Botany - Section A

1.

The two alleles of a gene pair are located on:

1. Homologous sites on homologous chromosomes
2. Heterologous sites on homologous chromosomes
3. Homologous sites on heterologous chromosomes
4. Heterologous sites on heretologous chromosomes

2.

A transcription unit does not contain:

1. A promoter
2. The structural gene
3. A terminator
4. An operator

3.

Match each item in Column I with one in Column II and select your answer from the codes given below:

	Column I		**Column II**
A.	Diatoms	a.	Protein rich layer pellicle
B.	Dinoflagellates	b.	Cell wall embedded with silica
C.	Euglenoids	c.	Spores with true walls
D.	Slime moulds	d.	Cellulose plates in cell wall

Codes:

	A	B	C	D
1.	b	a	c	d
2.	b	d	a	C
3.	b	c	a	d
4.	b	a	d	c

4.

Triangular age pyramid represents
1. Expanding population.
2. Declining population.
3. Mature population.
4. Both 1. and 3.

5.

Facilitated transport differs from active transport as the former

1. Transports saturates.
2. Response to protein inhibitors.
3. Requires special membrane proteins.
4. Shows downhill transport.

6.

The family pedigree of Queen Victoria shows a number of haemophilic descendants as she was:
1. Affected by the disease
2. Carrier for the disease
3. Did not carry the allele for haemophilia
4. Was not a queen

7.

State True (T) or False (F) to the given statements and select the correct option
(A) Abundance of lichens in any area indicates that the area is highly 2 SO polluted.
(B) Mycobiont partner of lichens is always heterotrophic.
(C) Body of lichens is made up of phycobionts only.

	(A)	(B)	(C)
1.	T	T	F
2.	F	T	F
3.	F	F	F
4.	T	F	F

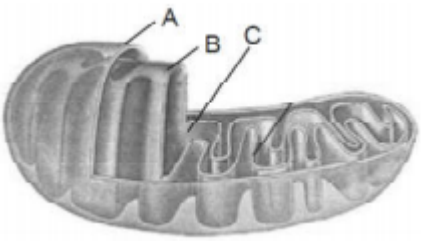
8.

Match the classes of pteridophyte given in column-I with their respective members given in column-II
Column-I Column-II
(A) Psilopsida (i) Selaginella
(B) Lycopsida (ii) Adiantum
(C) Pteropsida (iii) Psilotum
(D) Sphenopsida (iv) Equisetum

Select the correct answer from the following
1. (A) – (iii), (B) – (i), (C) – (iv), (D) – (ii)
2. (A) – (i), (B) – (iii), (C) – (ii), (D) – (iv)
3. (A) – (iii), (B) – (i), (C) – (ii), (D) – (iv)
4. (A) – (i), (B) – (iv), (C) – (iii), (D) – (ii)

9.

Which is not a feature w.r.t. given diagram of mitochondria (as indicated in diagram)?



1. A → Continuous limiting boundary.
2. B → Forms number of infolding called cisternae.
3. A & B → Both having own specific enzyme.
4. C → Site of Krebs' cycle.

10.

NADH synthesized in glycolysis of aerobic respiration is transferred into

1. Cytoplasm for oxidative phosphorylation.
2. Mitochondria for oxidative phosphorylation.
3. Mitochondria for photo oxidation.
4. ETS for photo oxidation.

11.

During what phase in the cell cycle would you find the most DNA per cell?
1. G_1
2. G_2
3. S
4. Prophase II

12.

Study the following statements and choose the correct option.

I. Buds are present in the axil of leaflets of the compound leaf.

II. pulvinus leaf-base is present in some leguminous plants.

III. In Alstonia, the petioles expand, become green and synthesize food.

IV. Opposite phyllotaxy is seen in guava.

1. II and IV are correct but I and III are wrong

2. I and III are correct but II and IV are wrong

3. I and IV are correct but II and III are wrong

4. II, III and IV are correct but I is wrong

13.

In monoecious plants like castor and maize

1. Autogamy and allogamy are not prevented

2. Geitonogamy is prevented

3. Autogamy is not prevented

4. Geitonogamy is not prevented

14.

Major event that occurs during anaphase of mitosis which brings about equal distribution of chromosomes is:

1. Condensation of chromatin

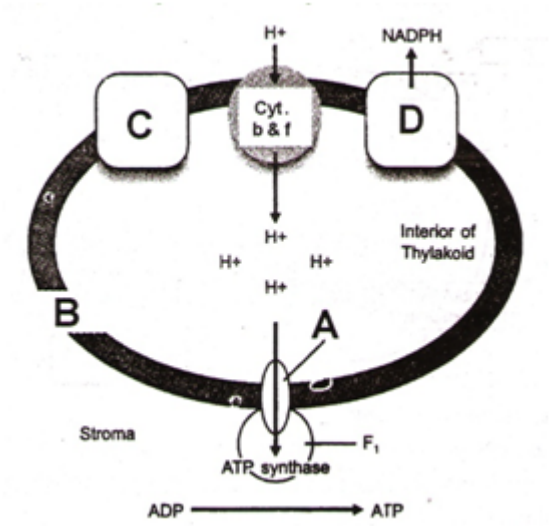
2. Replication of genetic material

3. Splitting of centromere

4. Pairing of homologous chromosomes

15.

Study the pathway ATP synthesis through chemiosmosis given below –



In which of the following options correct words for all the three blanks A, B, C and D are indicated –

1. A – F_1, B – Thylakoid membrane, C – Photosystem (I), D – Photosystem (II)
2. A – F_0, B – Thylakoid membrane, C – Photosystem (I), D – Photosystem (II)
3. A – F_1, B – Thylakoid membrane, C – Photosystem (II), D – Photosystem (I)
4. A – F_0, B – Thylakoid membrane, C – Photosystem (II), D – Photosystem (I)

16.

Measuring Biochemical Oxygen Demand (BOD) is a method used for:

1. Estimating the amount of organic matter in sewage water.
2. Working out the efficiency of oil driven automobile engines.
3. Measuring the activity of Saccharomyces cerevisae in producing curd on a commercial scale.
4. Working out the efficiency of R.B.Cs. about their capacity to carry oxygen.

17.

Which of the following is not related to formation of bivalent?
1. Synapsis
2. Recombinase
3. Zygotene
4. Synaptonemal complex

18.

What do you mean by bioprospecting?
1. Biological analysis of living things to classify them.
2. Exploring molecular, genetic and species level diversity for product of economic importance.
3. Exploring forests to identify diversity present their.
4. It is branch of biology which deals with prospect of conservation.

19.

By performing a series of experiments that showed the effect of R and S strains of Streptococcus pneumoniae on mice, Griffith concluded that

1. Protein digesting enzyme does not affect transformation.

2. DNA is more stable genetic material than RNA.

3. DNA replication is semi conservative.

4. Non-virulent bacteria were tranformed by heat killed virulent bacteria.

20.

Fate of pyruvate produced by glycolysis depends on cellular needs, it can enter
1. Lactic acid fermentation
2. Alcoholic fermentation
3. Aerobic respiration
4. All are correct

21.

From the following, identify the correct combination of salient features of Genetic Code

1. Universal, Non-ambiguous,Overlapping

2. Degenerate, Overlapping, Commaless

3. Universal, Ambiguous, Degenerate

4. Degenerate, Non-overlapping, Non ambiguous

22.

Which of the following option is not true for penicillin?

1. Its full potential as an effective antibiotic was established much later by Ernest Chain and Howard Florey.

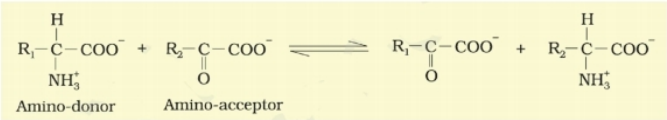
2. This antibiotic was extensively used to treat American soldiers wounded in World War II.

3. Produced by the bacteria.

4. both 2 and 3

23.

The below reaction depicts



1. Reductive amination

2. Transamination

3. Action of enzyme nitrogenise

4. Formation of amide

24.

Natural selection operates at the level of :-

1. Organism

2. Population

3. Community

4. Ecosystem

25.

ER, Golgi complex, lysosomes and vacuoles are included in endomembrane system because :-

1. Their function are similar
2. Their structure are same
3. Their function are co-ordinated
4. Golgi complex, lysosomes and vacuoles are originated from the ER

26.

In angiosperms, triple fusion is required for the formation of:-

1. Fruit wall
2. Seed coat
3. Embryo sac
4. Endosperm

27.

A typical anther is

(a) Tetrasporangiate

(b) Tetragonal

(c) Trilobed

(d) Surrounded by four wall layers

The correct ones are

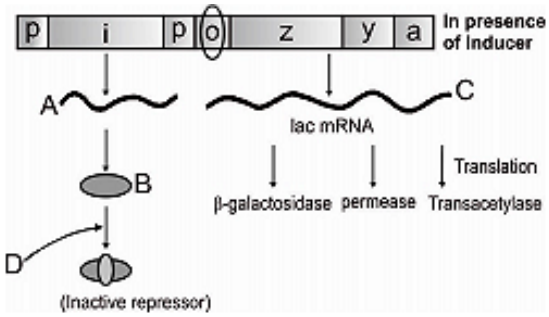
1. Only (a), (b) and (d)
2. Only (a) and (d)
3. Only (b) and (c)
4. All (a), (b), (c) and (d)

28.

Which of the following plays an important role in lateral root growth in dicot root?

1. Endodermis
2. Pericycle
3. Hypodermis
4. Intrafascicular cambium

29.



Choose the correct features for lac operon.

a. (D) synthesised by i gene

b. (C) is polycistronic hnRNA

c. (B) is produced constitutively

d. (A) repressor mRNA

e. p and o represent structural genes

1. a, c, d and e
2. c and d
3. a, c and d
4. b, c, d and e

30.

Absence of disjunction of chromosomes during cell division can lead to

1. Myotonic dystrophy
2. Cystic fibrosis
3. Down’s syndrome
4. Phenylketonuria

31.

The reaction centre w.r.t. cyclic photophosphorylation is

1. P_{700}
2. P_{680}
3. P_{540}
4. P_{660}

32.

Which of the given hormones is used to produce parthenocarpic or seedless banana and tomatoes?

1. Auxin
2. Cytokinin
3. Abscisic acid
4. Kinetin

33.

The total number and types of organisms on earth represents the

1. Taxonomy
2. Biodiversity
3. Classification
4. Systematics

34.

Choose the incorrect statement.

1. Stilt roots are found in sugarcane
2. Pneumatophores are respiratory roots
3. Leaf tendril are found in grape vine
4. The axillary buds in Citrus plants get modify to protect the plant

35.

In mycorrhiza, fungal filaments help in

1. Water absorption
2. Food translocation
3. Developing tension in xylem
4. Development of root pressure

Botany - Section B

36.

Ozone hole develops over Antarctica each year between:

1. Early January and late April
2. Early March and Late July
3. Late August and Early October
4. Late September and Early December

37.

Which of the following statements is/are correct?
(a) The entire sequence of communities that successively change in a given area is called sere.
(b) The natural reservoir of phosphorus is rock.
(c) Ecological pyramids do not accommodate food web.
1. Only statement (a) is correct.
2. Only statement (b) is correct.
3. All (a), (b) and (c) are correct.
4. All (a), (b) and (c) are incorrect.

38.

Select the correct match w.r.t. mineral as activator/components of enzymes.

a. Nitrogenase	(i) Zn
b. PEPcase	(ii) Fe
c. Alcohol dehydrogenase	(iii) Mo
d. Catalase	(iv) Mg

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

39.

Read the following statements and select the incorrect ones
(a) Mosses have an elaborate mechanism of spore dispersal.
(b) In liverworts, the haploid free living sporophyte is formed by spore germination.
(c) Vegetative reproduction in Polytrichum occurs by budding in the secondary protenema.
(d) Marchantia is a heterosporous bryophyte.
(e) Growth of bog moss ultimately fills ponds and lakes with soil

1. (a), (b) and (c)
2. (d) and (e) only
3. (b) and (d) only
4. All except (a)

40.

Select incorrect statement w.r.t the following group of organisms and their characteristics

1. Chrysophyte	– Includes diatoms and desmids, Planktonic organism.
2. Dinoflagellate	– Mostly marine and photosynthetic, cell wall has stiff cellulosic plate on outer surface.
3. Euglenoids	– Majority of them are fresh water, cell wall is absent.
4. Slime mould	– Saprophytic motile spores with true walls

41.

A. _____ hormone is most widely used PGR in agriculture.
B. _____ hormone is related with Richmond Lang effect.

	A	B
1.	Auxin	CK
2.	Auxin	GA
3.	Ethylene	CK
4.	ABA	CK

42.

A typical anther shows
i. Two lobes with two theca each
ii. Each lobe as dithecous
iii. All cells in a given microsporangium as potential PMC
iv. Thousands of microspores per microsporangium

Out of these statements :

1. ii is incorrect.
2. i and ii are correct.
3. iii and iv are incorrect.
4. i, ii, iii and iv are correct.

43.

Which of the following disease is caused by viruses in plants?

1. Brown rust of wheat
2. Turnip mosaic
3. Red rot of sugarcane
4. Late blight of potato

44.

Choose the incorrectly matched pair.

1. Contractile vacuole - Excretion.
2. SER - Steroidal hormones synthesis.
3. Xanthophyll - Fat soluble pigment.
4. Eukaryotic flagellum - Extension of basal body.

45.

Meiosis occurs in
1. Megaspore
2. Meiocyte
3. Conidia
4. Gemmule

46.

Choose the **odd** one out w.r.t. adaptations in organisms

1. Altitude sickness in humans is a physiological means to counteract the stressful condition

2. Biochemical adaptations are seen in organisms present at great depths in oceans

3. Allen's rule is seen in mammals of colder climate

4. Desert lizards lack the physiological and behavioural means to manage their body temperature

47.

The technology of biogas production in india was

1 Imported from Japan

2 Imported from Denmark

3 Imported from USA

4 Developed in India due to efforts of IARI and KVIC

48.

Communities with more species tend to be more stable than those with less species. This was confirmed by:-

1. Alexander von Humboldt

2. David Tilman

3. Paul Ehrlich

4. Edward Wilson

49.

How much percent forest cover was recommended for hills by National forest policy (1988) ?

1. 33

2. 67

3. 40

4. 30

50.

Mark the wrongly matched pair

1. Amaranthus - Causes pollen allergy

2. Pollen banks - Store pollen at -196°C

3. Pea - Pollens are viable for only 30 minutes

4. Pollen grains - Rich in nutrients

Zoology - Section A

51.

The feature lacking in bony fishes would be:

1. Operculum

2. Swim bladder

3. Ammonotelism

4. Placoid scales

52.

A change in ovum after penetration of sperm is

1. Formation of first polar body

2. Second meiosis starts

3. First meiosis

4. Formation of second polar body

53.

If insufficient PTH is produced, the blood calcium level drops, resulting in _____.

1. reduced growth in childhood or parathyroid dwarfism

2. tetany, where the body shakes from continuous muscle contraction

3. osteoporosis

4. blood clotting

54.

Which of the following statements is NOT correct?

1. Microvilli increase the surface area of the small intestine for absorption of nutrients.

2. Enzymes located on the brush-border finish the digestion of chyme.

3. Absorption is an active process in the small intestine.

4. Sugars and amino acids cross columnar epithelial cells to enter the lacteal.

55.

In the formation of a macromolecule, what type of reaction would join two subunits together?
1. hydrophobic reaction
2. hydrolysis reaction
3. dehydration reaction
4. denaturation reaction

56.

Blood is different from other connective tissue because
(i) It is mesodermal in origin.
(ii) Blood cells do not form the composition of blood plasma or matrix.
(iii) It contains different kind of cells performing different function.
(iv) It lack fibres.

1. (i), (ii), (iii), (iv)

2. (ii), (iv) only

3. (iv) only

4. (ii) only

57.

Which one is correct regarding electrocardiograph?

1. P-wave represents the electrical excitation of the ventricle

2. QRS complex represent repolarization of the ventricles

3. T-wave represents repolarization of the atria

4. By counting the number of QRS complexes one can determine the pulse rate

58.

Match the organism in Column-I with its excretory structure in Column-II

	Column-I		Column-II
(A)	Cockroach	(p)	Nephridia
(B)	Earthworm	(q)	Proboscis gland
(C)	Balanoglossus	(r)	Kidney
(D)	Clarias	(s)	Malpighian tubules

1. (A)→(s),(B)→(p),(C)→(q),(D)→(r)

2. (A)→(s),(B)→(p),(C)→(r),(D)→(q)

3. (A)→(q),(B)→(p),(C)→(r), (D)→(s)

4. (A)→(s), (B)→(q),(C)→(r),(D)→(p)

59.

_____ is a thermophilic bacterium that can survive temperatures upto $95^{\circ}C$. Select the option which fills the blank correctly.

1. Thermus aquaticus

2. Salmonella typhi

3. E.coli

4. Lactobacillus

60.

When you first walk from a brightly lit area into darkness which of the following occurs?

1. The photospins in your cones become bleached

2. Your rod cells become hyperpolarized

3. Your rhodpsin is still dossociated into retinal and opsin, and your rods are temporarily nonfunctional

4. Lateral inhibition caused by your horizontal cells ceases

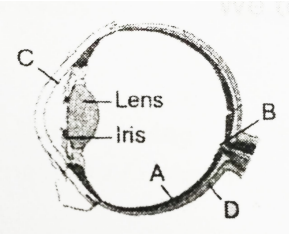
61.

Peristalsis occurs

1. from the mouth to the small intestine
2. from the beginning of the esophagus to the anus
3. only in the stomach
4. only in the small and large intestines

62.

Parts A, B, C and D of the human eye are shown in the diagram. Select the option which gives correct identification along with its functions/characteristics



1. B - Blind spots - has only a few rods and cones.

2. C- Aqueous chamber - reflects the light which does not pass through the lens.

3. D- Choroid - its anterior part forms ciliary body.

4. A - retina - contains photo receptors - rods and cones.

63.

Which of the following can not be expected in the filtrate when it arrives to descending limb of Henle's loop?
I. Albumin II. Glucose
III. Urea IV. Amino acid

1. I, II, III & IV

2. I only

3. II, IV only

4. I, II & IV

64.

Diaphragms, cervical caps and vaults prevent conception by
1. Increasing phagocytosis of sperms within uterus.
2. Suppressing sperm motility.
3. Inhibiting ovulation and implantation.
4. Blocking the entry of sperms through the cervix.

65.

Which of the following is very close to the time of ovulation?
1. Peak of progesterone.
2. Minimum level of estrogen.
3. Peak of LH and FSH.
4. Thickest layer of endometrium.

66.

Select the mismatch

1.	Scapula	-	Situated in between 2nd to 7th ribs
2.	Ball and socket joint	-	Humerus and pectoral girdle
3.	Rib cage	-	Formed by vertebrae, ribs and sternum
4.	Pelvic girdle	-	Articulates with thigh bone at pubic symphysis.

67.

Which of the following genes control the cotton bollworm?
1. cry IAc and cry IIAb
2. cry IIAb and cry IIAc
3. cry IAb and cry IAc
4. cry IAb and cry IIAc

68.

As the housefly is related with *Entamoeba histolytica*, *Aedes* mosquito is related with

1 Filariasis

2 Dengue

3 Virus

4 *Plasmodium*

69.

Which of the following does **not** affect the activity of simple enzyme?

1. Temperature
2. Presence of coenzymes
3. pH
4. Substarate concentration

70.

The neural system provides an organized network of ___A___ connections for a ___B___ coordination. Choose the correct option for A, B to complete the given statement.

1. A – point to point, B – slow
2. A – chemical, B – fast
3. A – point to point, B – fast
4. A – Chemical, B – slow

71.

The C - peptide is:-

1. Not present in proinsulin.
2. Present in mature insulin.
3. Removed during maturation of insulin.
4. Also present in artificial insulin.

72.

Cells of Human body exhibit which type of movement :-

1. Amoeboid
2. Muscular
3. Ciliary
4. All of the above

73.

Every 2000 mL of deoxygenated blood delivers approximately, how much mL CO_2 to alveoli?

1. 4 mL
2. 4.2 mL
3. 8 mL
4. 80 mL

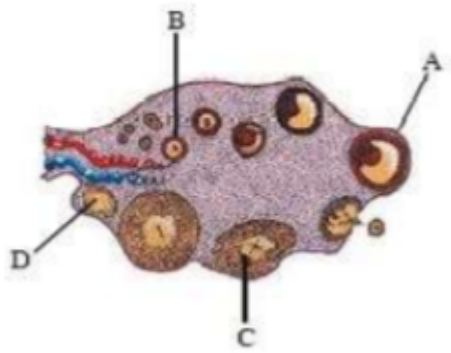
74.

Tube within a tube plan is found in

1. Coelenterata
2. Ctenophora
3. Platyhelminthes
4. Aschelminthes

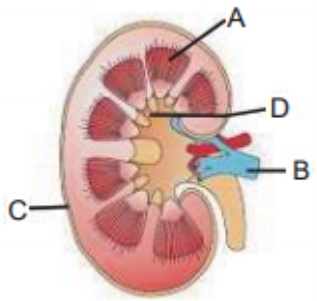
75.

The figure below shows the development of follicles (A, B, C, D). Select the option giving correct identification together with its function?



1. B-Secondary Follicle - secretes progesterone
2. D-Corpus Albicans - Secretes estrogen
3. A-Tertiary follicle - Secretes FSH & LH
4. C-Corpus luteum - Secretes progesterone

76.



	A	B	C	D
(1)	Medullary pyramid	Renal Artery	Renal capsule	Papilla
(2)	Cortex	Renal vein	Glisson's capsule	Calyx
(3)	Medullary pyramid	Renal Artery	Glisson's capsule	Calyx
(4)	Medullary pyramid	Renal vein	Renal capsule	Calyx

1. (1)
2. (2)
3. (3)
4. (4)

77.

One of these pairs are not correctly matched

1. Insulin – Raised blood sugar
2. Cretinism – Mental retardation
3. Grave's Disease – swollen facial tissues
4. Parathyroid – Tetany

78.

Read the following statement :-

(a) The hypothalamus is the basal part of diencephalon

(b) Hypothalamus contains group of neurosecretory cells called ganglia which regulate the synthesis and secretion of pituitary hormone

(c) GnRH from hypothalamus stimulate the anterior pituitary to release gonadotrophins

(d) The posterior pituitary is under direct chemical regulation of the hypothalamus

How many of above statements are correct?

1. 4
2. 3
3. 1
4. 2

79.

If a DNA fragment is cut by EcoRI at a specific recognition site then

1. Blunt-end cannot be obtained
2. Sticky-ends cannot be obtained
3. Construction of rDNA would not be possible
4. The plasmid with one site get cut into two fragments

80.

Which of the following is the incorrect match w.r.t ART?

1. ZIFT: Zygote or early embryo upto eight blastomeres is transferred into the
fallopian tubes.

2. IUT: Embryo with more than eight blastomeres is transferred into the
uterus

3. GIFT: Transfer of an ovum after fertilization into the fallopian tube of another female who cannot produce her own ova.

4. ICSI: A specialized procedure to form an embryo in the laboratory in which the sperm is injected into the ovum.

81.

Each of the following statements concerning pneumonia are correct, except

1. It is caused by Streptococcus pneumoniae and Hemophilus influenzae

2. Pneumonia bacteria grow better at 33°C than at 37°C, hence they tend to cause the disease in upper respiratory tract rather than the lower respiratory tract

3. Bacteria infects alveoli of lungs

4. In pneumonia finger nails turn bluish in colour

82.

Which of the following is almost completely reabsorbed by active reabsorption in the nephrons of a healthy person?

1. Urea

2. Creatinine

3. Glucose

4. Water

83.

Person with blood group O is considered as universal donor because he has

1. Both anti-A and anti-B antibodies in plasma and both A and B antigens on RBC's surface.

2. No antigen and no antibodies in the blood plasma

3. Neither A nor B antigens on RBCs

4. Both antigens on RBCs but no antibodies in plasma

84.

Match the column I and column II w.r.t. types of epithelial tissue and their function.

Column-I	Column-II
a. Glandular epithelium	(i) Secretes hormones and milk
b. Squamous epithelium	(ii) Forms a diffusion boundary
c. Columnar epithelium	(iii) Helps in secretion and absorption
d. Ciliated epithelium	(iv) Responsible for movement of ova and mucus

Choose the correct option.

1. a(i), b(ii), c(iii), d(iv)

2. a(ii), b(iii), c(iv), d(i)

3. a(iii), b(iv), c(i), d(ii)

4. a(iv), b(i), c(ii), d(iii)

85.

In which of the following disorders there is difficulty in breathing causing wheezing due to inflammation of bronchi and bronchioles?

1. Emphysema

2. Asthma

3. Pleurisy

4. Tuberculosis

Zoology - Section B

86.

The ATPase activity of the myosin head is dependent on:

1. Magnesium ions

2. Manganese ions

3. Calcium ions

4. Ferric ions

87.

Which of the following structure is associated with locomotion ?
(i) Parapodia.
(ii) Water vascular system.
(iii) Radula.
(iv) Proboscis.

1. (i), (ii), (iii), (iv)

2. (i) only

3. (i), (ii) only

4. (i), (iii) only

88.

The main cause of the disintegration of the endometrial lining

1. LH surge

2. Degeneration of corpus luteum

3. Ovulation during mid-cycle

4. Implantation leads to pregnancy

89.

NAD and NADP are consider as
1. Apoenzyme and cofactor respectively.
2. Coenzyme and co-factor respectively.
3. Both as co-enzyme.
4. Apoenzyme and holoenzyme respectively

90.

The sugar glider and flying squirrel belong to two different groups of mammals, but they have both evolved bushy tails and flaps of skin that help them exploit their forest environments more efficiently. This pattern of evolution is an example of :

1. Character displacement

2. Adaptive radiation

3. Convergent evolution

4. Divergent evolution

91.

Natural selection is the survival of fittest, which of the following most precisely describe the survival of fittest?
1. The physical strength of organism.
2. How many fertile offspring is produced by an organism.
3. Capability to tolerate environmental extremities.
4. How long they survive.

92.

Similarity between microinjection and biolistic gene gun method is
1. Used to transform the plant host cells.
2. Used to transform the animal host cells.
3. Recombinant DNA is directly injected into host cells.
4. Used to transform the bacterial host cells

93.

Which of the following will not show convergent evolution?
1. Eye of Octopus and mammal
2. Flippers of Penguins and Dolphins
3. Sweet potato and potato
4. Hearts of frog and rabbit

94.

The rate of appearance of new forms is linked with

1. Mutation

2. Life span

3. Use and disuse

4. Genetic drift

95.

Virus-infected cells secrete proteins called interferon which protect non-infected cells from further viral infection. This comes under

1 Physical barrier

2 Physiological barrier

3 Cellular barrier

4 Cytokine barrier

96.

The water canal system is found in:-

1. Echinus
2. Sycon
3. Balanoglossus
4. Ascidia

97.

If zygote or early embryo up to 8 blastomeres is transferred into the fallopian tube of a female. It is called as:-

1. GIFT
2. ZIFT
3. AI
4. ICSI

98.

Glucagon is a

1. Hypoglycemic hormone
2. Hyperglycemic hormone
3. Hypocalcemic hormone
4. Hypercalcemic hormone

99.

Select the incorrect statement
(1) Inbreeding increases heterozygosity
(2) Mule is a result of interspecific hybridisation
(3) MOET has been demonstrated for rabbits and mares
(4) A single outcross can help to overcome inbreeding depression

100.

Chemicals involved in transmission of impulses at chemical synapses are called A, they bind to their specific B present on the post synaptic membrane, Here 'A' and 'B' are

	A	B
1.	Receptors	Substrate
2.	Enzymes	Receptors
3.	Biocatalysts	Active site
4.	Neurotransmitters	Receptors

Chemistry - Section A

101.

Chlorobenzene reacts with Mg in dry ether to give a compound (A) which further reacts with ethanol to yield

1. Phenol
2. Benzene
3. Ethyl benzene
4. Phenyl ether

102.

Which of the following has the highest electron affinity?

1. F^-
2. O^-
3. O
4. Na

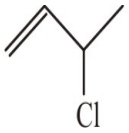
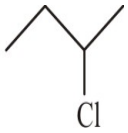
103.

How much oxygen is dissolved in 100ml water at 298K if partial pressure of oxygen is 0.5 atm and K_H=1.4 X 10^{-3} M/atm ?

1. 22.4 mg
2. 22.4 g
3. 2.24 g
4. 2.24 mg

104.

Arrange the following three chlorides in decreasing order towards S_N1 reactivity.

(1)  (2)  (3) 

(1) 1 > 2 >3

(2) 2 > 3 > 1

(3) 2 > 1 > 3

(4) 3 > 2 > 1

105.

The incorrect statement is:

1. $AlF_3 > MgO > MgF_2$: Lattice energy

2. $Li > Na > Al > Mg$: Electron affinity

3. $PF_5 > SF_6 > SiF_4$: Lewis acidic character

4. $SiCl_4 > SiBr_4 > SiI_4$: Decreasing ionic character

106.

An ideal gas absorbs 2000 cal of heat from a heat reservoir and does mechanical work equivalent to 4200 J. The change in internal energy of the gas is

1. 3000 cal

2. 2000 cal

3. 1500 cal

4. 1000 cal

107.

What volume of $O_2(g)$ measured at 1 atm and 273 K will be formed by the action of 100 mL of 0.5 N $KMnO_4$ on hydrogen peroxide in an acid solution?

The skeleton equation for the reaction is

$KMnO_4 + H_2SO_4 + H_2O_2 \rightarrow K_2SO_4 + MnSO_4 + O_2 + H_2O$

1. 0.12 litre

2. 0.028 litre

3. 0.56 litre

4. 1.12 litre

108.

Correct increasing order for the wavelengths of absorption in the visible region the complexes of Co^{3+} are:

1. $[Co(H_2O)_6]^{3+} < [Co(en)_3]^{3+} < [Co(NH_3)_6]^{3+}$

2. $[Co(H_2O)_6]^{3+} < [Co(NH_3)_6]^{3+} < [Co(en)_3]^{3+}$

3. $[Co(NH_3)_6]^{3+} < [Co(en)_3]^{3+} < [Co(H_2O)_6]^{3+}$

4. $[Co(en)_3]^{3+} < [Co(NH_3)_6]^{3+} < [Co(H_2O)_6]^{3+}$

109.

The method by which aniline cannot be prepared is

1. Hydrolysis phenyl isocyanide with an acidic solution

2. Degradation of benzamide with bromine in alkaline Solution

3. Reduction of nitrobenzene with H/Pd in ethanol

4. Potassium salt of phthalimide treated with chlorobenzene followed by the hydrolysis aqueous NaOH solution

110.
The K_{SP} of Ag_2CrO_4, AgCl, AgBr and AgI are respectively, 1.1 x 10^{-12}, 1.8 x 10^{-10}, 5.0 x 10^{-13}, 8.3 x 10^{-17}. Which one of the following salts will precipitate last if $AgNO_3$ solution is added to the solution containing equal moles of NaCl, NaBr, NaI, and Na_2CrO_4?

1. AgI

2. AgCl

3. AgBr

4. Ag_2CrO_4

111.

The correct set of four quantum numbers for the valence electron of rubidium atom (Z =37) is

1. $5, 1, 1, +\frac{1}{2}$

2. $6, 0, 0, +\frac{1}{2}$

3. $5, 0, 0, +\frac{1}{2}$

4. $5, 1, 0, +\frac{1}{2}$

112.

Which one of the following pairs is isostructural (i.e., having the same shape and hybridization)?

1. $[BCl_3 \text{ and } BrCl_3]$

2. $\left[NH_3 \text{ and } NO_3^-\right]$

3. $[NF_3 \text{ and } BF_3]$

4. $\left[BF_4^- \text{ and } NH_4^+\right]$

113.

The correct order of increasing bond length of C-H, C-O, C-C and C=C is

1. $C-C < C=C < C-O < C-H$

2. $C-O < C-H < C-C < C=C$

3. $C-H < C-O < C-C < C=C$

4. $C-H < C=C < C-O < C-C$

114.

Which one of the following is present as an active ingredient in bleaching powder for bleaching action?

1. $Ca(OCl)_2$

2. CaO_2Cl

3. $CaCl_2$

4. $CaOCl_2$

115.
Standard free energies of formation(in kJ/mol) at 298 K are -237.2, -394.4 and -8.2 for H_2O(l), CO_2(g) and pentane (g), respectively. The value of E_{cell} for the pentane-oxygen fuel cell is

1. 1.968 V

2. 2.0968 V

3. 1.0968 V

4. 0.0968 V

116.

Cellulose is a straight-chain polysaccharide composed of only:

1. D-glucose units joined by α - glucosidic linkage

2. D-glucose units joined by β - glucosidic linkage

3. D-galactose units joined by α - glycosidic linkage

4. D-galactose units joined by β - glycosidic linkage

117.

Which of the following is the most likely structure of $CrCl_3.6H_2O$, if $\frac{1}{3}$rd of total chlorine of the compound is precipitated by adding $AgNO_3$ to its aqueous solution :

1. $CrCl_3.6H_2O$

2. $[Cr(H_2O)_3Cl_3](H_2O)_3$

3. $[CrCl_2(H_2O)_4]Cl.2H_2O$

4. $[CrCl.(H_2O)_5]Cl_2.H_2O$

118.

Grignard reagent added to methanal followed by hydrolysis to give

1. Primary alcohol

2. Tertiary alcohol

3. Methane

4. Methanoic acid

119.

The soldiers of the Napolean army while at the Alps during freezing-winner suffered a serious problem as regards the tin buttons of their uniforms. White Metallic tin buttons get converted to grey powder. This transformation is related to:

1. An interaction with water vapour contained in humid air

2. A change in crystalline structure of tin

3. A change in the partial pressure of O_2 in air

4. An interaction with N_2 of air low temperature

120.

Which of the following is not correct?

(1) Liquid helium is used as cryogenic liquid

(2) XeO_3 has four σ and four π- bonds

(3) The hybridisation of Xe in XeF_4 is sp^3d^2

(4) Among noble gases, the occurrence of argon in highest in air

121.

The pH of 0.01 M NaOH (aq) solution will be-

1. 7.01

2. 2

3. 12

4. 9

122.

The decreasing order of boiling points of $1^{\circ}, 2^{\circ}, 3^{\circ}$ alcohol is:

1. $1^{\circ} > 2^{\circ} > 3^{\circ}$

2. $3^{\circ} > 2^{\circ} > 1^{\circ}$

3. $2^{\circ} > 1^{\circ} > 3^{\circ}$

4. none of these

123.

The specific conductance of a 0.1N KCl solution at $23^{\circ}C$ is 0.012 $\Omega^{-1}\,cm^{-1}$. The resistance of cell containing the solution at the same temperature was found to be 55 Ω. The cell constant will be

(1) $0.142cm^{-1}$

(2) $0.66\ cm^{-1}$

(3) $0.918\ cm^{-1}$

(4) $1.12cm^{-1}$

124.

If 60% of a first-order reaction was completed in 60 min, 50% of the same reaction would be completed in approximately.

(1) 50 min

(2) 45 min

(3) 60 min

(4) 40 min

(log 4=0.60, log 5=0.69)

125.

Of the hydrides, H_2O, H_2S, H_2Se and H_2Te, the one which has the smallest pK_a value is

1. H_2O

2. H_2S

3. H_2Se

4. H_2Te

126.

On boiling with concentrated hydrobromic acid phenyl ethyl ether yields:-

1. Phenol and ethyl bromide
2. Bromobenzene and ethanol
3. Phenol and ethane
4. Bromobenzene and ethane

127.

The oxidation number of phosphorous in ATP (adenosine triphosphate) is

1. 2
2. 3
3. 4
4. 5

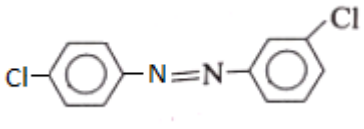
128.

The compressibility factor of a gas is less than unity at STP. Therefore

1. V_m > 22.4 L
2. V_m < 22.4 L
3. V_m = 22.4 L
4. V_m = 44.8 L

129.

Assign the IUPAC name for the following compound.



1. 3, 4-Dichlorobenzene
2. (4-chlorophenyl)(3-chlorophenyl) diazene
3. 3,4-Bis (chlorophenyl) diazene
4. (3-Chlorophenyl)(4-chlorophenyl)diazene

130.

Acetylene and HCHO reaction to the presence of copper acetylide catalyst to form

1. 2-Butyne-1,4-diol
2. But-2-yne-1,2-diol
3. But-1-yne-1,4-diol
4. None of these

131.

In the presence of peroxide, hydrogen chloride and hydrogen fluoride do not undergo anti-Markovnikov's addition to alkenes because

1. Both are highly ionic
2. One is oxidizing and the other is reducing
3. One of the steps is endothermic in both the cases
4. All the steps are exothermic in both cases

132.

The formula of exhausted permutit is

1. $K_2Al_2Si_2O_8.xH_2O$
2. $CaAl_2Si_2O_8.xH_2O$
3. $Na_2Al_2Si_2O_8.xH_2O$
4. $CaB_2Si_2O_8.xH_2O$

133.

One mole of carbon atom weighs 12 g, the number of atoms in it is equal to,

1. 1.2×10^{23}
2. 6.022×10^{22}
3. 12×10^{22}
4. 6.022×10^{23}

134.

Which of the following practices will not come under green chemistry?

1. Soap made of vegetable oils instead of using synthetic detergents

2. Using H_2O_2 for bleaching purposes instead of using chlorine-based bleaching agents

3. Using a bicycle for traveling small distances instead of using petrol/diesel-based vehicles

4. Using plastic cans

135.

Which of the following ions show higher spin-only magnetic moment value?

1. Ti^{3+}

2. Mn^{2+}

3. Fe^{2+}

4. Co^{3+}

Chemistry - Section B

136.

CrO_4^{2-} (yellow) changes to $Cr_2O_7^{2-}$ (orange) in pH =x and vice versa in pH=y. Hence, x and y are:

1. 6,8

2. 6,5

3. 8,6

4. 7,7

137.

The appearance of color in solid alkali metal halides is generally due to:-

1. Frankel Defect

2. Interstitial Defect

3. F-Centres

4. Schottky Defect

138.

Which of the following does not show optical isomerism ?

(en-ethylenediamine)

1. $[Co(en)_2Cl_2]^+$

2. $[Co(NH_3)_3Cl_3]$

3. $[Co(en)Cl_2(NH_3)_2]^+$

4. $[Co(en)_3]^{3+}$

139.

The coagulation values in millimoles per litre of the electrolytes used for the coagulation of $As_2S_3$are given below
I. (NaCl)= 52,

II. ($BeCl_2$) = 0.69
III. ($MgSO_4$) = 0.22
The correct order of their coagulating power is

1. I>II>III

2. II>I>III

3. III>II>I

4. III>I>II

140.

Which one of the following is incorrect for an ideal solution?

1. $\Delta H_{mix} = 0$
2. $\Delta U_{mix} = 0$
3. $\Delta P = P_{obs.} - P_{calculated\ by\ Raoult's\ Law} = 0$
4. $\Delta G_{mix} = 0$

141.

The plastic household crockery is prepared by using

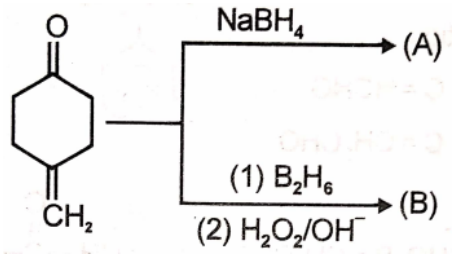
1. Melamine and tetrafluoroethane
2. Malonic acid and hexamethylene imine
3. Melamine and vinyl acetate
4. Melamine and formaldehyde

142.

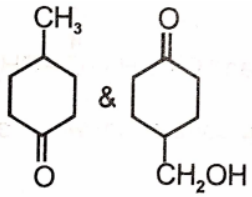
The reaction 2A+B+C→D+E is found to be first order in A, second in B and zero order in C. What is the effect on the rate of increasing concentration of A, B and C two times?

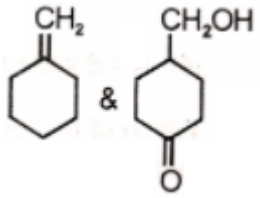
1. 72 times
2. 8 times
3. 24 times
4. 36 times

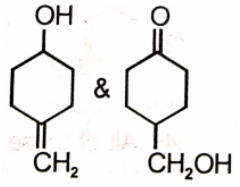
143.

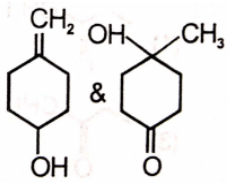


A and B respectively are

1. 

2. 

3. 

4. 

144.

Among the following, the narrow-spectrum antibiotic is:

1. Chloramphenicol
2. Penicillin G
3. Ampicillin
4. Amoxicillin

145.

Which of the species is planar and polar :-

1. $TeCl_4$
2. SO_2
3. SF_6
4. XeF_2

146.

Which of the following elements is present as the impurity to the maximum extent in the pig iron?

1. Phosphorus

2. Manganese

3. Carbon

4. Silicon

147.

The total number of isomers for C_4H_8 are

1. 8

2. 7

3. 6

4. 5

148.

The pH of 0.01 M NaOH (aq) solution will be-

1. 7.01

2. 2

3. 12

4. 9

149.

What is the percentages of 1° monochlorinated product obtained from 2- methylbutane If The relative reactivity of 1°, 2° and 3° hydrogen's towards chlorination is 1 : 3.8 : 5 ?

1. % of 1° monochlorinated product = 41.7%

2. % of 1° monochlorinated product = 35.2

3. % of 1° monochlorinated product = 23.1

4. % of 1° monochlorinated product = 33.2

150.

Assertion : $R_3P = O$ exist but $R_3N = O$ does not (R = alkyl group).

Reason: Nitrogen doesn't have d orbitals.

1. Assertion is correct and reason is correct explanation of Assertion.

2. Assertion is true but reason is not correct explanation of Assertion.

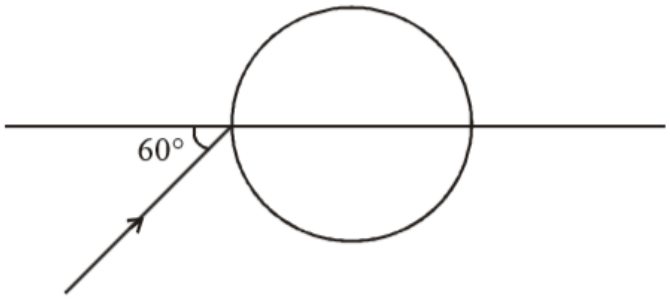
3. Assertion is true ,Reason is false.

4. Assertion is false, Reason is true.

Physics - Section A

151.

A ray of light falls on a transparent sphere as shown in the figure. If the final ray emerges from the sphere parallel to the horizontal diameter, then calculate the refractive index of the sphere-[Consider that the sphere is kept in air]



1. $\sqrt{2}$

2. $\sqrt{3}$

3. $\sqrt{3/2}$

4. $\sqrt{4/3}$

152.

The position of a particle at time t is given by the relation $x(t)=\left(\frac{v_0}{\alpha}\right)\left(1-e^{-\alpha t}\right)$, where v_0 is a constant and $\alpha>0$. The dimensions of v_0 and α are respectively

1. $M^0L^1T^{-1}$ and T^{-1}
2. $M^0L^1T^0$ and T^{-1}
3. $M^0L^1T^{-1}$ and LT^{-2}
4. $M^0L^1T^{-1}$ and T

153.

The ratio of the speed of sound in nitrogen gas to that in helium gas, at 300 K is -

1. $\sqrt{\frac{2}{7}}$
2. $\sqrt{\frac{1}{7}}$
3. $\frac{\sqrt{3}}{5}$
4. $\frac{\sqrt{6}}{5}$

154.

An electromagnetic radiation has an energy 14.4 keV. To which region of electromagnetic spectrum does it belong?

1. Infra red region
2. Visible region
3. X-ray region
4. $\gamma - ray\ region$

155.

The escape velocity of a particle of mass m varies as

1. m^2
2. m
3. m^0
4. m^{-1}

156.

A particle having charge q_0 when placed at a point in an electric field experiences a force $\vec{F}$. The electric field at that point-

1. $\frac{\vec{F}}{q_0}$
2. $> \frac{\vec{F}}{q_0}$
3. $< \frac{\vec{F}}{q_0}$
4. May be any of the above depending on the source of the field.

157.

The degree of freedom per molecule for a gas at an average is 8. If the gas performs 100 J of work when it expands under constant pressure, then amount of heat absorbed by gas is-

1. 500 J
2. 600 J
3. 20 J
4. 400 J

158.

The direction of the Electric field at point C due to charge q and -2q at points A and B such that C is a point on the perpendicular bisector of AB above line AB and charge q is negative-

1. ←
2. ↙
3. ↖
4. →

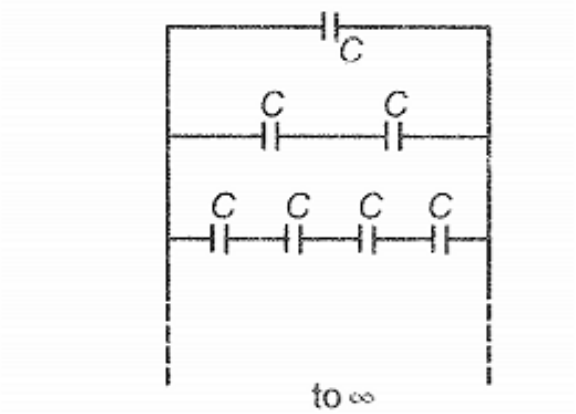
159.

The equation of an SHM is given as y=3sinωt + 4cosωt where y is in centimeters. The amplitude of the SHM is

1. 3 cm
2. 3.5 cm
3. 4 cm
4. 5 cm

160.

The equivalent capacitance of the given circuit is:



1. $\frac{C}{2}$
2. C
3. 2C
4. 4C

161.

Two-point charges -q and +q are located at points (0,0,-a) and (0,0,a) respectively. The electric potential at point (0,0,z) (is given z>a)

1. $\frac{qa}{4\pi\varepsilon_0 z^2}$
2. $\frac{2q}{4\pi\varepsilon_0 a}$
3. $\frac{2qa}{4\pi\varepsilon_0(z^2-a^2)}$
4. zero

162.

If magnetic induction at center due to electron in first orbit of hydrogen atom is B, then the magnetic induction due to electron in 5^{th} orbit of the atom is :

1. 2B
2. $\frac{B}{(5)^3}$
3. $\frac{B}{(5)^4}$
4. $\frac{B}{(5)^5}$

163.

A proton started moving with speed v normal to a uniform magnetic field. The time period of revolution of the proton is T. When another proton starts moving with speed 2v normal to the same uniform magnetic field, its new time period of revolution will be

1. $\frac{T}{2}$
2. 2T
3. T
4. 4T

164.

The equation of a stationary wave is given as $y = A\ \sin\ 0.5\pi t\ \cos(0.2\pi x)$, where t is in seconds and x in centimeters. Which of the following is correct?

1. Wavelength of the component waves is 10 cm
2. The separation between a node and nearest antinode is 2.5cm
3. Frequency of the component wave is 0.25 Hz
4. All of these

165.

Huygens' wave theory allows us to know the

1. Wavelength of the wave
2. Velocity of the wave
3. Amplitude of the wave
4. Propagation of wavefronts

166.

A ring of radius R is having a uniform line charge density 'λ'. The electric field at the center of the ring is-

1. Zero
2. not defined
3. $\frac{\lambda}{2\pi\varepsilon_0 R^2}$
4. $\frac{\lambda}{4\pi\varepsilon_0 R}$

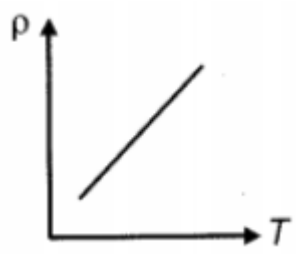
167.

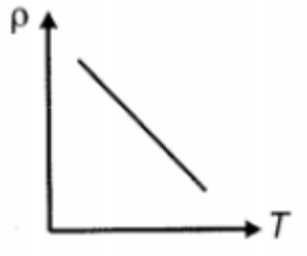
During which of the following thermodynamic processes, the elasticity of a gas is minimum?

1. Adiabatic process
2. Isothermal process
3. Isobaric process
4. Isochoric process

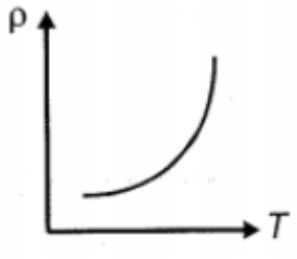
168.

The temperature (T) dependence of resistivity (ρ) of a semiconductor is roughly represented by-

1. 

2. 

3. 

4. 

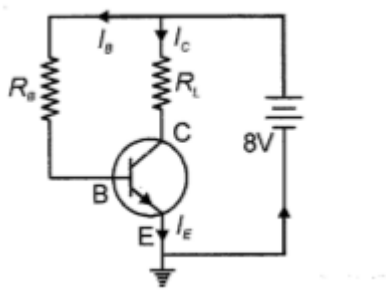
169.

A rigid body is rolling without slipping. If the ratio of translational kinetic energy and rotational kinetic energy is 2 : 1, the body maybe

1. A solid sphere
2. A ring
3. A hollow cylinder
4. A solid cylinder

170.

A n-p-n transistor operates in a common emitter mode as shown. Given that $I_C = 4$ mA, $V_{CE} = 4\ V$, $V_{BE} = 0.6\ V$ *and* $\beta_{dc} = 100$. The value of R_L is:



1. 1 kΩ
2. 2 kΩ
3. 3 kΩ
4. 4 kΩ

171.

The saturation photoelectric current depends on

1. Frequency of photon
2. Wavelength of photon
3. Intensity of photon
4. Stopping potential

172.

A metallic surface is exposed to two radiations separately, one of wavelength 4000 $\overset{o}{A}$ and other of 8000 $\overset{o}{A}$. If work function of metal is 1 eV, then the ratio of maximum kinetic energies of photoelectrons are nearly equal to-

1. $\frac{32}{11}$
2. $\frac{42}{11}$
3. $\frac{52}{11}$
4. $\frac{62}{11}$

173.

The LED

1. Is reverse biased
2. Is forward biased
3. Can be made of GaAs
4. Both (2) & (3) are correct

174.

The Young's modulus of a wire is numerically equal to the stress at which:

1. strain produced in the wire is equal to unity.
2. length of wire gets doubled.
3. length increases by 100%.
4. All of these

175.

The velocity of water in a river is

1. Same everywhere
2. More in the middle and less near its banks
3. Less in the middle and more at banks
4. Increases from one bank to other

176.

When a point source of monochromatic light is at a distance of 0.2 m from a photoelectric cell, the cut-off voltage and saturation current are 0.6 volt and 18 mA respectively. If the same source is placed 0.6m away from photoelectric cell, then

1. Stopping potential will be 0.2 volt
2. Stopping potential will be 0.6 volt
3. The saturation current will be 6 mA
4. The saturation current will be 18 mA

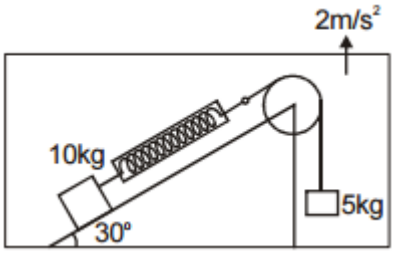
177.

If the same amount of heat is supplied to two spheres of the same material having the same radius (one is hollow and the other is solid), then:-

1. the expansion in hollow is greater than the solid
2. the expansion in hollow is the same as that in solid
3. the expansion in hollow is lesser than the solid
4. the temperature of both must be the same as each other

178.

Calculate the reading of spring balance shown in figure :- (g = 10 m/s^2)



1. 60 N
2. 40 N
3. 50 N
4. 80 N

179.

The radius of gyration of a uniform solid sphere about a tangent is:

1. $R\sqrt{\frac{2}{3}}$
2. $R\sqrt{\frac{2}{5}}$
3. $R\sqrt{\frac{5}{3}}$
4. $R\sqrt{\frac{7}{5}}$

180.

A heavy stone is thrown from a cliff of height h with a speed v. The stone will hit the ground with maximum speed if it is thrown:

1. Vertically downward
2. Vertically upward
3. Horizontally
4. The speed does not depend on the initial direction

181.

A car moving along a straight highway with a speed of 126 $km\ h^{-1}$ is brought to a stop within a distance of 200 m. How long does it take for the car to stop?

1. 10.2 sec
2. 9.6 sec
3. 11.4 sec
4. 6.7 sec

182.

A stone tied to the end of a string 80 cm long is whirled in a horizontal circle at a constant speed. If the stone makes 14 revolutions in 25 sec, what is the magnitude of the acceleration of the stone?

1. $8.1\ \text{ms}^{-2}$
2. $7.7\ \text{ms}^{-2}$
3. $8.7\ \text{ms}^{-2}$
4. $9.9\ \text{ms}^{-2}$

183.

A pair of adjacent coils has a mutual inductance of 1.5 H. If the current in one coil changes from 0 to 20 A in 0.5 s, what is the change of flux linkage with the other coil?

1. 35 Wb
2. 25 Wb
3. 30 Wb
4. 20 Wb

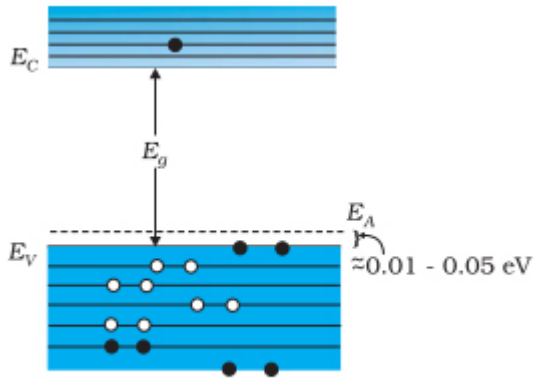
184.

At a certain location in Africa, a compass points 12° west of the geographic north. The north tip of the magnetic needle of a dip circle placed in the plane of magnetic meridian points 60° above the horizontal. The horizontal component of the earth's field is measured to be 0.16 G. The magnitude of the earth's field at the location is:

1. 0.16 G
2. 0.48 G
3. 0.32 G
4. 0.30 G

185.

In the energy band diagram of a material shown below, the open circles and filled circles denote holes and electrons respectively. The material is a/an:



1. p-type semiconductor
2. insulator
3. metal
4. n-type semiconductor

Physics - Section B

186.

$^{22}_{10}$Ne nucleus after absorbing energy decays into two α-particles and an unknown nucleus. The unknown nucleus is

(1) Nitrogen

(2) Carbon

(3) Boron

(4) Oxygen

187.

The speed of sound in a medium is v. If the density of the medium is doubled at constant pressure, what will be new speed of sound?

1. $\sqrt{2}$v
2. v
3. $\frac{v}{\sqrt{2}}$
4. 2 v

188.

If a diamagnetic substance is brought near the north or the south pole of a bar magnet, it is:

1. Repelled by both the poles
2. Repelled by the north pole and attracted by the south pole
3. Attracted by the north pole and repelled by the south pole
4. Attracted by both the poles

189.

A series AC circuit has a resistance of 4Ω and an inductor of reactance 3Ω . The impendance of the circuit is z_1. Now a capacitor of reactance 6Ω is connected in the series of above combination, the impedance becomes z_2, Then $\frac{z_1}{z_2}$ will be

1. 1 : 1
2. 5 : 4
3. 4 : 5
4. 2 : 1

190.

The distance between the object and its real image formed by a concave mirror is minimum when the distance of the object from centre of curvature of the mirror is [f→focal length of mirror]

(1) zero

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

(3) f

(4) 2f

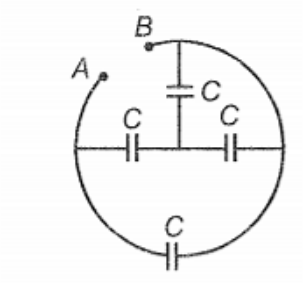
191.

Equation of simple harmonic motion is x = asinωt, then for which value of x, kinetic energy is equal to the potential energy?

1. $x = \pm a$
2. $x = \pm \frac{a}{2}$
3. $x = \pm \frac{a}{\sqrt{2}}$
4. $x = \pm \frac{\sqrt{3}a}{2}$

192.

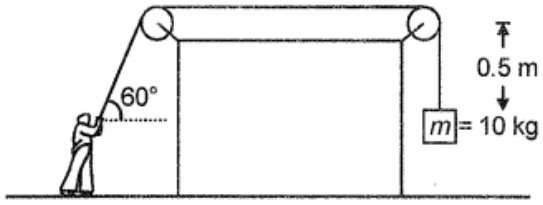
The equivalent capacitance across A and B in the given figure is



1. $\frac{3}{2}C$
2. C
3. $\frac{2}{3}C$
4. $\frac{5}{3}C$

193.

In the given figure, a man pulls the mass m with the help of a rope. Work done by the man against the gravity when mass is lifted by 0.5 m is ($g = 10\ m/s^2$)



1. 50 J
2. 100 J
3. 25 J
4. Zero

194.

A body of mass 2 kg moving with a velocity of 3 m/s collides with a body of mass 1 kg approaching with velocity 6 m/s. If the collision is one dimensional and perfect inelastic, then the velocity of combined mass after a collision is

1. 4 m/s
2. 3 m/s
3. 12 m/s
4. Zero

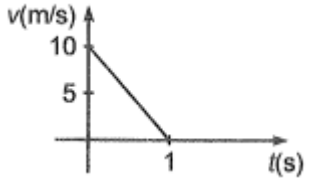
195.

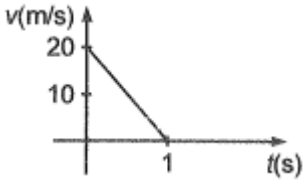
Resolving power of a microscope can be increased by using

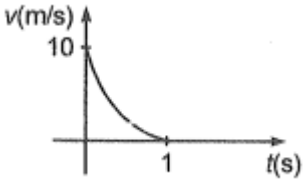
1. Red light
2. Blue light
3. Oil between objective lens and object
4. Both 2 & 3

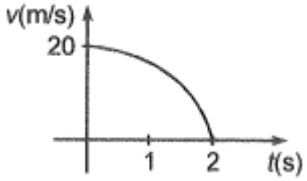
196.

The position (x) of a particle on a straight line motion is given by $x = 2 + 10t - 5t^2\ (m)$. Its velocity (v) is best represented by

1. 

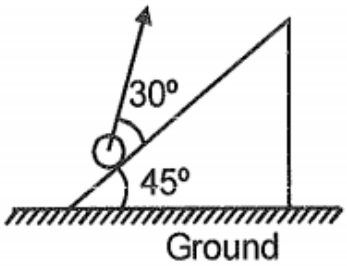
2. 

3. 

4. 

197.

A particle is projected on an incline of inclination 45° as shown in the given figure. Acceleration of the particle at its highest point is :



1. g
2. $\frac{g}{2}$
3. $\frac{g}{\sqrt{2}}$
4. $\frac{\sqrt{3}g}{2}$

198.

Two heating coils, one of fine wire and the other of thick wire of the same material and of the same length are connected in series and in parallel. Which of the following statements is correct?

1. In series, fine wire liberates more energy while in the parallel thick wire will liberate more energy
2. In series, fine wire liberates less energy while in the parallel thick wire will liberate more energy
3. Both will liberate equally
4. In series, the thick wire will liberate more energy while in parallel it will liberate less energy

199.

With an increase in temperature, the viscosity of liquid and gas, respectively will:

1. increase and increase
2. increase and decrease
3. decrease and increase
4. decrease and decrease

200.

A body of mass 5 kg is acted upon by two perpendicular forces 8 N and 6 N. The magnitude of the acceleration of the body is:

1. $0.99\ m\ s^{-2}$
2. $3\ m\ s^{-2}$
3. $2\ m\ s^{-2}$
4. $0.77\ m\ s^{-2}$

Fill OMR Sheet*

*If above link doesn't work, please go to test link from where you got the pdf and fill OMR from there