns and select the correct option.

Column-I		Column-II	
(a)	Bt cotton	(i)	Gene therapy
(b)	Adenosine deaminase deficiency	(ii)	Cellular defence
(c)	RNAi	(iii)	Detection of HIV infection
(d)	PCR	(iv)	*Bacillus thuringiensis*

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

Ans key: (4)

86. Match the following columns and select the correct option.

Column-I		Column-II	
(a)	Organ of Corti	(i)	Connects middle ear and pharynx
(b)	Cochlea	(ii)	Coiled part of the labyrinth
(c)	Eustachian tube	(iii)	Attached to the oval window
(d)	Stapes	(iv)	Located on the basilar membrane

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

Ans key: (2)

87. Which one of the following is the most abundant protein in the animals?

(1) Collagen
(2) Lectin
(3) Insulin
(4) Haemoglobin

Ans key: (1)

88. Identify the wrong statement with reference to Immunity.

(1) When ready-made antibodies are directly given, it is called "Passive immunity"
(2) Active immunity is quick and gives full response.
(3) Foetus receives some antibodies from mother, it is an example for passive immunity.
(4) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".

Ans key: (2)

89. Montreal protocol was signed in 1987 for control of:

(1) Emission of ozone depleting substances
(2) Release of Green House gases
(3) Disposal of e-wastes
(4) Transport of Genetically modified organisms from one country to another

Ans key: (1)

90. Match the trophic levels with their correct species examples in grassland ecosystem.

Column-I		Column-II	
(a)	Fourth trophic level	(i)	Crow
(b)	Second trophic level	(ii)	Vulture
(c)	First trophic level	(iii)	Rabbit
(d)	Third trophic level	(iv)	Grass

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

Ans key: (4)

91. A screw gauge has least count of 0.01 mm and there are 50 divisions in its circular scale.
The pitch of the screw gauge is :
(1) 0.25 mm
(2) 0.2 mm
(3) 1.0 mm
(4)0.01mm

Ans key: (2)

92. The mean free path for a gas, with molecular diameter d and number density n can be expressed as:

(1) $\frac{1}{\sqrt{2}n\pi d^2}$
(2) $\frac{1}{\sqrt{2}n^2\pi d^2}$
(3) $\frac{1}{\sqrt{2}n^2\pi^2 d^2}$
(4) $\frac{1}{\sqrt{2}n\pi d}$

Ans key: (1)

93. Light of frequency 1.5 times the threshold frequency is incident on a photosensitive material. What will be the photoelectric current if the frequency is halved and intensity is doubled?

(1) four times
(2) one-fourth
(3) zero
(4) doubled

Ans key: (3)

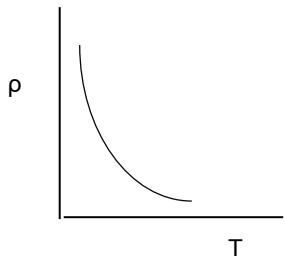
94. In a certain region of space with volume $0.2m^3$, the electric potential is found to be 5V throughout. The magnitude of electric field in this region is:

(1) 0.5 N/C
(2) 1 N/C
(3) 5 N/C
(4) zero

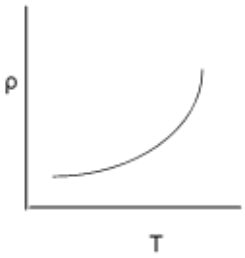
Ans key: (4)

95. Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for copper?

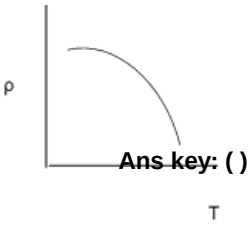
(1)



(2)



(3)



Ans key: ( )

(4)

Ans key: (2)

96. A wire of length L, area of cross section A is hanging from a fixed support. The length of the wire changes to L_1 when mass M is suspended from its free end. The expression for Young's modulus is:

(1) $\frac{mg(L_1-L)}{AL}$
(2) $\frac{mgL}{AL_1}$
(3) $\frac{mgL}{A(L_1-L)}$
(4) $\frac{mgL_1}{AL}$

Ans key: (3)

97. In a guitar, two strings A and B made of same material are slightly out of tune and produce beats

of frequency 6Hz. When tension in B is slightly decreased, the beat frequency increase to 7 Hz. If he frequency of A is 530 Hz, the original frequency of B will be:

(1) 524 Hz
(2) 536 Hz
(3) 537 Hz
(4) 523 Hz

Ans key: (1)

98. A 40μ F capacitor connected to a 200V, 50Hz ac supply. The rms value of the current in the circuit is, nearly:

(1) 2.05 A
(2) 2.5 A
(3) 25.1
(4)1.7 A

Ans key: (2)

99. A ball is thrown vertically downward with a velocity of 20 m/s from the top of tower. It hits the ground after some time with a velocity of 80 m/s. The height of the tower is: ($g = 10\ m/s^2$)

(1) 340 m
(2) 320 m
(3) 300 m
(4) 360 m

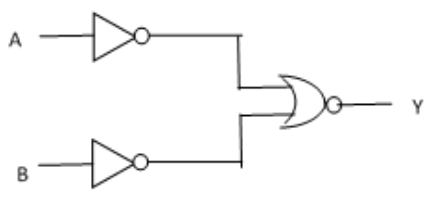
Ans key: (3)

100. An electron is accelerated from rest through a potential difference of V volt. If the de Broglie wavelength of the electrons is 1.227×10^{-2} nm, the potential difference is:

(1) 10^2 V
(2) 10^3 V
(3) 10^4 V
(4) 10 V

Ans key: (3)

101. For the logic circuit shown, the truth table is:



(1)

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

(2)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

(3)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

(4)

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

Ans key: (4)

102. A short electric dipole has a dipole moment of 16×10^{-9} Cm. The electric potential due to the dipole at a point at a distance of 0.6 m from the centre of the dipole, situated on a line making an angle of 60° with the dipole axis is : $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 Nm^2/C^2$

(1) 200 V
(2) 400 V
(3) zero
(4) 50V

Ans key: (3)

103. An iron of susceptibility 599 is subjected to a magnetizing field of 1200 A m^{-1}. The permeability of the material of the rod is:
($\mu_0 = 4\pi \times 10^{-7}\ T\ m\ A^{-1}$)

(1) $8.0 \times 10^{-5}\ T\ m\ A^{-1}$
(2) $2.4\pi \times 10^{-5}\ T\ m\ A^{-1}$
(3) $2.4\pi \times 10^{-7}\ T\ m\ A^{-1}$
(4) $2.4\pi \times 10^{-4}\ T\ m\ A^{-1}$

Ans key: (4)

104. Th increase in the width of the depletion region in a p-n junction diode is due to:

(1) reverse bias only
(2) both forward bias and reverse bias
(3) increase in forward current
(4) forward bias only

Ans key: (1)

105. Capillary tube of radius r is immersed in water and water rises in it to a height h. The mass of the water in the capillary is 5g. Another capillary tube

of radius 2r is immersed in water. The mass of water that will rise in this tube is:

(1) 5.0 g
(2) 10.0 g
(3) 20.0 g
(4) 2.5 g

Ans key: (2)

106. The energy equivalent of 0.5g of a substance is:

(1) 4.5×10^{13}J
(2) 1.5×10^{13}J
(3) 0.5×10^{13}J
(4) 4.5×10^{16}J

Ans key: (1)

107. The solids which have the negative temperature coefficient of resistance are:

(1) insulators only
(2) semiconductors only
(3) insulators and semiconductors
(4) metals

Ans key: (3)

108. A ray is incident at an angle of incidence i on one surface of a small angle prism (with angle of prism A) and emerges normally from the opposite surface. If the refractive index of the material of the prism is μ, then the angle of incidence is nearly equal to:

(1) $\frac{2A}{\mu}$

(2) μA

(3) $\frac{\mu A}{2}$

(4) $\frac{A}{2\mu}$

Ans key: (2)

109. For which one of the following, Bohr model is **not** valid?

(1) Singly ionized helium atom (He^+)
(2) Deuteron atom
(3) Singly ionized neon atom (Ne^+)
(4) Hydrogen atom

Ans key: (3)

110. Assume that light of wavelength 600nm is coming from a star. The limit of resolution of telescope whose objective has a diameter of 2m is:

(1) 1.83×10^{-7}rad
(2) 7.32×10^{-7}rad
(3) 6.00×10^{-7}rad
(4) 3.66×10^{-7}rad

Ans key: (4)

111. A body weighs 72N on the surface of the earth. What is the gravitational force on it, at a height equal to half the radius of the earth?

(1) 32 N
(2) 30 N
(3) 24 N
(4) 48 N

Ans key: (1)

112. A charged particle having drift velocity of 7.5×10^{-4} ms^{-1} in an electric field of 3×10^{-10} Vm^{-1}, has a mobility in $m^2 V^{-1} s^{-1}$ of:

(1) 2.5×10^{6}
(2) 2.5×10^{-6}
(3) 2.25×10^{-15}
(4) 2.25×10^{15}

Ans key: (1)

113. For transistor action. Which of the following statements is **correct**?

(1) Base, emitter and collector regions should have same size.
(2) Both emitter junction as well as the collector junction are forward biased.
(3) The base region must be very thin and lightly doped.
(4) Base, emitter and collector regions should have same doping concentrations.

Ans key: (3)

114. The capacitance of a parallel plate capacitor with air as medium is 6μF. With the introduction of a dielectric medium, the capacitance becomes 30μF. The permittivity of the medium is:

$\epsilon_0 = 8.85 \times 10^{-12} C^{-2} N^{-1} m^{-2}$

(1) $1.77 \times 10^{-12} C^{-2} N^{-1} m^{-2}$
(2) $0.44 \times 10^{-10} C^{-2} N^{-1} m^{-2}$
(3) $5.00\ C^{-2} N^{-1} m^{-2}$
(4) $0.44 \times 10^{-13} C^{-2} N^{-1} m^{-2}$

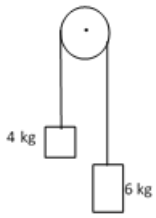
Ans key: (2)

115. Taking into account of the significant figure, what is the value of 9.99m – 0.0099m?

(1) 9.98 m
(2) 9.980 m
(3) 9.9 m
(4) 9.9801 m

Ans key: (1)

116. Two bodies of mass 4 kg and 6 kg are tied to the ends of a massless string. The string passes over pully which is frictionless (see figure). The acceleration of the system in terms of acceleration due to gravity (g) is:



(1) g/2
(2) g/5
(3) g/10
(4) g

Ans key: (2)

117. A cylinder contains hydrogen gas at pressure of 249kPa and temperature 27°C.
Its density is : ($R = 8.3\ J\ mol^{-1}\ K^{-1}$)

(1) 0.2 kg/m^3
(2) 0.1 kg/m^3
(3) 0.02 kg/m^3
(4) 0.5 kg/m^3

Ans key: (1)

118. The ratio of contributions made by the electric field and magnetic field components to the intensity of an electromagnetic wave is : (c = speed of electromagnetic waves)

(1) 1 : 1
(2) 1 : c
(3) 1 : c^2
(4) c : 1

Ans key: (1)

119. A long solenoid of 50 cm length having 100 turns carries a current of 2.5A. The magnetic field at the centre of the solenoid is :
($\mu_0 = 4\pi \times 10^{-7}\ TmA^{-1}$)

(1) 3.14×10^{-4} T
(2) 6.28×10^{-5} T
(3) 3.14×10^{-5} T
(4) 6.28×10^{-4} T

Ans key: (4)

120. The Young's double slit experiment, if the separation between coherent sources is halved and the distance of the screen from the coherent sources is doubled, then the fringe width becomes:

(1) half
(2) four times
(3) one - fourth
(4) double

Ans key: (2)

121. A resistance wire connected in the left gap of a meter bridge balances a 10Ω resistance in the right gap at a point which divides the bridge wire in the ratio 3 : 2. If the length of the resistance wire is 1.5m, then the length of 1Ω of the resistance wire is :

(1) 1.0×10^{-1} m
(2) 1.5×10^{-1}m
(3) 1.5×10^{-2} m
(4) 1.0×10^{-2} m

Ans key: (1)

122. The energy required to break one bond in DNA is 10^{-20}J. This value in eV is nearly.

(1) 0.6
(2) 0.06
(3) 0.006
(4) 6

Ans key: (2)

123. when a uranium isotope $^{235}_{92}U$ is bombarded with a neutron, it generates $^{89}_{36}Kr$, three neutrons and:

(1) $^{91}_{40}Zr$
(2) $^{101}_{36}Kr$
(3) $^{103}_{36}Kr$
(4) $^{144}_{56}Ba$

Ans key: (4)

124. Two cylinders A and B of equal capacity ae connected to each other via a stop cock. A contains an ideal gas at standard temperature and pressure. B is completely evacuated. The entire system is thermally insulated. The stop cock is suddenly opened. The process is:

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

Ans key: (1)

125. Light with an average flux of 20 W/cm^2 falls on a non -reflecting surface at normal incidence having surface area 20 cm^2. The energy received by the surface during time span of 1 minute is :

(1) 12×10^3 J
(2) 24×10^3 J
(3) 48×10^3 J
(4) 10×10^3 J

Ans key: (2)

126.

The quantities of heat required to raise the temperature of two solid copper spheres of radii r_1 and r_2 ($r_1 = 1.5\, r_2$) through 1 K are in the ratio:

(1) $\frac{9}{4}$

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

(3) $\frac{5}{3}$

(4) $\frac{27}{8}$

Ans key: (4)

127.

The average thermal energy for a mono-atomic gas is: (k_B is Boltzmann constant and T, absolute temperature)

(1) $\frac{3}{2}k_BT$

(2) $\frac{5}{2}k_BT$

(3) $\frac{7}{2}k_BT$

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

Ans key: (1)

128.

A series LCR circuit is connected to an ac voltage source. When l is removed from the circuit, the phase difference between current and voltage is $\frac{\pi}{3}$:. If instead C is removed from the circuit, the phase difference is again $\frac{\pi}{3}$ between current and voltage. The power factor of the circuit is:

(1) 0.5
(2) 1.0
(3) –1.0
(4) zero

Ans key: (2)

129.

Two particles of mass 5 kg and 10 kg respectively are attached to the two ends of a rigid rod of length 1 m with negligible mass
The centre of mass of the system from the 5 kg particle is nearly at a distance of

(1) 50 cm
(2) 67 cm
(3) 80 cm
(4) 33 cm

Ans key: (2)

130.

The phase difference between displacement and acceleration of a particle in a simple harmonic motion is:

(1) $\frac{3\pi}{2}$ rad

(2) $\frac{\pi}{2}$ rad

(3) zero

(4) π rad

Ans key: (4)

131.

The Brewster's angle i_b for an interface should be:

(1) $30° < i_b < 45°$
(2) $45° < i_b < 90°$
(3) $i_b = 90°$
(4) $0° < i_b < 30°$

Ans key: (2)

132.

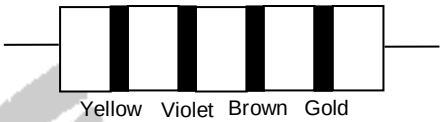
Dimensions of stress are

(1) $[ML^2T^{-2}]$
(2) $[ML^0T^{-2}]$
(3) $[ML^{-1}T^{-2}]$
(4) $[MLT^{-2}]$

Ans key: (3)

133.

The color code of a resistance is given below:



The values of resistance and tolerance, respectively,

(1) 47 kΩ, 10%
(2) 4.7 kΩ, 5%
(3) 470 kΩ, 5%
(4) 470 kΩ, 5%

Ans key: (3)

134.

A spherical conductor or radius 10 cm has a charge of 3.2×10^{-7} C distributed uniformly. What is the magnitude of electric field at a point 15 cm from the centre of the sphere?

$\left(\frac{1}{4\pi\epsilon_0} = 9 \times 10^9\ \text{N m}^2/\text{c}^2\right)$

(1) 1.28×10^5 N / C
(2) 1.28×10^6 N / C
(3) 1.28×10^7 N / C
(4) 1.28×10^4 N / C

Ans key: (1)

135.

Find the torque about the origin when a force of $3\hat{j}$ N acts on a particle whose position vector is $2\hat{k}$ m.

(1) $6\ \hat{j}$ N m
(2) $-6\ \hat{j}$ N m
(3) $-6\ \hat{k}$ N m
(4) $6\ \hat{i}$ N m

Ans key: (2)

136.
The mixture which shows positive deviation from Raoult's law is:
(1) Benzene + Toluene
(2) Acetone + Chloroform
(3) Chloroethane + Bromoethane
(4) Ethanol + Acetone

Ans key: (4)

137.
Which of the following is **not** correct about reaction carbon monoxide?
(1) It reduces oxygen carrying ability of blood
(2) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin
(3) It is produced due to incomplete combustion
(4) It forms carboxyhaemoglobin

Ans key: (2)

138.
The number of Faradays(F) required to produce 20 g of calcium from molten $CaCl_2$ (Atomic mass of Ca = 40 g mol^{-1}) is :
(1) 2
(2) 3
(3) 4
(4) 1

Ans key: (4)

139.
Hydrolysis of sucrose is given by the following reaction
Sucrose+ $H_2O \rightleftharpoons$ Glucose + Fructose
If the equilibrium constant (K_c) is 2×10^{13} at 300 K, the value of $\Delta_r G°$ at the same temperature will be:
(1) 8.314 J mol^{-1} K^{-1} × 300 K × ln (2×10^{13})
(2) 8.314 J mol^{-1} K^{-1} × 300 K × ln (3×10^{13})
(3) –8.314 J mol^{-1} K^{-1} × 300 K × ln (4×10^{13})
(4) –8.314 J mol^{-1} K^{-1} × 300 K × ln (2×10^{13})

Ans key: (4)

140.
For the reaction, $2Cl_{(g)} \rightarrow Cl_{2(g)}$, the **correct** option is
(1) $\Delta_r H > 0$ and $\Delta_r S < 0$
(2) $\Delta_r H < 0$ and $\Delta_r S > 0$
(3) $\Delta_r H < 0$ and $\Delta_r S < 0$
(4) $\Delta_r H > 0$ and $\Delta_r S > 0$

Ans key: (3)

141.
Paper chromatography is an example of
(1) Partition chromatography
(2) Thin layer chromatography
(3) Column chromatography
(4) Adsorption chromatography

Ans key: (1)

142.
The rate constant for a first order reaction is 4.606×10^{-3} s^{-1}. The time required to reduce 2.0 g of the reactant to 0.2 is:
(1) 200 s
(2) 500 s
(3) 1000 s
(4) 100 s

Ans key: (2)

143.
Which of the following oxoacid of Sulphur has –O–O– linkage?
(1) H_2SO_4, sulphuric acid
(2) $H_2S_2O_8$, peroxodisulphuric acid
(3) $H_2S_2O_7$, pyrosulphuric acid
(4) H_2SO_3, sulphurous acid

Ans key: (2)

144.
Reaction between benzaldehyde and acetophenone in presence of dilute NaOH is known is:
(1) Cannizzaro's reaction
(2) Cross Cannizzaro's reaction
(3) Cross Aldol condensation
(4) Aldol condensation

Ans key: (3)

145.
An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is:
(1) $\frac{\sqrt{3}}{4} \times 288\,\text{pm}$
(2) $\frac{4}{\sqrt{3}} \times 288\,\text{pm}$
(3) $\frac{4}{\sqrt{2}} \times 288\,\text{pm}$
(4) $\frac{\sqrt{3}}{4} \times 288\,\text{pm}$

Ans key: (4)

146.
Which of the following is a cationic detergent?
(1) Sodium stearate
(2) Cetyltrimethyl ammonium bromide
(3) Sodium dodecylbenzene sulphonate
(4) Sodium lauryl suphate

Ans key: (2)

147.
The calculated spin only magnetic moment of Cr^{2+} ion is:
(1) 4.90 BM
(2) 5.92 BM
(3) 2.84 BM
(4) 3.87 BM

Ans key: (1)

148.

HCl was passed through a solution of $CaCl_2$, $MgCl_2$ and NaCl. Which of the following compound(s) crystallise(s)?
(1) Only NaCl
(2) Only $MgCl_2$
(3) NaCl, $MgCl_2$ and $CaCl_2$
(4) Both $MgCl_2$ and $CaCl_2$

Ans key: (1)

149.
Match the following and identify the **correct** option

(a)	$CO(g) + H_2(g)$	(i)	$Mg(HCO_3)_2 + Ca(HCO_3)_2$
(b)	Temporary hardness of water	(ii)	An electron deficient hydride
(c)	B_2H_6	(iii)	Synthesis gas
(d)	H_2O_2	(iv)	Non-planar structure

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

Ans key: (4)

150.
Elimination reaction of 2-Bromo-pentane to form pent-2-ene is
(a) β-elimination reaction
(b) Follows Zaitsev rule
(c) Dehydrohalogenation reaction
(d) Dehydration reaction
(1) (a), (c), (d)
(2) (b), (c), (d)
(3) (a), (b), (d)
(4) (a), (b), (c)

Ans key: (4)

151.
Which of the following is the **correct** order of increasing field strength of ligands to form coordination compounds?
(1) $SCN^- < F^- < CN^- < C_2O_4^{2-}$
(2) $F^- < SCN^- < C_2O_4^{2-} < CN^-$
(3) $CN^- < C_2O_4^{2-} < SCN^- < F^-$
(4) $SCN^- < F^- < C_2O_4^{2-} < CN^-$

Ans key: (4)

152.
Identify the **correct** statement from the following:
(1) Blister copper has blistered appearance due to evolution of CO_2
(2) Vapour phase refining is carried out for Nickel by Van Arkel method
(3) Pig iron can be moulded into a variety of shapes
(4) Wrought iron is impure iron with 4% carbon

Ans key: (3)

153.
Sucrose on hydrolysis gives:
(1) α-D-Glucose + βD-Glucose
(2) α-D-Glucose + β-D-Fructose
(3) α-D-Fructose + β-D-Fructose
(4) α-D-Glucose + α-D-Fructose

Ans key: (2)

154.
What is the change in oxidation number of carbon in the following reaction?
$CH_{4(g)} + 4Cl_{2(g)} \rightarrow CCl_{4(\ell)} + 4HCl_{(g)}$
(1) 0 to +4
(2) –4 to +4
(3) 0 to –4
(4) +4 to –4

Ans key: (2)

155.
The following metal ion activates many enzymes participates in the oxidation of glucose to produce ATP and with Na, is responsible for the transmission of nerve signals
(1) Copper
(2) Calcium
(3) Potassium
(4) Iron

Ans key: (3)

156.
Which of the following alkane cannot be made in good yield by Wurtz reaction?
(1) 2,3-Dimethylbutane
(2) n-Hepane
(3) n-Butane
(4) n-Hexane

Ans key: (2)

157.
Measuring Zeta potential is useful in determining which property of colloidal solution?
(1) Solubility
(2) Stability of the colloidal particles
(3) Size of colloidal particles
(4) Viscosity

Ans key: (2)

158.
The freezing point depression constant (K_f) of benzene is 5.12 kg mol^{-1}. The freezing point depression for the solution of molarity 0.078 m containing a non-electrolyte solution in benzene is (rounded off upto two decimal places):
(1) 0.80 K
(2) 0.40 K
(3) 0.60 K
(4) 0.20 K

Ans key: (2)

159.

Which of the following amine will give the carbylamine test?

(1) 

(2) 

(3) 

(4) 

Ans key: (4)

160.

Which of the following is a natural polymer?

(1) poly (Butadiene-styrene)
(2) polybutadiene
(3) poly (Butadiene-acrylonitrile)
(4) cis-1,4-polyisoprene

Ans key: (4)

161.

Identify the **incorrect** statement

(1) The transition metals and their compounds are known for their catalytic activity due to their ability to adopt multiple oxidation states and to form complexes
(2) Interstitial compounds are those that are formed when small atoms like H, C or N are trapped inside the crystal lattices of metals
(3) The oxidation states of chromium in CrO_4^{2-} and $Cr_2O_7^{2-}$ are not the same
(4) Cr^{2+} (d^4) is a stronger reducing agent than Fe^{2+} (d^6) in water

Ans key: (3)

162.

Which of the following set of molecules will have zero dipole moment?

(1) Boron trifluoride, hydrogen fluoride, carbon dioxide, 1,3-dichlorobenzene
(2) Nitrogen trifluoride, beryllium, difluoride, water, 1,3-dichlorobebnzene
(3) Boron trifluoride, beryllium, difluoride, carbon dioxide, 1,4-dichlorobenzene
(4) Ammonia, beryllium difluoride, water, 1,4-dichlrobenzene

Ans key: (3)

163.

On electrolysis of dil.sulphuric acid using Platinum (Pt) electrode, the product obtained at anode will be:

(1) Oxygen gas
(2) H_2S gas
(3) SO_2 gas
(4) Hydrogen gas

Ans key: (1)

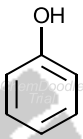
164.

Anisole on cleavage with HI gives:

(1)  + CH_3OH

(2)  + C_2H_5I

(3)  + C_2H_5OH

(4)  + CH_3I

Ans key: (4)

165.

The number of protons, neutrons, and electrons in $^{175}_{71}Lu$, respectively are:

(1) 104, 71 and 71
(2) 71, 71 and 104
(3) 175, 104 and 71
(4) 71, 104 and 71

Ans key: (4)

166.

Match the following:

Oxide		Nature	
(a)	CO	(i)	Basic
(b)	BaO	(ii)	Neutral
(c)	Al_2O_3	(iii)	Acidic
(d)	Cl_2O_7	(iv)	Amphoteric

Which of the following is **correct** option?

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

Ans key: (1)

167.

A tertiary butyl carbocation is more stable than a secondary butyl carbocation because of which of the following?

(1) +R effect $-CH_3$ groups

(2) –R effect of $-CH_3$ groups
(3) Hyperconjugation
(4) –I effect of $-CH_3$ groups

Ans key: (3)

168.
Which one of the following has maximum number of atoms?
(1) 1 g of Mg(s) [Atomic mass of Mg = 24]
(2) 1 g of O_2(g) [Atomic mass of O = 16]
(3) 1 g of Li(s) [Atomic mass of Li = 7]
(4) 1 of Ag(s) [Atomic mass of Ag = 108]

Ans key: (3)

169.
Which of the following is a basic amino acid?
(1) Alanine
(2) Tyrosine
(3) Lysine
(4) Serine

Ans key: (3)

170.
The correct option for free expansion of an ideal gas under adiabatic condition is
(1) q = 0, $\Delta T < 0$ and w > 0
(2) q < 0.$\Delta T = 0$ and w = 0
(3) q > 0, $\Delta > 0$ and w > 0
(4) q = 0, $\Delta T = 0$ and w = 0

Ans key: (4)

171.
Identify the **incorrect** match

Name		IUPAC Official Name	
(a)	Unnilunium	(i)	Mendelevium
(b)	Unnilitrium	(ii)	Lawrencium
(c)	Unnilhexium	(iii)	Seaborgium
(d)	Unununnium	(iv)	Darmstadtium

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

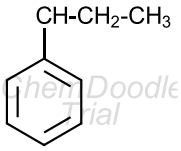
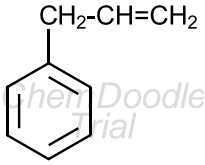
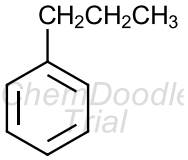
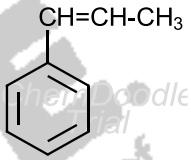
Ans key: (3)

172.
Identify a molecule which does **not** exist
(1) Li_2
(2) C_2
(3) O_2
(4) He_2

Ans key: (4)

173.
Identify the **correct** statement from the following:
(a) $CO_{2(g)}$ is used as refrigerant for ice-cream and frozen food
(b) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings
(c) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline
(d) CO is colorless and odourless gas
(1) (a) and (c) only
(2) (b) and (c) only
(3) (c) and (d) only
(4) (a), (b) and (c) only

Ans key: (3)

174.
An alkene on ozonolysis gives methanol as one of the product. Its structure is:
(1) 
(2) 
(3) 
(4) 

Ans key: (2)

175.
Reaction between acetone and methylmagnesium chloride followed by hydrolysis will give:
(1) Sec, butyl alcohol
(2) Tert, butyl alcohol
(3) Isobutyl alcohol
(4) Isopropyl alcohol

Ans key: (2)

176.
A mixture of N_2 and Ar gases in cylinder contains 7 g of N_2 and 8 g of Ar. If the total pressure of the mixture of the gases in the cylinder is 27 bar, the partial pressure of N_2 is:
[Use atomic masses (in g mol^{-1}) : N = 14, Ar = 40]
(1) 12 bar
(2) 15 bar
(3) 18 bar
(4) 9 bar

Ans key: (2)

177.
An increase in the concentration of reactants of a reaction leads to change in:
(1) heat of reaction

(2) threshold energy
(3) collision frequency
(4) activation energy

Ans key: (3)

178.

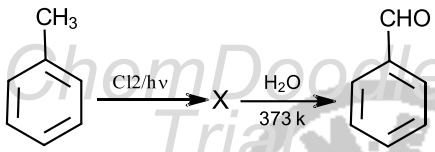
Find out the solubility of $Ni(OH)_2$ in 0.1 M NaOH. Given that the ionic product of $Ni(OH)_2$ is 2×10^{-15}

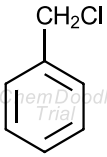
(1) 2×10^{-8} M
(2) 1×10^{-13} M
(3) 1×10^{8} M
(4) 2×10^{-13} M

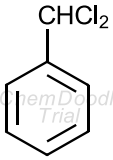
Ans key: (4)

179.

Identify compound X in the following sequence of reactions



(1) 

(2) 

(3) 

(4) 

Ans key: (2)

180.

Urea reacts with water to form A which will decomposes to form **B**. **B** when passed through Cu^{2+} (aq), deep blue colour solution **C** is formed. What is the formula of **C** from the following?

(1) $[Cu(NH_3)_4]^{2+}$
(2) $Cu(OH)_2$
(3) $CuCO_3.Cu(OH)_2$
(4) $CuSO_4$

Ans key: (1)