

1. Identify the incorrect statement:
  1. Virus has a protein coat called capsid made of small subunits called capsomeres.
  2. The core has the genetic material - either RNA or DNA or both.
  3. The capsomeres are arranged in helical or icosahedral forms.
  4. Virus can infect any type of organisms.
  
2. Saprophytic protists are:
  1. Slime moulds
  2. Dinoflagellates
  3. Chrysophytes
  4. Protozoans
  
3. Which of the following does not help in excretion in *Periplaneta Americana*?
  1. Fat body
  2. Urecose glands
  3. Nephrocytes
  4. None of these
  
4. Male heterogamety is not seen in:
  1. Humans
  2. Melandrium album
  3. Birds
  4. Fruit fly
  
5. A transcription unit does not contain:
  1. A promoter
  2. The structural gene
  3. A terminator
  4. An operator
  
6. Growth and reproduction are mutually exclusive events in
  1. Bacteria and protista.
  2. Protista and unicellular fungi.
  3. Yeast and Paramoecium.
  4. Higher plants and animals.
  
7. Catalytic converter of automobiles converts unburnt hydrocarbons into
  1. NO<sub>2</sub> and CO<sub>2</sub>
  2. H<sub>2</sub>S and NO<sub>2</sub>
  3. CO<sub>2</sub> and H<sub>2</sub>O
  4. H<sub>2</sub>O and SO<sub>2</sub>
  
8. Population density will increase if
  1. Number of births and number of deaths increase.
  2. Number of births and number of immigrants is high.
  3. Number of immigrants and number of deaths is high.
  4. Number of births and number of immigrants is low.
  
9. Select the group of animals belonging to different phyla?
  1. Hirudinaria, Limulus, Laccifer.
  2. Nereis, Dentalium, Aplysia.
  3. Pheretima, Chaetopleura, Ophiura.
  4. Cucumaria, Anteadon, Loligo.
  
10. **Statement-1:** Xylem transport can be unidirectional and bidirectional.  
**Statement-2:** Both phloem loading and unloading is active process.  
**Options**
  1. Both statements are correct.
  2. Both statements are incorrect.
  3. 1 is correct, 2 is incorrect.
  4. 1 is incorrect, 2 is correct.

11.

**Statement - 1 :** Herbivores and plants appears to be more adversely affected by competition than carnivores.

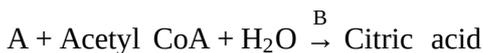
**Statement - 2 :** Competition is a process in which fitness of one species is significantly lower in the presence of another species.

**Options**

1. Both statements are correct.
2. Both statements are incorrect.
3. 1 is incorrect.
4. 2 is incorrect.

12.

Complete the given reaction of the cycle present in mitochondrial matrix



1. A—Succinic acid; B—Pyruvate dehydrogenase.
2. A—Malic acid; B—Transacetylase.
3. A—OAA; B—Citrate synthase.
4. A—  $\alpha$ -KGA; B  $\alpha$  Thiokinase.

13.

The phytohormone, which was first isolated from human urine, shows

- a. Bolting effect.
- b. Apical dominance.
- c. Control of xylem differentiation.
- d. Promote leaf senescence.
- e. Ripening of fruit.
- f. Initiation of rooting in stem cuttings.

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

14.

Consider the characters of a certain part of the human brain:

- I. It contains neurosecretory cells.
- II. It is an important part of the limbic system.
- III. It is a part of the diencephalons.

This part of the human brain is:

1. Hypothalamus
2. Medulla oblongata
3. Cerebellum
4. Amygdala

15.

Consider the following four statements (I- IV) related to cell cycle, and select the correct option stating them as true (T) and false (F)

- I. Cell growth in terms of cytoplasmic increase is a continuous process.
- II. Interphase is the phase of actual cell division.
- III. The number of chromosomes doubles in S-phase.
- IV. The cell that does not divide further exits G1-phase to enter an inactive stage.

**Options :**

- |    |   |    |     |    |
|----|---|----|-----|----|
|    | I | II | III | IV |
| 1. | T | F  | F   | F  |
| 2. | F | T  | T   | T  |
| 3. | F | F  | T   | T  |
| 4. | T | F  | F   | T  |

16.

Find the incorrect statement:

1. Plastids found in plant cells and in euglenoids.
2. Golgi apparatus is site of formation of glycoproteins and glycolipids.
3. Nucleus during interphase has highly extended and elaborate nucleoprotein fibers.
4. Centriole Microtubular organization is referred to as the 9 + 2 and it forms basal body of cilia and flagella.

17.

In contrast to Annelids, the Platyhelminths show

1. Absence of body cavity
2. Presence of pseudocoel
3. Radial symmetry
4. Bilateral symmetry

18.

Nucleotides are building blocks of nucleic acids. Each nucleotide is a composite molecule formed by -

1. Base-sugar-OH
2. Base-sugar-phosphate
3. Sugar-phosphate
4. (Base-sugar-phosphate)<sub>n</sub>

19.

In a test cross, the plant expressing the dominant phenotype is crossed with the plant:

1. Which is heterozygous dominant
2. Which is heterozygous recessive
3. Which is homozygous recessive
4. Which is homozygous dominant

20.

Some hormones can act on their target cells through second messengers. Identify the one that does not:

1. cortisol
2. adrenaline
3. FSH
4. calcitonin

21.

Which of the following is not the property of a molecule that can act as genetic material?

1. Able to replicate
2. Able to mutate
3. Chemically and structurally stable
4. Should express as dominant characters.

22.

During DNA replication, two strands of DNA cannot be separated in their entire length in one step because?

1. Due to high energy requirement
2. Due to complementary base pairing
3. Due to antiparallel nature of DNA strand
4. Due to absence of enzyme DNA polymerase

23.

Consider the following four statements (A–D), select the correct option stating which ones are true (T) and which ones are false (F)

(A) Organism at each trophic level depends on those at higher trophic levels for their energy demands.

(B) Each trophic level has a certain mass of living material at a particular time called standing crop.

(C) The amount of inorganic matter present in an ecosystem at a given time called standing state.

(D) The number of trophic levels in a grazing food chain is not restricted

A B C D

1. T T F F
2. F T F T
3. T F T F
4. F T T F

24.

Select the correct match.

1. Dengue, chikungunya, filariasis - Vector borne disease

2. Acid, saliva, mucus in GIT - Physiological barriers

3. Histamine, cortisol, adrenaline - Anti-inflammatory compounds

4. Crack, smack, charas - Hallucinogens

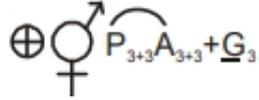
25.

Consider the following four statements A, B, C and D and select the right option for two correct statements.

(A) In vexillary aestivation, the large posterior petal is called standard, two lateral ones

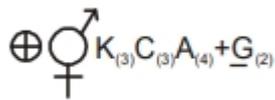
are wings and two small anterior petals are termed keel

(B) The floral formula for Liliaceae is



(C) In pea flower the stamens are monadelphous

(D) The floral formula for Solanaceae is



The correct statements are

1. (A) and (C)
2. (A) and (B)
3. (B) and (C)
4. (C) and (D)

26.

Arrange the following process starting from the germ cells of seminiferous tubule?

- (i) Meiotic division in secondary spermatocytes.
- (ii) Spermiation.
- (iii) Spermiogenesis.
- (iv) Capacitation.

1. (i), (ii), (iii), (iv)
2. (i), (iii), (ii), (iv)
3. (ii), (i), (iv), (iii)
4. (i), (ii), (iv), (iii)

27.

The most toxic nitrogenous waste excreted by many bony fishes, aquatic amphibians, and aquatic insects is

1. Ammonia
2. Urea
3. Uric acid
4. Both 2 and 3

28.

To ciliated columnar epithelial cells in humans are known to occur in

1. Fallopian tubes and urethra
2. Eustachian tube and stomach lining
3. Bronchioles and Fallopian tubes
4. Bile duct and oesophagus

29.

In nature, a given habitat has enough resources to support a maximum possible number, beyond which no further growth is possible. This characteristic feature of nature is known as

1. Biotic potential
2. Carrying capacity
3. Natural selection
4. Homeostasis

30.

The parts of nephron situated in cortical region of kidney are

1. Loop of Henle, PCT, and collecting duct
2. Collecting duct, PCT, and malpighian corpuscle
3. PCT, DCT, and Loop of Henle
4. PCT, DCT and Malpighian corpuscle

31.

Which hormone level reaches a peak during the luteal phase of the menstrual cycle?

1. Luteinizing hormone
2. Progesterone
3. Follicle-stimulating hormone
4. Estrogen

32.

During the past century, the temperature of Earth has increased by \_\_\_\_\_, most of its during the last three decades

1. 6°C
2. 0.6°C
3. 0.8°C
4. 7°C

33.

Find odd one out w.r.t. functional component of ecosystem

1. Productivity
2. Stratification
3. Decomposition
4. Nutrient cycling

34. Arrange the following component acts during blood clotting mechanism?

- (i) Platelets                      (ii) Prothrombin  
 (iii) Fibrinogen                (iv) Ca<sup>++</sup>  
 (v) Thrombokinase

1. (i), (ii), (iii), (iv), (v)
2. (i), (iv), (v), (ii), (iii)
3. (iii), (iv), (v), (i), (ii)
4. (v), (iv), (iii), (ii), (i)

35. Which of the following function can be performed by both parenchyma and collenchyma?

1. Storage.
2. Photosynthesis.
3. Secretion.
4. All.

36. Secondary protonema of moss

1. Helps in propagation by fragmentation.
2. Helps in propagation by budding.
3. Have leafy stage as lateral bud.
4. All the above

37. Trachea divides into two primary bronchi at the levels of :

1. 7th thoracic vertebrae in mid-thoracic cavity.
2. 5th lumbar vertebrae in mid-thoracic cavity.
3. 5th thoracic vertebrae in lower thoracic cavity.
4. 5th thoracic vertebrae in mid-thoracic cavity.

38. Which of the following option gives correct categorization of hormones according to their chemical nature:-

	A	B	C
	Steroid	Amino-acid derivative	Iodothyromines
1.	Epinephrine, nor-epinephrine	Estradiol, progesterone	Thyroxine
2.	Estradiol, progesterone	Epinephrine, nor-epinephrine	Thyroxine
3.	Estradiol, epinephrine	Nor-epinephrine, progesterone	Thyroxine
4.	Estradiaol, pogesterone	Thyroxine	Epinephrine, nor-epinephrine

39. Hepatic portal system connect

1. Liver and heart.
2. Liver and Kidney.
3. Liver and digestive tract.
4. Liver and spleen.

40.

Inbreeding

1. Refers to the mating of distantly related individuals
2. Refers to the mating of more closely related individuals
3. Reduces homozygosity
4. Reduces inbreeding depression

41. Which one of the following is tested by the technique of amniocentesis?
1. Biochemical abnormalities in the foetus
  2. Errors of metabolism in the foetus
  3. Chromosomal abnormalities in the foetus
  4. All of the above
42. A : Pollen grains carry the male gamete from microsporangium to micropyle of ovule in angiosperms.  
B : Pollen grain itself a male gamete further divides and form another one on stigma only.
1. Both A and B are correct
  2. A is correct only
  3. B is correct only
  4. Both A and B are incorrect
43. Seed-set is assured even in absence of pollinators, when:
1. Both flowers (♂ and ♀) of a plant mature at the same time
  2. The numbers of flowers clustered into an inflorescence to make them conspicuous, colorless and rich in nectar
  3. The flowers are cleistogamous
  4. The flowers are functionally cross-pollinating but genetically self-pollinating
44. Which of the following enzyme is involved in the isolation of genetic material like DNA from a plant cell?
- |                   |              |
|-------------------|--------------|
| I. Cellulase      | II. Lysozyme |
| III. Ribonuclease | IV. Protease |
1. I, II, III and IV
  2. I and II only
  3. I only
  4. I, III and IV
45. The incorrect statement for facilitated diffusion is
1. Special proteins help move substances across membranes without expenditure of energy.
  2. Can cause net transport of molecules from a low to a high concentration
  3. It is very specific, it allows cell to select substances for uptake.
  4. Transport rate reaches a maximum when all of the protein transporters are being used
46. A motor unit is best described as-
1. All the nerve fibres and muscle fibres in a single muscle bundle
  2. One muscle fibre and its single nerve fibre
  3. A single motor neuron and all the muscle fibres that it innervates
  4. It is the neuron which carries the message from muscle to CNS
47. Which is not correct about methanogens?
1. they are archaebacteria
  2. they live in marshy areas
  3. Methane is their preferred carbon source
  4. They are present in guts of several ruminant animals (cow, buffaloes) and they produce biogas (CH<sub>4</sub>) from the dung of these animals.
48. Pathogens of Arthropods effectively used as biological control agents include
1. Trichoderma
  2. Baculoviruses
  3. Agrobacterium tumefaciens
  4. E. Col
49. How many enzymes in the list given below found in pancreatic juice?
- Enterokinase, Chymotrypsin, Aminopeptidase, Pepsin, Lactase, Rennin, Carboxypeptidase, Nuclease, Nucleotidase & Elastase:-
1. Six
  2. Three
  3. Five
  4. Four

50. Which of the following is not the function of the large intestine?
1. Absorption of some water, minerals and certain drugs
  2. Nutrient absorption
  3. Secretion of mucus to lubricate feces
  4. The temporary storage of feces in rectum
51. Which one option is correct for Dark reactions?
1. Occurs in dark
  2. Not depend on light
  3. Dependent on products of light reaction
  4. Occurs in lumen in thylakoid
52. 'Ozone depletion' means thinning of ozone layer during spring season and
1. This will allow UV-A to enter stratosphere which will cause snow blindness
  2. This is caused by  $N_2O$  as major pollutant
  3. Ozone is released during this as  $O_2$  or  $ClO$
  4. First large hole was discovered over north pole
53. All of the following statements are correct in respect of gene therapy, except
1. It allows correction of genetic defect in embryonic stage only
  2. The gene is inserted into cells and tissues to treat a disease
  3. Delivery of a normal gene into cell takes over the function of and compensate for the non-functional gene
  4. As a step towards gene therapy to treat ADA deficiency, ADAcDNA is introduced into cultured lymphocytes of the patient and subsequently returned to him/her.
54. Neuroglia makes more than \_\_\_\_\_ the volume of neural tissue in our body.
1. 10%
  2. 50%
  3. 25%
  4. 20%
55. The criteria for essentially of an element are all, **except**
1. Absolutely necessary for supporting normal growth and reproduction
  2. The essential element must be replaceable by another element
  3. It is involved in the metabolism of plants
  4. Its deficiency will show hunger sign
56. Read the following statements carefully and mark the **correct** w.r.t. gymnosperms
- a. Pollen grains are carried by air currents
  - b. Pollen tube carries the male gametes to archegonia
  - c. Ovules are exposed before fertilization but get covered after fertilization
  - d. They produce same type of spores
- 1 a, b & d  
2 a & b  
3 a & c  
4 b & d
57. Vascular archegoniates with diplontic life cycle are
- 1 Bryophytes
  - 2 Pteridophytes
  - 3 Gymnosperms
  - 4 More than one option is correct
58. Choose the **odd** one w.r.t. significance of meiosis
- 1 Conservation of specific chromosome number of each species
  - 2 Increases genetic variability
  - 3 Able to regenerate part or whole of the organism
  - 4 Introduces new combination of traits

59. The World summit on sustainable development held in \_\_\_\_\_ in \_\_\_\_\_. (Fill the gaps respectively by selecting the correct option).
1. 2002, Johannesburg, South Africa
  2. 2002, Johannesburg, South America
  3. 1992, Rio de Janerio, Brazil
  4. 2002, Rio de Janerio, Brazil
60. 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
61. The number of ATP required for phosphorylation to form a RUBP during regeneration steps is
- 1 18
  - 2 3
  - 3 5
  - 4 1
62. In ETS the number of ATP molecules synthesized depends on
- 1  $O_2$
  - 2 Substrate
  - 3 Electron donor
  - 4 Proton gradient
63. Apical and axillary meristem can be induced to grow *in-vitro* to specifically raise
1. Early growing plant varieties
  2. Virus-free plants
  3. Plants with tolerance against environmental factors
  4. Plants with high yield
64. A true coelom is between
1. Mesoderm and endoderm
  2. Ectoderm and mesoderm
  3. Body wall and endoderm
  4. Body wall and mesoderm
65. In periodic abstinence, the couple must avoid the coitus/sexual contact from day \_\_\_\_\_ of the menstrual cycle
1. 14 to 21
  2. 18 to 21
  3. 14 to 15
  4. 10 to 17
66. Which of the following statements is not true w.r.t. mammary glands?
1. Contain glandular tissue and variable amount of fat tissues
  2. Contain 15-20 mammary lobes containing clusters of cells called alveoli where cells of alveoli secrete milk
  3. Several mammary ampullae combine to form mammary duct which is connected to the lactiferous duct
  4. milk is sucked out through the lactiferous duct
67. Mark the correct statement
- a. MALT (Mucosa-associated lymphoid tissue) constitutes about 50% of the lymphoid tissue in the human body
  - b. Antigen trapped in the lymph nodes are responsible for the activation of lymphocytes present there and cause an immune response
  - c. B cells mediate (CMI), cell-mediated immunity
  - d. Secondary immune response is due to memory cells
- 1 a & b are correct
  - 2 c & d are correct
  - 3 a, b & d are correct
  - 4 a, b, c & d are correct

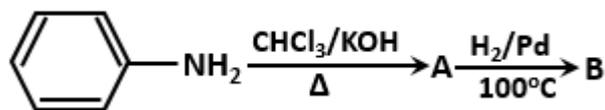
68. When recombinant DNA is inserted within the coding sequence of an enzyme  $\beta$ -galactosidase. This results in the following except
1. Insertional inactivation
  2. Recombinant colonies do not produce any color
  3. Inactivation of enzyme
  4. Chromogenic substrate is converted into product by recombinant colonies
69. Which one is the most abundant protein in the animal world?
1. Collagen
  2. RUBISCO
  3. Trypsin
  4. Insulin
70. Select incorrect statement w.r.t. racemose inflorescence
1. The main axis continues to grow
  2. Peduncle bears flowers in basipetal/centrifugal manner
  3. The main axis is not terminated into flower
  4. It is an indeterminate inflorescence
71. Respiratory rhythm centre is present in the medulla and is primarily responsible for regulation of respiration as per demands of the body tissues. This centre is regulated by
1. Pneumotaxic centre present pons region
  2. Central chemoreceptor adjacent to rhythm centre
  3. Peripheral chemoreceptor present in aortic arch and carotid artery
  4. All of these
72. Which of the following includes non-muscular movement?
- (a) Protoplasmic streaming
  - (b) Pseudopodial movements
  - (c) Flagellar movements
  - (d) Ciliary movement
1. (a) and (b)
  2. (a), (c) and (d)
  3. (a), (b), (c) (d)
  4. (c) and (d)
73. Find out the **incorrectly** matched pair w.r.t. structure and its function as mentioned below
1. Eustachian tube - Maintains air pressure in tympanic cavity
  2. Cornea - Controls amount of light entering into eyeball, called the diaphragm of eye
  3. Cristae in ampulla - Detect rotational motion
  4. Semicircular canals - Help in maintaining dynamic equilibrium, not in hearing
74. According to the five-kingdom classification system, which of the following kingdom has multicellular/loose tissue level body organization?
1. Protista
  2. Plantae
  3. Animalia
  4. Fungi
75. All are X-linked traits, except
1. Colourblindness
  2. Haemophilia
  3. Deficiency of glucose-6-phosphate dehydrogenase
  4. Hypertrichosis

76. Kinetochores are associated with
1. Outer part of primary constriction
  2. Centromere in its inner central part
  3. Secondary construction
  4. Satellite
77. What is the possible advantage if hybrids are made into apomicts?
1. Segregation of characters in the hybrid progeny
  2. Farmers can keep on using the hybrid seeds to raise new crop in first year only
  3. Absence of segregation in the hybrid progeny
  4. More than one option is correct
78. Development of a new individual from a single gamete without fusion with another gamete is called
1. Parthenocarpy
  2. Sporophytic budding
  3. Parthenogenesis
  4. Polyembryony
79. Which of the following is not correctly matched?
1. Productivity - Rate of biomass production
  2. Gross primary productivity of earth - Rate of productivity of organic matter during photosynthesis
  3. Net primary productivity - Available biomass for consumption by heterotrophs
  4. Secondary productivity - Formation of new organic matter by producers
80. Amrita Devi Bishnoi Award is given to individuals or communities from rural areas that have shown extraordinary courage and dedication in
1. Protecting wildlife
  2. Minimizing the ODS
  3. Organic farming
  4. Biotechnology
81. Tissue which provides mechanical strength and flexibility to young dicot stem is present in
1. Pith
  2. Endodermis
  3. Hypodermis
  4. Cortex
82. Fill up the blanks:-
- I. The products of ecosystem processes are called .....A.....
  - II. ...B.. are the major source of ecosystem services.
  - III. ...C... and his colleagues tried to put price tags on nature's life support survives which, came up to US ...D... a year.
- Choose the correct option for A, B, C and D.
1. A-Ecosystem services, B-Plants, C-Robert Brown, D-31 trillion
  2. A-Ecology services, B-Plants, C-Robert Constanza, D-33 trillion
  3. A-Ecosystem services, B-Forests, C-Robert Constanza, D-33 trillion
  4. A-Ecology services, B-Ponds, C-Robert Brown, D-34 trillion
83. Read the following statement carefully and choose how many of them are incorrect
- A. Afferent neuron transmits a signal to CNS.
  - B. Choroid layer is bluish color and is present over posterior two-third of eyeball.
  - C. Olfactory bulbs are extension of hypothalamus
  - D. Medulla oblongata has a center to control excretion, circulation and gastric secretion.
1. one
  2. two
  3. three
  4. four

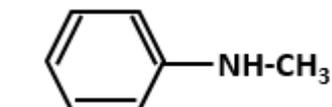
84. Mark the wrongly matched pair
1. Amaranthus - Causes pollen allergy
  2. Pollen banks - Store pollen at  $-196^{\circ}\text{C}$
  3. Pea - Pollens are viable for only 30 minutes
  4. Pollen grains - Rich in nutrients
85. The most accepted line of descent in human evolution is
1. Australopithecus  $\rightarrow$  Homo erectus  $\rightarrow$  Homo habilis  $\rightarrow$  Homo sapiens
  2. Homo erectus  $\rightarrow$  Homo habilis  $\rightarrow$  Homo neanderthalensis  $\rightarrow$  Homo sapiens
  3. Ramapithecus  $\rightarrow$  Homo habilis  $\rightarrow$  Homo erectus  $\rightarrow$  Homo sapiens
  4. Australopithecus  $\rightarrow$  Ramapithecus  $\rightarrow$  Homo habilis  $\rightarrow$  Homo sapiens
86. 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
87. RNA interference (RNAi) inhibits
1. DNA replication
  2. Neither transcription nor translation of specific genes
  3. Transcription of all genes
  4. Translation of specific mRNAs
88. Which type of natural selection is said to have occurred when more individuals acquire peripheral character value at both ends of the distribution curve?
1. Stabilising selection
  2. Balancing selection
  3. Disruptive selection
  4. Directional selection
89. Glucagon is a
1. Hypoglycemic hormone
  2. Hyperglycemic hormone
  3. Hypocalcemic hormone
  4. Hypercalcemic hormone
90. At how many locations, SNPs are present in human beings?
1. 1.4 billion
  2. 1.4 million
  3.  $3 \times 10^9$  bp
  4.  $3 \times 10^4$  bp
91. The quantum numbers of most energetic electron in Ne atom in first excited state is
1. 2, 1, 0,  $+1/2$
  2. 3, 1, 1,  $+1/2$
  3. 3, 0, 0,  $+1/2$
  4. 3, 1, 0,  $+1/2$
92. Which of the following is a redox reaction?
1.  $\text{NaCl} + \text{KNO}_3 \rightarrow \text{NaNO}_3 + \text{KCl}$
  2.  $\text{CaC}_2\text{O}_4 + 2\text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{C}_2\text{O}_4$
  3.  $\text{Mg}(\text{OH})_2 + 2\text{NH}_4\text{Cl} \rightarrow \text{MgCl}_2 + 2\text{NH}_4\text{OH}$
  4.  $\text{Zn} + 2\text{AgCN} \rightarrow 2\text{Ag} + \text{Zn}(\text{CN})_2$
93. When zeolites, (hydrated sodium aluminum silicate) is treated with hard water, the sodium ions are exchanged with:
1.  $\text{H}^+$  ion
  2.  $\text{Ca}^{2+}$  ion
  3.  $\text{SO}_4^{2-}$  ion
  4.  $\text{OH}^-$  ion

94.  $\text{TiO}_2$  is well-known example of:
1. triclinic system
  2. tetragonal system
  3. monoclinic system
  4. none of these
95. Which method of purification is represented by the following equation?
- $$\text{Ti(s)} + 2\text{I}_2(\text{g}) \xrightarrow{523\text{K}} \text{TiI}_4(\text{g})$$
- $$\text{TiI}_4(\text{g}) \xrightarrow{1700\text{K}} \text{Ti(s)} + 2\text{I}_2(\text{g})$$
1. Cupellation
  2. Poling
  3. Van Arkel
  4. Zone refining
96. The decreasing order of boiling points of 1°, 2° and 3° alcohol is:
1. 1° > 2° > 3°
  2. 3° > 2° > 1°
  3. 2° > 1° > 3°
  4. none of these
97.  $\alpha$ -D-(+)-glucose and  $\beta$ -D-(+)-glucose are
1. anomers
  2. epimers
  3. enantiomers
  4. geometrical isomers
98. Melamine plastic crockery is a copolymer of:
1. HCHO and melamine
  2. HCHO and ethylene
  3. melamine and ethylene
  4. none of the above
99. Green chemistry means such reactions which
1. produce color during reactions
  2. reduce the use and production of hazardous chemicals
  3. are related to the depletion of the ozone layer
  4. study the reactions in plants
100. An open container is heated from 300 K to 400 K then % of gas remain in the container is:
1. 25%
  2. 50%
  3. 75%
  4. 100%
101. Electronic configuration of Palladium is :-
1.  $[\text{Rn}] 5f^3 6d^1 7s^2$
  2.  $[\text{Rn}] 5f^5 6d^1 7s^2$
  3.  $[\text{Rn}] 5f^2 6d^1 7s^2$
  4. None of the above

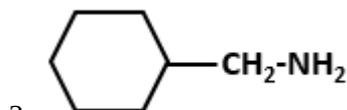
102.



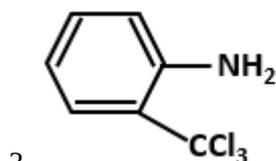
The compound 'B' is



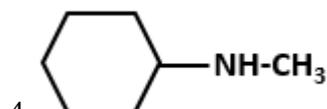
1.



2.



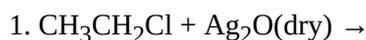
3.



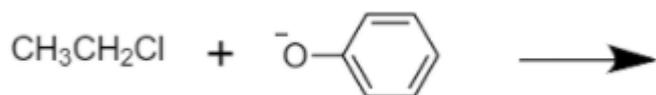
4.

103.

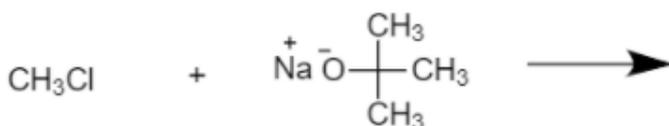
Which of the following reaction will not give ether as a major product?



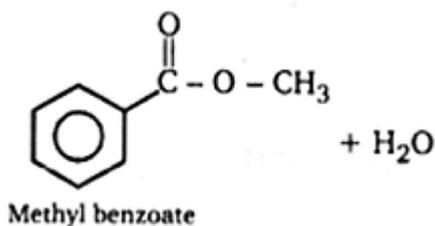
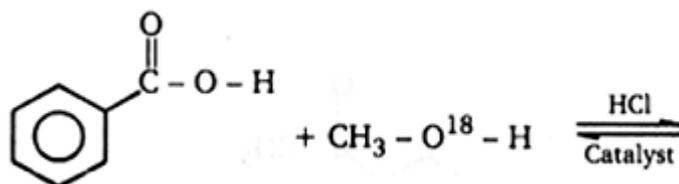
3.



4.



104.



The labeled  $\text{-O}^{18}$  will be in:

1.  $\text{H}_2\text{O}$

2. Methyl benzoate

3. Both 1 and 2

4. Benzoic acid

105.

Chloroform is kept in dark coloured bottles because:-

1. it is inflammable

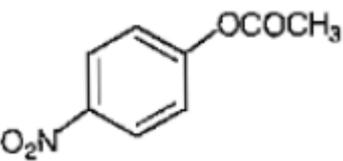
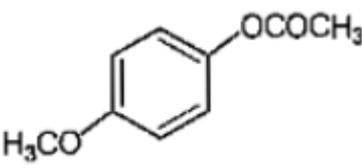
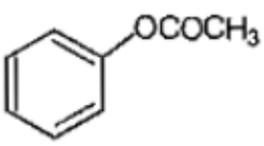
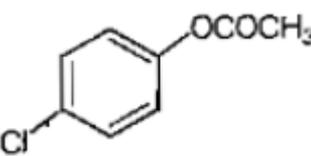
2. it gives a peroxide

3. it undergoes rapid chlorination

4. it is oxidized to poisonous phosgene

106.

Which one of the following esters get hydrolyzed most easily under alkaline conditions?

1. 
2. 
3. 
4. 

107.

Which of the following statements is not correct for a nucleophile?

1. Nucleophile is a Lewis acid
2. Ammonia is a nucleophile
3. Nucleophiles attack low electrons density sites
4. Nucleophiles are not electron seeking

108.

Which of the following pairs has the same size?

1.  $\text{Fe}^{2+}$ ,  $\text{Ni}^{2+}$
2.  $\text{Zr}^{4+}$ ,  $\text{Ti}^{4+}$
3.  $\text{Zr}^{4+}$ ,  $\text{Hf}^{4+}$
4.  $\text{Zn}^{2+}$ ,  $\text{Hf}^{4+}$

109.

Vapour pressure of  $\text{CCl}_4$  at  $25^\circ\text{C}$  is  $143 \text{ mm Hg}$ .  $0.5 \text{ g}$  of a non-volatile solute (mol. wt. 65) is dissolved in  $100 \text{ ml}$  of  $\text{CCl}_4$ . Find the vapour pressure of the solution. (Density of  $\text{CCl}_4 = 1.58 \text{ g/cm}^3$ )

1.  $141.93 \text{ mm}$
2.  $94.39 \text{ mm}$
3.  $199.34 \text{ mm}$
4.  $143.99 \text{ mm}$

110.

The unit of entropy is ,

1.  $\text{J mol}^{-1}$
2.  $\text{JK mol}^{-1}$
3.  $\text{J mol}^{-1} \text{K}^{-1}$
4.  $\text{J}^{-1} \text{K}^{-1} \text{mol}^{-1}$

111.

Which molecular geometry is least likely to result from a trigonal bipyramidal electron geometry?

1. Trigonal planar
2. See-saw
3. Linear
4. T-shaped

112.

$[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$  and  $[\text{Fe}(\text{CN})_6]^{4-}$  differ in :

1. geometry, magnetic moment
2. geometry, hybridization
3. magnetic moment, colour
4. hybridization, number of d-electrons

113.

The rate constant, the activation energy and the Arrhenius parameter of a chemical reaction at 25°C are  $3.0 \times 10^{-4} \text{ s}^{-1}$ ,  $104.4 \text{ kJ mol}^{-1}$  and  $6.0 \times 10^{14} \text{ s}^{-1}$  respectively the value of the rate constant as  $T \rightarrow \infty$  is :

- $2.0 \times 10^{18} \text{ s}^{-1}$
- $6.0 \times 10^{14} \text{ s}^{-1}$
- $\infty$
- $3.6 \times 10^{30} \text{ s}^{-1}$

114.

Out of the following which has a maximum value of lattice energy

- NaF
- NaCl
- NaBr
- NaI

115.

Which is not correct?

- $\text{Ge}(\text{OH})_2$  is amphoteric
- $\text{GeCl}_2$  is more stable than  $\text{GeCl}_4$
- $\text{GeO}_2$  is weakly acidic
- $\text{GeCl}_4 + 2\text{HCl} \rightleftharpoons \text{H}_2[\text{GeCl}_6]$

116.

Which of the following oxides is not expected to react with sodium hydroxide?

- $\text{B}_2\text{O}_3$
- CaO
- $\text{SiO}_2$
- BeO

117.

The equivalent conductance of  $\frac{M}{32}$  solution of a weak monobasic acid is  $8.0 \text{ mho cm}^2$  and at infinite dilution is  $400 \text{ mho cm}^2$ . The dissociation constant of this acid is

- $1.25 \times 10^{-5}$
- $1.25 \times 10^{-6}$
- $6.25 \times 10^{-4}$
- $1.25 \times 10^{-4}$

118.

For the reaction,  $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$ , if  $\frac{d[\text{NH}_3]}{dt} = 2 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$ , the value of  $\frac{-d[\text{H}_2]}{dt}$  would be

- $3 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- $4 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- $6 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$
- $1 \times 10^{-4} \text{ mol L}^{-1} \text{ s}^{-1}$

119.

The values of  $\Delta H$  and  $\Delta S$  for the reaction,  $\text{C}_{(\text{graphite})} + \text{CO}_2(\text{g}) \rightarrow 2\text{CO}(\text{g})$  are  $170 \text{ kJ}$  and  $170 \text{ JK}^{-1}$ , respectively. This reaction will be spontaneous at

- 710 K
- 910 K
- 1110 K
- 510 K

120.

A solution containing  $10 \text{ g per dm}^3$  of urea (molecular mass =  $60 \text{ g mol}^{-1}$ ) is isotonic with a 5% solution of a non-volatile solute. The molecular mass of this non-volatile solute is :

- $25 \text{ g mol}^{-1}$ .
- $300 \text{ g mol}^{-1}$ .
- $350 \text{ g mol}^{-1}$ .
- $200 \text{ g mol}^{-1}$ .

121.

The volume occupied by 1.8 g of water vapour at 374 degree C and 1 bar pressure will be - [Use  $R=0.083 \text{ bar L K}^{-1} \text{ mol}^{-1}$ ]

1. 96.66 L
2. 55.87 L
3. 3.10 L
4. 5.31 L

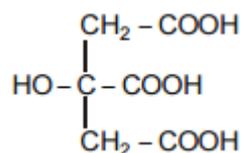
122.

Which of the following lanthanoid has the highest tendency to form complexes?

1.  $\text{Ce}^{+3}$
2.  $\text{Pm}^{+2}$
3.  $\text{Lu}^{+3}$
4.  $\text{Eu}^{+2}$

123.

The IUPAC name of the following compound is :-



1. Citric acid
2. 3-Hydroxy pentane-1,5-dioic acid
3. 2-Hydroxy propane-1,2,3-tricarboxylic acid
4. 2-Carboxy-2-hydroxy propane-1,3-dicarboxylic acid

124.

Which of the following is the correct order of increasing field strength of ligands to form coordination compounds?

1.  $\text{SCN}^- < \text{F}^- < \text{CN}^- < \text{C}_2\text{O}_4^{2-}$
2.  $\text{F}^- < \text{SCN}^- < \text{C}_2\text{O}_4^{2-} < \text{CN}^-$
3.  $\text{CN}^- < \text{C}_2\text{O}_4^{2-} < \text{SCN}^- < \text{F}^-$
4.  $\text{SCN}^- < \text{F}^- < \text{C}_2\text{O}_4^{2-} < \text{CN}^-$

125.

Sulpha drugs used for:

1. precipitating bacteria
2. removing bacteria
3. decreasing the size of bacteria
4. stopping the growth of bacteria

126.

The weight of  $1 \times 10^{23}$  molecules of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  is

1. 42.42 g
2. 41.42 g
3. 44.44 g
4. 48.94 g

127.

Which among of the following alkyne will give an aldehyde on hydroboration oxidation reaction?

1.  $\text{CH} \equiv \text{CH}$
2.  $\text{CH}_3 - \text{CH}_2 - \text{C} \equiv \text{C} - \text{H}$
3.  $\text{CH}_3 - \text{C} \equiv \text{C} - \text{H}$
4. all of these

128.

Conductivity of 0.00241 M acetic acid is  $7.896 \times 10^{-5} \text{ S cm}^{-1}$ . If  $\Lambda_m^0$  for acetic acid is  $390.5 \text{ S cm}^2 \text{ mol}^{-1}$ , what is its dissociation constant?

1.  $2.45 \times 10^{-5} \text{ mol L}^{-1}$
2.  $1.86 \times 10^{-5} \text{ mol L}^{-1}$
3.  $3.72 \times 10^{-4} \text{ mol L}^{-1}$
4.  $2.12 \times 10^{-6} \text{ mol L}^{-1}$

129.

Arrange the following compounds in increasing order of their reactivity in nucleophilic addition reactions: Ethanal, Propanal, Propanone, Butanone.

1. Butanone < Propanone < Propanal < Ethanal
2. Butanone > Propanone > Propanal > Ethanal
3. Butanone < Propanal < Propanone < Ethanal
4. Propanal < Propanone < Ethanal < Butanone

130.

How much charge is required for the following reductions of 1 mol of  $\text{MnO}_4^-$  to  $\text{Mn}^{2+}$ ?

1.  $4.8 \times 10^5 \text{ C}$
2.  $3.2 \times 10^6 \text{ C}$
3.  $1.8 \times 10^5 \text{ C}$
4.  $4.1 \times 10^4 \text{ C}$

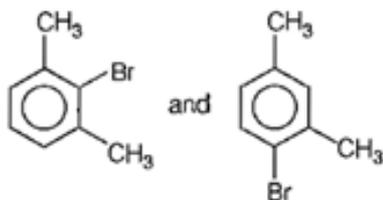
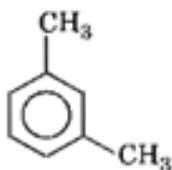
131.

The correct order of ease of hydrolysis is

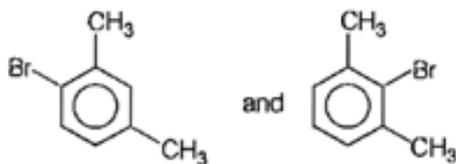
1.  $\text{CCl}_4 < \text{SiCl}_4 < \text{PCl}_5 < \text{AlCl}_3$
2.  $\text{AlCl}_3 < \text{CCl}_4 < \text{PCl}_5 < \text{SiCl}_4$
3.  $\text{CCl}_4 < \text{AlCl}_3 < \text{PCl}_5 < \text{SiCl}_4$
4.  $\text{CCl}_4 < \text{AlCl}_3 < \text{SiCl}_4 < \text{PCl}_5$

132.

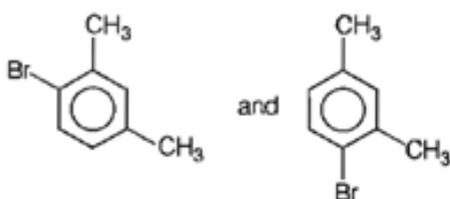
What products are formed when the following compound is treated with  $\text{Br}_2$  in the presence of  $\text{FeBr}_3$ ?



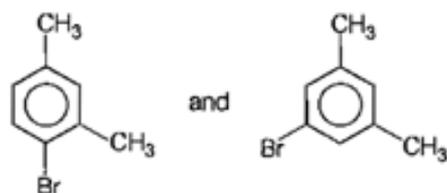
1.



2.



3.



4.

133.

Which of the following oxidation states are the most characteristic for lead and tin respectively?

1. +4, +2
2. +2, +4
3. +4, +4
4. +2, +2

134.

The vapour density of a mixture containing  $\text{NO}_2$  and  $\text{N}_2\text{O}_4$  is 38.3

Calculate the mole of  $\text{NO}_2$  in 100 g mixture.

[Vapour density = (Molar mass / 2)]

1. 0.437
2. 0.347
3. 0.557
4. 0.663

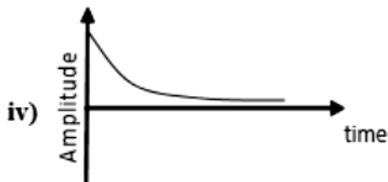
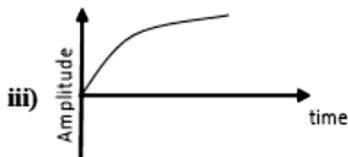
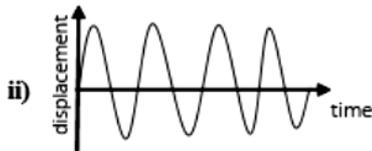
135.

Which of the following solutions will have pH close to 1.0 ?

1. 100 ml of (M/10) HCl + 100 ml of (M/10) NaOH
2. 55 ml of (M/10) HCl + 45 ml of (M/10) NaOH
3. 10 ml of (M/10) HCl + 90 ml of (M/10) NaOH
4. 85 ml of (M/10) HCl + 15 ml of (M/10) NaOH

136.

Which of the following figure represents damped harmonic motion?



1. i and ii
2. iii and iv
3. i, ii, iii, and iv
4. i and iv

137.

A box 'A' is lying on the horizontal floor of the compartment of a train running along horizontal rails from left to right. At time 't' the train decelerates. Then the resultant contact force R by the floor on the box is given best by :

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

138.

A rigid body moves a distance of 10 m along a straight line under the action of a force of 5N. If the work done by this force on the body is 25 Joules, the angle which the force makes with the direction of motion of the body is :

1.  $0^\circ$
2.  $30^\circ$
3.  $60^\circ$
4.  $90^\circ$

139.

Molar specific heat at constant volume is  $C_V$  for a monoatomic gas is:

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

140.

The coefficient of viscosity  $\eta$  of a liquid is defined as the tangential force on a layer in that liquid per unit area per unit velocity gradient across it. Then a sphere of radius 'a', moving through it under viscous force F attains a constant velocity 'v' given by - (where K is a numerical constant)

1.  $KFa\eta$
2.  $K\frac{F}{a}\eta$
3.  $K\frac{F}{a\eta}$
4.  $K\eta\frac{a}{F}$

141.

Light of wavelength  $\lambda$  strikes a photosensitive surface and electrons are ejected with kinetic energy E. If the kinetic energy is increased to two times, (i.e., 2E), the wavelength must be changed to  $\lambda'$ , where:-

1.  $\frac{\lambda}{2} < \lambda' < \lambda$
2.  $\lambda' > \lambda$
3.  $\lambda' = \frac{\lambda}{2}$
4.  $\lambda' < \frac{\lambda}{2}$

142.

540 g of ice at  $0^\circ\text{C}$  is mixed with 540 g water at  $80^\circ\text{C}$ . The final temperature of the mixture is :-

1.  $0^\circ\text{C}$
2.  $40^\circ\text{C}$
3.  $80^\circ\text{C}$
4. less than  $0^\circ\text{C}$

143.

The maximum height reached by the projectile is 4 metres and the horizontal range is 12 metres. The velocity of projection in  $\text{ms}^{-1}$  (g is the acceleration due to gravity)

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

144.

For a satellite moving in an orbit around the earth, the ratio of kinetic energy to potential energy is -

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

145.

280 J heat is supplied to a diatomic gas at constant pressure. Work done by the gas in the process is:

1. 120 J
2. 200 J
3. 180 J
4. 80 J

146.

If  $V = ar$  where a is a constant and r is the distance, then the electric field at a point will be proportional to

1. r
2.  $r^{-1}$
3.  $r^{-2}$
4.  $r^0$

147.

A car of mass 1000 kg moves on a circular track of radius 40 m. If the coefficient of friction is 1.28, the maximum velocity with which the car can be moved, is

1. 22.4 m/s
2. 112 m/s
3.  $\frac{0.64 \times 40}{1000 \times 100}$  m/s
4. 1000 m/s

148.

A magnetic field exerts no force on:

1. A magnet
2. An unmagnetised iron bar
3. A moving charge
4. Stationary charge

149.

An engine moving towards a wall with a velocity 50 m/s emits a note of 1.2 kHz. The speed of sound in air is 350 m/s. The frequency of the note after reflection from the wall as heard by the driver of the engine is:

1. 2.4 kHz
2. 0.24 kHz
3. 1.6 kHz
4. 1.2 kHz

150.

A parallel plate capacitor with plate area  $A$  and separation between the plates  $d$ , is charged by a source having current  $i$  at some instant. Consider a plane surface of area  $A/2$  parallel to the plates and drawn symmetrically between the plates. The displacement current through this area is:

1.  $i$
2.  $i/2$
3.  $i/4$
4.  $i/8$

151.

A long wire carrying a steady current is bent into a circular loop of one turn. The magnetic field at the centre of the loop is  $B$ . It is then bent into a circular coil of  $n$  turns. The magnetic field at the centre of this coil of  $n$  turns will be:

1.  $nB$
2.  $n^2B$
3.  $2nB$
4.  $2n^2B$

152.

Four equal charges  $Q$  are placed at the four corners of a square of each side ' $a$ '. Work done in removing a charge  $-Q$  from its centre to infinity is

1. 0
2.  $\frac{\sqrt{2}Q^2}{4\pi\epsilon_0 a}$
3.  $\frac{\sqrt{2}Q^2}{\pi\epsilon_0 a}$
4.  $\frac{Q^2}{2\pi\epsilon_0 a}$

153.

Two wires of copper having the length in the ratio 4:1 and their radii ratio as 1:4 are stretched by the same force. The ratio of longitudinal strain in the two will be:

1. 1:16
2. 16:1
3. 1:64
4. 64:1

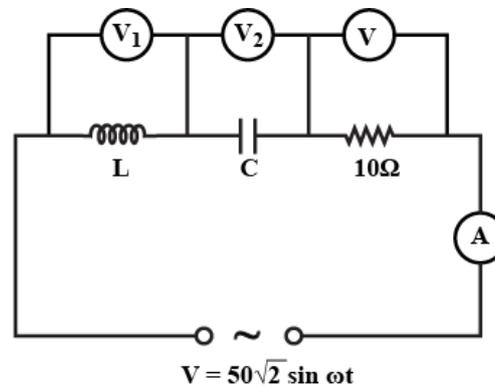
154.

The time period of the spring-mass system depends upon

1. the gravity of earth
2. the mass of block
3. spring constant
4. Both 2 & 3

155.

In the LCR-circuit shown below, if the reading of the voltmeters  $V_1$  and  $V_2$  are same, then



1.  $\omega^2 = \frac{1}{LC}$
2. Reading of the voltmeter  $V$  is 50 V
3. Reading of the ammeter  $A$  is 5 A
4. All of these

156.

As we go from the magnetic equator towards the geographic south pole, the angle of the dip will become :

1. More and more vertically downward and perpendicular to the surface at the magnetic pole.
2. More and more vertically upward and become perpendicular to the surface at the magnetic pole.
3. Less and less vertically downward and become horizontal at the magnetic pole.
4. Less and less vertically upward and become horizontal at the magnetic pole.

157.

The average e.m.f. induced in a coil, when current changes from 0 to 2 A in 0.5 seconds is 0.8 V. The self-inductance of the coil is:

1. 0.1 H
2. 0.2 H
3. 0.4 H
4. 0.8 H

158.

A small square loop of wire of side 'l' is placed inside a large square loop of side 'L' ( $L \gg l$ ). If the loops are coplanar and their centres coincide, the mutual inductance of the system is directly proportional to:

1. L/l
2. l/L
3.  $L^2/l$
4.  $l^2/L$

159.

Two light sources are said to be coherent when their:

1. amplitudes are equal and have a constant phase difference.
2. wavelengths are equal.
3. intensities are equal.
4. frequencies are equal and have a constant phase difference.

160.

If a stone is projected vertically upward from the ground with a speed of 10 m/s, then it's ( $g = 10 \text{ m/s}^2$ )

1. Potential energy will be maximum after 0.5 s
2. Kinetic energy will be maximum again after 1 s
3. Kinetic energy = potential energy at a height of 2.5 m from the ground
4. Potential energy will be minimum after 1 s

161.

The number of the significant digit in 2000 kg is:

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

162.

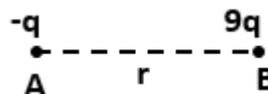
Beta plus decay is shown below. Assuming that X and Y both are neutral atoms and energy carried by  $\nu$  is negligible, the Q-value of the process is-



1.  $[m({}^A_ZX) - m({}^{A}_{Z-1}Y) - 2m_e]c^2$
2.  $[m({}^A_ZX) - m({}^{A}_{Z-1}Y)]c^2$
3.  $[m({}^A_ZX) - m({}^{A}_{Z-1}Y) - m_e]c^2$
4.  $[m({}^A_ZX) - m({}^{A}_{Z-1}Y) + m_e]c^2$

163.

Two-point charges  $-q$  and  $+9q$  are kept at  $r = 12 \text{ cm}$  apart as shown. The electric field is zero at:



1. 6 cm from point A toward B
2. 3 cm from point A opposite to B
3. 9 cm from point B towards A
4. 18 cm from the point B towards A

164.

Three masses  $m$ ,  $2m$ , and  $3m$  are thrown from the top of a tower such that  $m$  is thrown vertically upward with  $10\text{m/s}$ ,  $2m$  is thrown horizontally with  $15\text{m/s}$  and  $3m$  is thrown vertically downward with  $5\text{m/s}$ . The acceleration of centre of mass of the three-body system will be-

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

165.

The moment of inertia of a uniform disc of mass  $M$  and radius  $R$  about an axis passing through its edge and perpendicular to its plane is  $I$ . Its moment of inertia about its diameter will be:

1.  $I$
2.  $\frac{I}{2}$
3.  $\frac{I}{4}$
4.  $\frac{I}{6}$

166.

During the motion of a planet around the sun, which of the following physical quantity remains conserved?

1. Moment of inertia of planet about sun
2. Angular velocity of planet about sun
3. Angular momentum of planet about sun
4. All of these

167.

If a charging source supplies charges at constant potential ( $V$ ), then work done by the charging source is  $W = qV$  and energy stored in the charged conductor is  $U = \frac{1}{2}qV$ .

Remaining  $\frac{1}{2}qV$  energy is wasted as

1. Heat
2. Light
3. Sound
4. All of these

168.

An object is placed in front of a concave mirror. The distance of object from the focus is 10 cm and the distance of the image from the focus is 40 cm. Then the focal length of the mirror is-

1. 20 cm
2. 10 cm
3. 40 cm
4. 30 cm

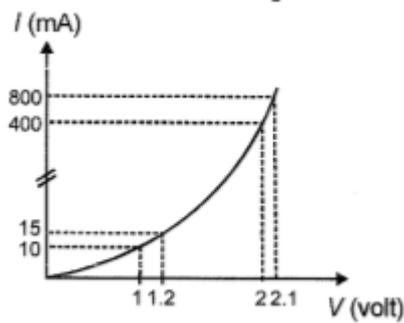
169.

A ray of light is incident on an equilateral prism at an angle of incidence  $i$  such that it is incident normally on other refracting face. Find ' $i$ '. [take  $\mu_{\text{glass}} = 2$ ]

1.  $30^\circ$
2.  $45^\circ$
3.  $60^\circ$
4. Not possible

170.

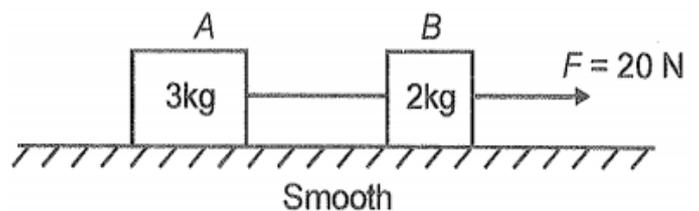
The  $I - V$  characteristics of a p-n junction diode is shown. If  $R_1$  and  $R_2$  be the dynamic resistance of the p-n junction when (i) a forward bias of 1 volt is applied and (ii) a forward bias of 2 volt is applied respectively, then  $\frac{R_1}{R_2} = ?$



1. 160
2. 16
3. 1.6
4. 0.16

171.

Two blocks A and B are connected by a light string as shown in the figure. The force exerted by the string on the block B is:



1. 20 N
2. 15 N
3. 12 N
4. 8 N

172.

Which of the following statement/s is/are incorrect regarding the motion in a plane?

1. A body can't move on a curved path with constant acceleration.
2. The angle between acceleration and velocity can be  $90^\circ$ .
3. The angle between acceleration and velocity can be other than  $90^\circ$ .
4. All of the above.

173.

In the Davisson - Germer experiment, the electron beam is made to fall on the surface of:

1. Iron crystals
2. Nickel crystals
3. Gold crystals
4. Cesium crystals

174.

Position  $x$  of a particle moving on a straight line as a function of time  $t$  is  $x = (2t^2 - 12t + 5)m$ . The particle will come to rest at time  $t$  equal to:

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

175.

What is the shortest wavelength present in the Paschen series of spectral lines?

1. 818.9 nm
2. 779 nm
3. 500 nm
4. 1024 nm

176.

In a transistor the base is very lightly doped as compared to the emitter because by doing so

1. The flow across the base region is mainly because of electrons
2. The flow across the base region is mainly because of holes
3. Recombination is decreased in the base region
4. Base current is high

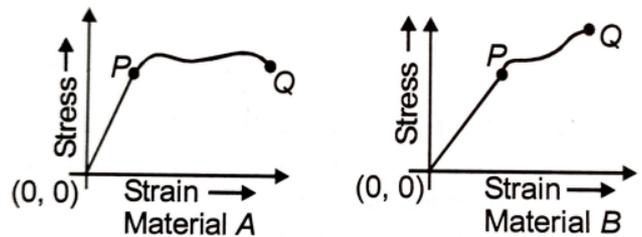
177.

Electric current has both magnitude and direction. It is a:

1. Vector quantity
2. Scalar quantity
3. Tensor quantity
4. None of these

178.

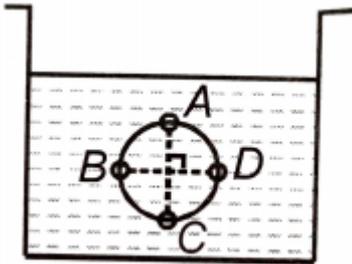
The stress-strain graphs for two materials A and B are shown in the figure. The graphs are drawn to the same scale. Select the correct statement



1. Material A has greater Young's Modulus
2. Material A is ductile
3. Material B is brittle
4. All of these

179.

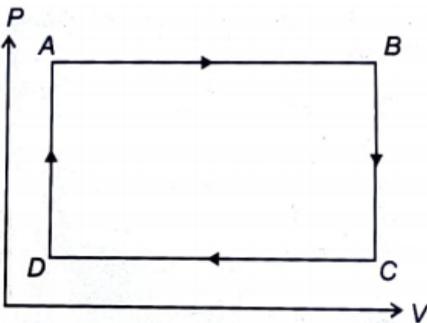
Figure shows a container filled with a liquid of density  $\rho$ . Four points A, B, C and D lie on the diametrically opposite points of a circle as shown. Points A and C lie on vertical line and points B and D lie on horizontal line. The incorrect statement is ( $p_A, p_B, p_C, p_D$  are absolute pressure at the respective points)



1.  $p_D = p_B$
2.  $p_A < p_B = p_D < p_C$
3.  $p_D = p_B = \frac{p_C - p_A}{2}$
4.  $p_D = p_B = \frac{p_C + p_A}{2}$

180.

The pressure and volume of a gas are changed as shown in the P-V diagram in this figure. The temperature of the gas will:



1. increase as it goes from A to B.
2. increase as it goes from B to C.
3. remain constant during these changes.
4. decrease as it goes from D to A.

**Fill OMR Sheet**