1.
Given below is a sample of portion of DNA strand giving the base sequence on the opposite strands. What is so, special shown in it?
5’___GAATTC___3’
3’___CTTAAG__5’

1. Deletion mutation
2. Start codon at the 5' end
3. Palindromic sequence of base pairs
4. Replication completed 26

2.
Compared with the gametophytes of the bryophytes, the gametophytes of vascular plants tends to be

1. larger but to have smaller sex organs
2. larger and to have large sex organs
3. smaller and to have smaller sex organs
4. smaller but to have larger sex organs

3.
Which one of the following statements is correct?

1. Seeds of orchids have oil-rich endosperm
2. Placentation in primrose is basal
3. Flower of a tulip is a modified shoot
4. In tomato, fruit is a capsule

4.
Arteries are best defined as the vessels which

1. carry blood away from the heart to different organs
2. break up into capillaries which reunite to form a vein
3. carry blood from one visceral organ to another visceral organs
4. supply oxygenated blood to the different organs

5.
There is a restriction endonuclease called Eco RI.
What does 'co' part in it stand for?

1. Coelom
2. Coenzyme
3. Coli
4. Colon

6.
Consider the following four conditions (I-IV) and select the correct pair of them as adaption to environment in desert lizards.
The conditions:
I. Burrowing in soil to escape high temperature
II. Losing heat rapidly from the body during high temperature
III. Bask in sun when temperature is low
IV. Insulating body due to thick fatty dermis

1. (I) and (III)
2. (II) and (IV)
3. (I) and (II)
4. (III) and (IV)

7.
‘Jaya’ and ‘Ratna’ developed for green revolution in India are the varieties of

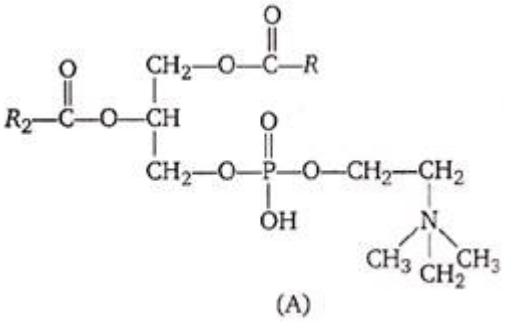
1. rice
2. wheat
3. bajra
4. maize

8.
Agarose extracted from seaweeds finds use in

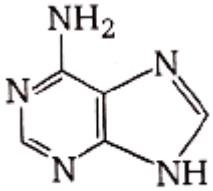
1. tissue culture
2. PCR
3. gel electrophoresis
4. spectrophotometry

9.

Which one of the following structural formulae of two organic compounds are correctly identified along with its related function?



(A)



(B)

1. A- Triglyceride – sources of energy e-major
2. B- Uracil – a component of DNA
3. A- Lecithin – a component of cell membrane
4. B- Adenine – a nucleotide that makes up nucleic acids

10.

A certain X patient is suspected to be suffering from acquired immune deficiency syndrome. Which diagnostic technique will you recommend for its detection?

1. MRI
2. Ultra Sound
3. WIDAL
4. ELISA

11.

Which one of the following statements is correct for secondary succession?

1. It occurs on a deforested site
2. It follows primary succession
3. It is similar to primary succession except that it has a relatively fast pace
4. All of the above

12.

Filiform apparatus is a characteristic feature of

1. egg
2. synergid
3. zygote
4. suspensor

13.

Which one of the following pairs of gases are the major cause of 'Green house effect'?

1. CO_2 and CO
2. CFC_s and SO_2
3. CO_2 and N_2O
4. CO_2 and O_3

14.

Which one of the following expanded forms of the following acronyms is correct?

1. UNEP - United Nations Environmental Policy
2. EPA - Environmental Pollution Agency
3. IUCN -International Union for Conservation of Nature and Natural Resources
4. IPCC -International Panel for Climate Change

15.

What are those structures that appear as 'beads-on-string' in the chromosomes when viewed under electron microscope?

1. Nucleotides
2. Nucleosomes
3. Base pairs
4. Uracil

16.

Which one of the following statements for pyramid of energy is incorrect, whereas the remaining three are correct?

1. It shows energy content of different trophic level organisms
2. It is inverted in shape
3. It is upright in shape
4. Its base is broad

17.

Match the source gland with its respective hormone as well as the function.

	Sources gland	Hormone	Function
(a)	Posterior pituitary	Vasopression	Stimulates resorption of water in the distal tubules in the nephron
(b)	Corpus luteum	Oestrogen	Supports pregnancy
(c)	Thyroid	Thyroxine	Regulates blood calcium level
(d)	Anterior pituitary	Oxytocin	Contraction of uterus muscles during child birth

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

18.
Medical Termination of Pregnancy (MTP) is considered safe up to have many weeks of pregnancy?

1. Twelve weeks
2. Eighteen weeks
3. Six weeks
4. Eight weeks

19.
The gametophyte is not an independent, free living generation in

1. Adiantum
2. Marchantia
3. Pinus
4. Polytrichum

20.
Which one of the following has the highest number of species in nature?

1. Insects
2. Birds
3. Angiosperms
4. Fungi

21.
Which one of the following statements is correct regarding blood pressure?

1. 100/55 mmHg is considered an ideal blood pressure
2. 105/50 mmHg makes one very active
3. 190/110 mmHg may harm vital organs like brain and kidney
4. 130/90 mmHg is considered high and requires treatment

22.
Given ahead is an incomplete table about certain hormone, their source glands and one major effect of each on the body in humans. Identify the correct option for the three blanks A, B and C

Gland	Secretion	Effect on Body
A	Oestrogen	Maintenance of secondary sexual characters
Alpha cells of islets of Langerhans	B	Raises blood sugar level
Anterior	C	Over secretion leads to gigantism

1. A B C
   Placenta Insulin Vasopressin
2. A B C
   Ovary Insulin Calcium
3. A B C
   Placenta Glucagon Calcitonin
4. A B C
   Ovary Glucagon Growth hormone

23.
One very special feature in the earthworm Pheretima is that

1. the typhlosole greatly increases the effective absorption area of the digested food in the intestine
2. the S-shaped setae embedded in the integument are the defensive weapons used against the enemies
3. it has a long dorsal tubular heart
4. fertilization of eggs occurs inside the body

24.
The 'Eyes' of the potato tuber are

1. flower buds
2. shoot buds
3. axillary buds
4. root buds

25.
Which of the following is mainly produced by the activity of anaerobic bacteria on sewage?

1. Propane
2. Mustard gas
3. Marsh gas
4. Laughing gas

26.
Two friends are eating together on a dining table. One of them suddenly starts coughing while swallowing some food. This coughing would have been due to improper movement of

1. diaphragm
2. neck
3. tongue
4. epiglottis

27.
The figure given below shows a small part of human lung where exchange of gas takes place. In which one of the options given below, the one part A, B C or D is correctly identified along with its function.

1. A – Alveolar – main site of exchange of respiratory gases
2. D – Capillary wall – exchange of and take place here
3. B – Red blood cell – transport of mainly
4. – Arterial capillary – passes oxygen to tissues

28.
If for some reason, the vasa efferentia in the human reproductive system get blocked, the gametes will not be transported from

1. epididymis to vas deferens
2. ovary to uterus
3. vagina to uterus
4. testes to epididymis

29.
Which one of the following helps in absorption of phosphorus from the soil by plants?

1. Rhizobium
2. Frankia
3. Anabaena
4. Glomus

30.
Large woody vines are more commonly found in

1. mangroves
2. tropical rainforests
3. alpine forests
4. temperate forests

31.
The ciliated columnar epithelial cells in humans are known to occur in

1. bronchioles and fallopian tubes
2. bile duct and Oesophagus
3. fallopian tubes and urethra
4. eustachian tube and stomach lining

32.
A person with unknown blood group under system, has suffered much blood loss in accident and needs immediate blood transfusion. His one friend who has a v certificate of his own blood type, offers for blood donation without delay. What would have the type of blood group of the donor friend?

1. Type AB
2. Type O
3. Type A
4. Type B

33.
Which one of the following is the most widely accepted method of contraception in India, as present?

1. Tubectomy
2. Diaphragms
3. IUDs (Intra Uterine Devices)
4. Cervical caps

34.
CAM helps the plants in

1. secondary growth
2. disease resistance
3. reproduction
4. conserving water

35.
The function of leghemoglobin in the root nodules of legumes is

1. oxygen removal
2. nodule differentiation
3. expression of nif gene
4. inhibition of nitrogenase activity

36.
'Bundle of His' is a part of which one of the following organs in humans?

1. Heart
2. Kidney
3. Pancreas
4. Brain

37.
Organisms called Methanogens are most abundant in a

1. cattle yard
2. polluted stream
3. hot spring
4. sulphur rock

38.
Which of the following enzymes carries out the initial step in the digestion of milk in human adults?

1. Rennin
2. Lipase
3. Trypsin
4. Pepsin

39.
The purplish-red pigment rhodopsin contained in the rods type of photoreceptor cells of the human eyes is a derivative of

1. vitamin-C
2. vitamin-D
3. vitamin-A
4. vitamin-B

40.
The process of RNA interference has been used in the development of plants resistant to

1. fungi
2. viruses
3. insects
4. nematodes

41.
Which one of the following organisms is not an example of eukaryotic cells?

1. Escherichia coli
2. Euglena viridis
3. Amoeba proteus
4. Paramecium caudatum

42.
Which one of the following conditions correctly describes the manner of determining the sex in the given example?

1. XO type of sex chromosomes determine male sex in grasshopper
2. XO condition in humans as found in Turner syndrome, determines female sex
3. Homozygous sex chromosomes (XX) produce male in Drosophila
4. Homozygous sex chromosomes (ZZ) determine female sex in birds.

43.
Maximum number of existing transgenic animals is of

1. mice
2. cow
3. pig
4. fish

44.
Which one of the following shows maximum genetic diversity in India?

1. Rice
2. Maize
3. Mango
4. Groundnut

45.
Continuous addition of sugars in 'fed-batch' fermentation is done to

1. obtain antibiotics
2. purify enzymes
3. degrade sewage
4. produce methane

46.
What would be the number of chromosomes of the aleurone cells of a plant with 42 chromosomes in its root tip cells?

1. 63
2. 84
3. 21
4. 42’

47.
Nitrifying bacteria

1. convert free nitrogen to nitrogen compounds
2. convert proteins into ammonia
3. reduce nitrates to free nitrogen
4. oxidize ammonia to nitrates

48.
Mannitol is a sugar alcohol. It is as stored food in

1. Fucus
2. Gracillaria
3. Chara
4. Porphyra

49.
Which one of the following is not a biofertilizer?

1. Rhizobium
2. Nostoc
3. Mycorrhiza
4. Agrobacterium

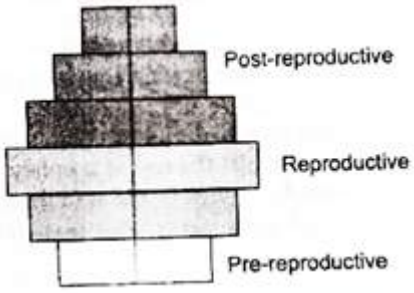
50.
Mass of living matter at a tropic level in an area at any times is called

1. Detritus
2. Humus
3. Standing state
4. Standing crop

51.
Which one of the following plasma proteins is involved in the coagulation of blood?

1. Serum amylase
2. A globulin
3. Fibrinogen
4. An albumin

52.
What type of human population is represented by the following age pyramid?



1. Stable population
2. Declining population
3. Expanding population
4. Vanishing population

53.
Important site for formation of glycoproteins and glycolipids is.

1. Golgi apparatus
2. plastid
3. lysosome
4. vacuole

54.
Which of the following is correctly states as it happens in the common cockroach?

1. Oxygen is transported by hemoglobin in blood
2. Nitrogenous excretory product is urea
3. The food is ground by mandibles and gizzard
4. Malpighian tubules are excretory organs projecting out from the colon

55.
Which one of the following correctly explains the function of a specific part of a human nephron?

1. Henle's loop – most re-absorption of the major substances from the glomerular filtrate
2. Distal convoluted tubule – reabsorption of ions into the surrounding blood capillaries
3. Afferent arteriole – carries the blood away from the glomerulus towards renal vein
4. Podocytes - create minute spaces (slit pores) for the filtration of blood into the Bowman's capsule

56.
What will you look for to identity the sex of the following? Select the correct match.

1. Male frog – a copulatory pad on the first digit of the hind limb.
2. Female cockroach – anal cerci
3. Male shark – claspers borne on pelvic fins
4. Female Ascaris – sharply curved posterior end

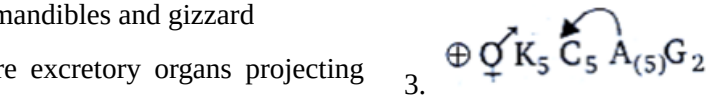
57.
Select the correct option with respect to mitosis.

1. Chromatids start moving towards opposite poles in telophase.
2. Golgi complex and endoplasmic reticulum are still visible at the end of prophase.
3. Chromosomes move to the spindle equator and get aligned along equatorial plate in metaphase.
4. Chromatids separate but remains in the center of the cell in anaphase.

58.
A collection of plants and seeds having diverse alleles of all the genes of a crop is called

1. germplasm
2. gene library
3. genome
4. herbarium

59.
The correct floral formula of chilli is

1. $\oplus ♀♂ K_5\ C_5\ A_5\ \underline{G}_{(2)}$
2. $\oplus ♀♂ K_5\ C_5\ A_5\ G_{(2)}$
3. 
4. $\oplus ♀♂ K_{(5)}\ C_5\ A_5\ G_{(2)}$

60.
The most common substrate used in distilleries for the production of ethanol is

1. soya meal
2. ground gram
3. molasses
4. com meal

61.
Of the total incident solar radiation proportion of PAR is

1. about 60%
2. about 50%
3. more than 80%
4. about 70%

62.
Which one of the following elements in plants not re-mobilized?

1. Calcium
2. Potassium
3. Sulphur
4. Phosphorus

63.
Ethanol is commercially produced through a particular species of

1. Clostridium
2. Trichoderma
3. Aspergillus
4. Saccharomyces

64.
A large proportion of oxygen is left unused the human blood even after its uptake by body tissues. This O_2

1. raises the P_{co2} blood to 75 mm of Hg
2. is enough to keep oxyhaemoglobin
3. helps in releasing more O_2 to the epithelial tissues
4. acts as a reserve during muscular exercise

65.
Which one of the following is categorized as a parasite in true senses?

1. Human foetus developing inside the uterus draws nourishment from the mother
2. Head louse living on the human scalp as laying eggs on human hair
3. The cuckoo (koel) lays its eggs in crow's nest
4. The female Anopheles bites and sucks blood from humans

66.
At which stage of HIV infection does one usually shows symptoms of AIDS?

1. When viral DNA is produced by reverse transcriptase
2. When HIV replicates rapidly in helper T-lymphocytes and damages large number of these
3. With 15 days of sexual contact with an infected person
4. When the infecting retrovirus enters host cells

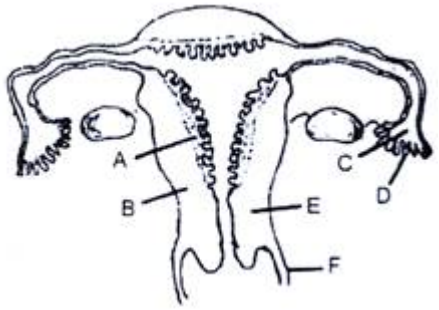
67.
Which one of the following statements is wrong in case Bhopal gas tragedy?

1. Thousands of human beings died
2. Radioactive fall-out engulfed Bhopal
3. It took place on the night of December 2/3, 1984
4. Methyl isocyanate gas leakage took place

68.
Ground tissue includes

1. all tissues except epidermis and vascular bundles
2. epidermis and cortex
3. all tissues internal to endodermis
4. all tissues external to endodermis

69.
The figure given below depicts a diagrammatic sectional view of the female reproductive system of humans. Which one set of three parts out of A-F have been correctly identified?



1. C-Infundibulum, D-Fimbriae, E-Cervix
2. D-Oviducal funnel, E-Uterus, F-Cervix
3. A-perimetrium, B-Myometrium, C-Fallopian tube
4. B-Endometrium, C-Infundibulum, D-Fimbriae

70.
Bioethanol can be produced by using which of the following plants?

1. Brassica
2. Zea maize
3. Jatropha
4. Pongamia

71.
Flowers are zygomorphic in

1. gulmohur
2. tomato
3. datura
4. mustard

72.
A drupe develope in

1. wheat
2. pea
3. tomato
4. mango

73.
Which one of the following also acts as a catalyst in a bacterial cell?

1. sn RNA
2. hn RNA
3. 23 S rRNA
4. 5 S rRNA

74.
What was the most significant trend in the evolution of modem man (Homo sapiens) from his ancestors?

1. Shortening of jaws
2. Binocular vision
3. Increasing brain capacity
4. Upright posture

75.
In eubacteria, a cellular component that resembles eukaryotic cells is

1. nucleus
2. ribosomes
3. cell wall
4. plasma membrane

76.
In which one of the following the genus name, its two characters and its class/phylum are correctly matched?

Genus	Two Characters	Class/phylum
(a) Salman dra	(i) A tympanum represents ear (ii) Fertilisation is extermal	Amphibia
(b) Pteropus	(i) Skin possesses hair (ii) Oviparous	Mammalia
(c) Aurelia	(i) Cnidobles (ii) organ leval of Organization	Coelenterata
(d) Ascaris	(i) Body segmented (ii) Males and Female distinct	Annelida

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

77.
Which one of the following animals is correctly matched with its particular named taxonomic category?

1. Cuttlefish – Mollusca, a class
2. Humans – Primate, the family
3. Housefly – Musca, an order
4. Tiger – Tigris, the species

78.
Mutations can be induced with

1. IAA
2. ethylene
3. gamma radiations
4. infrared radiations

79.
Inland plants, the guard cells differ from other epidermal cells in having

1. mitochondria
2. endoplasmic reticulum
3. chloroplasts
4. cytoskeleton

80.
Wind pollination is common

1. lilies
2. grasses
3. orchids
4. legumes

81.
Which one of the following is not a part of a renal pyramid?

1. Convoluted tubules
2. Collecting ducts
3. Loops Henle
4. Peritubular capillaries

82.
'Himgiri' developed by hybridization and selection for disease resistance against rust pathogens is a variety of

1. maize
2. sugarcane
3. Wheat
4. chilli

83.
Which one of the following groups of animals is correctly matched with its one characteristic feature without even a single exception?

1. Chordata – possess a mouth provided with an upper and a lower jaw
2. Chondrichthyes – possess cartilaginous endoskeleton
3. Mammalia – give birth to young ones
4. Reptilia – posses 3-incompletely heart with one incompletely divided ventricle.

84.
Which one of the following acts as a physiological barrier to the entry of microorganisms in human body?

1. Tears
2. Monocytes
3. Skin
4. Epithelium of urogenital tract

85.
When a neuron is in resting state, i.e., not conducting any impulse, the axonal membrane is

1. equally permeable to both Na + and K+ ions
2. impermeable to both Na+ and K+ ions
3. comparatively more permeable to K+ ions and nearly impermeable to Na + ions
4. comparatively more permeable to Na + ions and nearly impermeable to K+ ions

86.
Nucellar polyembryony is reported in species of

1. Gossypium
2. Triticum
3. Brassia
4. Citrus

87.
Peptide synthesis inside a cell takes place in

1. mitochondria
2. chromoplast
3. ribosomes
4. chloroplast

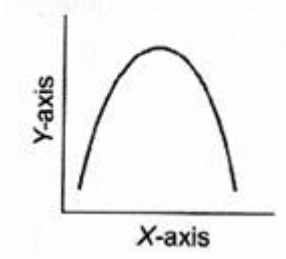
88.
When two unrelated individuals or lines crossed, the performance of F_1 hybrid is of superior to both its parents. This phenomenon is called

1. transformation
2. splicing
3. metamorphosis
4. heterosis

89.
The cork cambium, cork and secondary cortex are collectively called

1. phellogen
2. periderm
3. phellem
4. phelloderm

90.
The curve given below shows enzymatic activity with relation to three conditions (pH, temperature and substrate concentration) what do the two axises (X and Y) represent?



X-axis	Y-axis
(a) temperature	Enzyme activity
(b) substrate concentration	Enzymatic activity
(c) enzymatic activity	Temperature
(d) enzymatic activity	pH

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

91.
Uricotelic mode of passing out nitrogenous wastes is found in

1. birds and annelids
2. amphibians and reptiles
3. insects and amphibians
4. reptiles and birds

92.
The testes in humans are situated outside the abdominal cavity inside a pouch called scrotum. The purpose served is for

1. escaping any possible compression by the visceral organs
2. providing more space for the growth epididymis
3. providing a secondary sexual feature for exhibiting the male sex
4. maintaining the scrotal temperature low than the internal body temperature

93.
An organism used as a bio-fertilizer for raising soyabean crop is

1. Azospirillum
2. Rhizobium
3. Nostoc
4. Azotobacter

94.
Which one of the following is wrongly matched?

1. Puccinia - Smut
2. Root Exarch- protoxylem
3. Cassia- Imbricate aestivation
4. Root pressure - Guttation

95.
In which one of the following pollination is autogamous?

1. Xenogamy
2. Chasmogamy
3. Cleistogamy
4. Geitonogamy

96.
The ovary is half inferior in flowers of

1. cucumber
2. cotton
3. guava
4. peach

97.
Which one of the following statements is correct with respect to kidney function regulation?

1. Exposure to cold temperature stimulates ADH release
2. An increase in glomerular blood flow stimulates formation of angiotensin II
3. During summer when body loses lot of water by evaporation, the release of ADH is suppressed
4. When someone drinks a lot of water, ADH release is suppressed.

98.
Archegoniophore is present in

1. Chara
2. Adiantum
3. Funaria
4. Marchantia

99.
Where will you look for the sporozoites of the malarial parasite?

1. Red blood corpuscles of humans suffering from malaria
2. Spleen of infected humans
3. Salivary glands of freshly moulted female anopheles mosquito
4. Saliva of infected female anopheles mosquito

100.
A prokaryotic autotrophic nitrogen-fixing symbiont is found in

1. Cycas
2. Cicer
3. Pisum
4. Alnus

101.
Standard electrode potential of three metals X, Y and Z are -1.2 V, +0.5 V and -3.0 V

respectively. The reducing power of these metals will be

1. Y > X > Z
2. Z > X > Y
3. X > Y > Z
4. Y > Z > X

102.

Considering the state of hybridization of carbon atoms, find out the molecules among the following which is linear.

1. $CH_3 - C \equiv C - CH_3$
2. $CH_2 = CH - CH_2 - C \equiv CH$
3. $CH_3 - CH_2 - CH_2 - CH_3$
4. $CH_3 - CH = CH - CH_3$

103.

Clemmensen reduction of a ketone is carried out in the presence of which of the following?

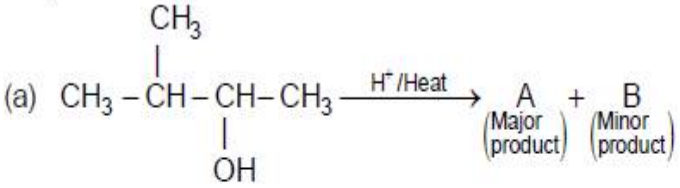
1. Zn-Hg with HCl
2. $LiAlH_4$
3. H_2 and Pt as catalyst
4. Glycol with KOH

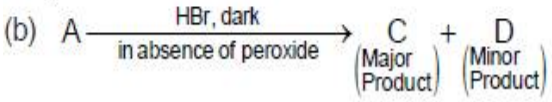
104.
A gaseous mixture was prepared by taking equal moles of CO and N_2. If the total pressure of the mixture was found 1 atmosphere, the partial pressure of the nitrogen (N_2) in the mixture is

1. 0.8 atm
2. 0.9 atm
3. 1 atm
4. 0.5 atm

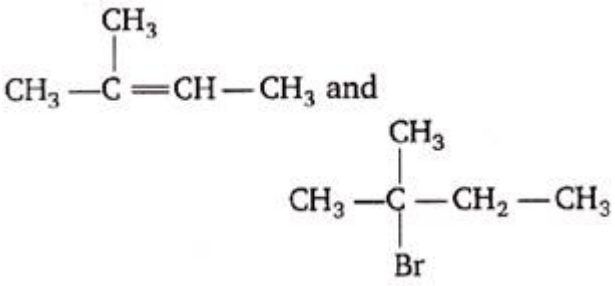
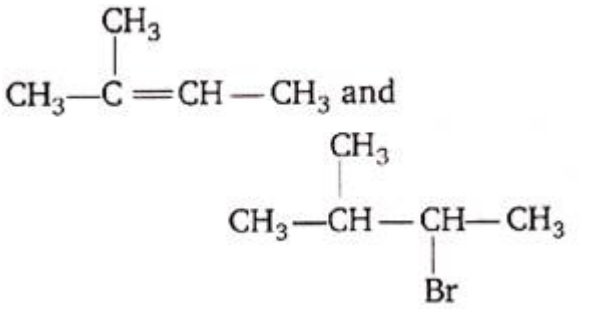
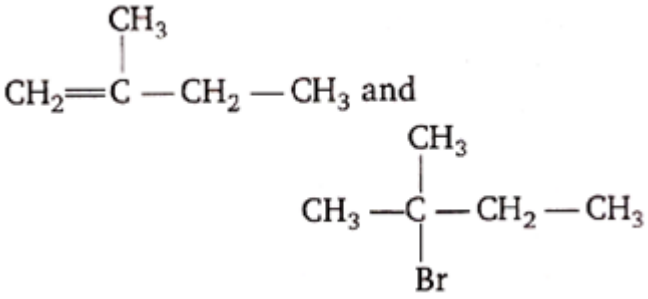
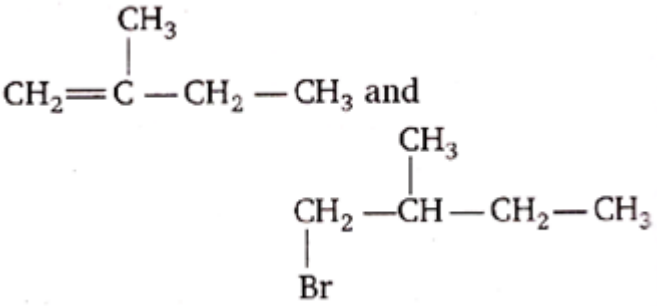
105.

In the following reactions,





The major products A. and C. are respectively

1. 
2. 
3. 
4. 

106.

If x is amount of adsorbate and m is amount of adsorbent, which of the following relations is not related to adsorption process?

1. $\frac{x}{m}$ = f(T) at constant P
2. p = f(T) at constant (x/m)
3. $\frac{x}{m} = p \times T$
4. $\frac{x}{m}$ = f(p) at constant T

107.

The freezing point depression constant for water is -1.86°C m^{-1}. If 5.00 g Na_2SO_4 is dissolved in 45.0 g H_2O, the freezing point is changed by -3.82°C. Calculate the van't Hoff factor for Na_2SO_4.

1. 2.63
2. 3.11
3. 0.381
4. 2.05

108.

Which of the two ions from the list given below have the geometry that is explained by the same hybridisation of orbitals, $NO_2^-, NO_3^-, NH_2^-, NH_4^-, SCN^-$?

1. NH_4^- and NO_3^-
2. SCN^- and NH_2^-
3. NO_2^- and NH_2^-
4. NO_2^- and NO_3^-

109.

The d-electron configurations of Cr^{2+}, Mn^{2+}, Fe^{2+}, and Co^{2+} are d^4, d^5, d^6, and d^7 respectively. Which one of the following will exhibit minimum paramagnetic behavior?
(At. No Cr= 24, Mn= 25, Fe=26, Co= 27)

1. $[Fe(H_2O)_6]^{2+}$
2. $[Co(H_2O)_6]^{2+}$
3. $[Cr(H_2O)_6]^{2+}$
4. $[Mn(H_2O)_6]^{2+}$

110.

For the four successive transition elements (Cr, Mn, Fe and Co), the stability of +2 oxidation state will be there in which of the following order?
(At. No Cr= 24, Mn= 25, Fe=26, Co= 27)

1. Fe>Mn>Co>Cr
2. Co>Mn>Fe>Cr
3. Cr>Mn>Co>Fe
4. Mn>Fe>Cr>Co

111.

The van't Hoff factor, i, for a compound that undergoes dissociation and association in a solvent, is respectively -

1. less than one and less than one
2. greater than one and less than one
3. greater than one and greater than one
4. less than one and greater than one

112.

Which one of the following statements is not true regarding (+) lactose?

1. (+) lactose is a β-glycoside and a molecule of D(+) galactose
2. (+) lactose is a reducing sugar and does not exhibit mutarotation
3. (+) lactose, $C_{12}H_{22}O_{11}$ contains 8-0 H groups
4. On hydrolysis (+) lactose gives equal amount of D(+) glucose and D(+) galactose

113.

If the E^0_{cell} for a given reaction has a negative value then which of the following gives the correct relationships for the values of ΔG^0 and K_{eq} ?

1. $\Delta G^0 < 0$; $K_{eq} > 1$
2. $\Delta G^0 < 0$; $K_{eq} < 1$
3. $\Delta G^0 > 0$; $K_{eq} < 1$
4. $\Delta G^0 > 0$; $K_{eq} > 1$

114.
Which one of the following is employed as an antihistamine?

1. Diphenylhydramine
2. Norethindrone
3. Omeprazole
4. Chloramphenicol

115.
Which of the following elements is present as the impurity to the maximum extent in the pig Iron?

1. Carbon
2. Silicon
3. Phosphorus
4. Manganese

116.

Of the following complex ions, which is diamagnetic in nature?

1. $[Ni(CN)_4]^{2-}$
2. $[CuCl_4]^{2-}$
3. $[CoF_6]^{3-}$
4. $[NiCl_4]^{2-}$

117.
The electrode potentials for

$Cu^{2+}(aq) + e^- \rightarrow Cu^+(aq)$

and $Cu^+(aq) + e^- \rightarrow Cu(s)$

are +0.15 V and +0.50 V respectively. The value of $E^0_{Cu^{2+}/Cu}$ will be (electrochemistry)

1. 0.325 V
2. 0.650 V
3. 0.150V
4. 0.500 V

118.
Actinoids exhibit more number of oxidation states than lanthanoids. It is because of

1. the greater metallic character of the lanthanoids than that of the corresponding actinoids
2. more energy difference between 5f and 6d orbitals than that between 4f and 5d orbitals
3. the lesser energy difference between 5f and 6d orbitals than that between 4f and 5d orbitals
4. more active nature of the actinoids

119.
Which one of the following statements for the order of a reaction is incorrect?

1. Order is not influenced by stoichiometric coefficient of the reactants
2. Order of reaction is sum of power to the concentration terms of reactants to express the rate of reaction
3. Order of reaction is always the whole number
4. Order can be determined by experiments only

120.

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

121.

Which of the following is least likely to behave as Lewis base?

1. NH_3
2. BF_3
3. OH^-
4. H_2O

122.
Of the following which one is classified as polyester polymer? (polymers)

1. Bakelite
2. Melamine
3. Nylon-66
4. Terylene

123.

A buffer solution is prepared in which the concentration of NH_3 is 0.30 M and the concentration of NH_4^+ is 0.20 M. if the equilibrium constant, K_b for NH3 equals 1.8×10^{-5}, what is the pH of this solution?
(log 2.7 = 0.43)

1. 9.43
2. 11.72
3. 8.73
4. 9.08

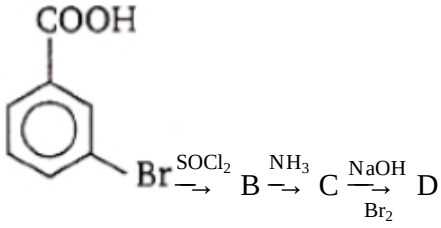
124.

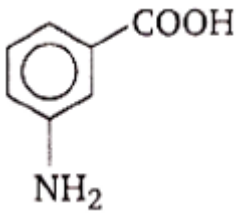
Standard electrode potential for Sn^{4+}/Sn^{2+} couple is +0.15 V and that for the Cr^{3+}/Cr couple is -0.74. These two couple in their standard state are connected to make a cell. The cell potential will be

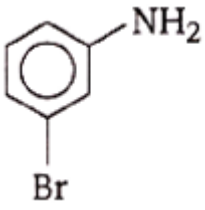
1. +0.89 V
2. +0.18 V
3. +1.83 V
4. +1.199 V

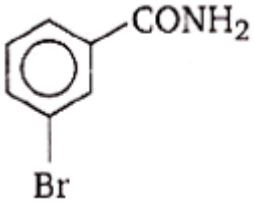
125.

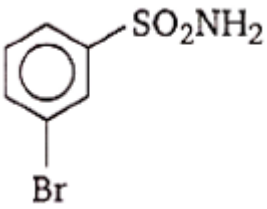
In a set of reactions, m-bromobenzoic acid gave a product D. Identify the product D



1. 

2. 

3. 

4. 

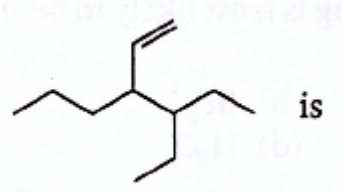
126.

Name the type of the structure of silicate in which one oxygen atom of $[SiO_4]^{4-}$ is shared?

1. Sheet silicate
2. Pyrosilicate
3. Three dimensional silicate
4. Linear chain silicate

127.

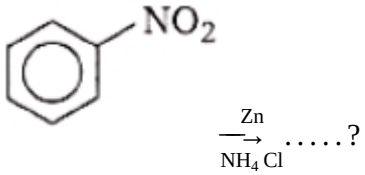
The correct IUPAC name of the compound

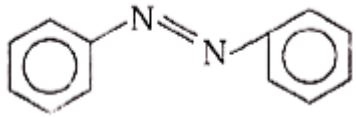
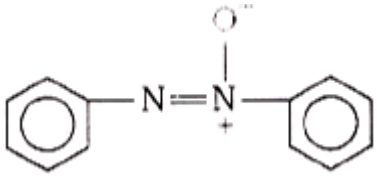
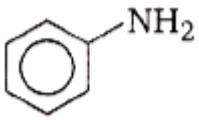
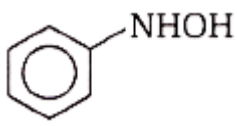
 is

1. 3-ethyl-4-ethenylheptane
2. 3-ethyl-4-propylhex-5-ene
3. 3-(1-ethyl propyl) hex-1-ene
4. 4-ethyl-3-propylhex-1-ene

128.

What is the product obtained in the following reaction?



1. 
2. 
3. 
4. 

129.

Which of the following is correct option for free expansion of an ideal gas under adiabatic condition?

1. $q \neq 0,\ \Delta T = 0,\ W = 0$
2. $q = 0,\ \Delta T = 0,\ W = 0$
3. $q = 0,\ \Delta T < 0,\ W \neq 0$
4. $q = 0,\ \Delta T \neq 0,\ W = 0$

130.

Enthalpy change for the reaction,

$4H(g) \rightarrow 2H_2(g) is -869.6\,kJ$

The dissociation energy of H-H bond is

1. -869.6 kJ
2. +434.8kJ
3. +217.4kJ
4. -434.8 kJ

131.

Two gases A and B having the same volume diffuse through a porous partition in 20 and 10 second respectively. The molecular mass of A is 49 u. Molecular mass of B will be

1. 12.25 U
2. 6.50 U
3. 25.00 U
4. 50.00 U

132.

The complex $[Co(NH_3)_6][Cr(CN)_6]$ and $[Cr(NH_3)_6][Co(CN)_6]$ are the examples of which type of isomerism?

1. Ionisation isomerism
2. Co-ordination isomerism
3. Geometrical isomerism
4. Linkage isomerism

133.

Which of the following pairs of metals is purified by van Arkel method?

1. Zr and Ti
2. Ag and Au
3. Ni and Fe
4. Ga and In

134.

Which one is a nucleophilic substitution reaction among the following?

1. $RCHO + R'MgX \rightarrow R - \underset{\underset{OH}{|}}{CH} - R'$
2. $CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_2Br + NH_3 \rightarrow CH_3 - CH_2 - \underset{\underset{CH_3}{|}}{CH} - CH_2NH_2$
3. $CH_3CHO + HCN \rightarrow CH_3CH(OH)CN$
4. $CH_3 - CH = CH_2 + H_2O \xrightarrow{H^+} CH_3 - \underset{\underset{OH}{|}}{CH} - CH_3$

135.

Which of the following compounds has the lowest melting point?

1. $CaBr_2$
2. CaI_2
3. CaF_2
4. $CaCl_2$

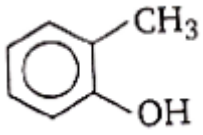
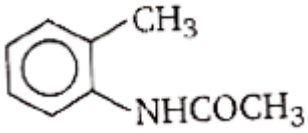
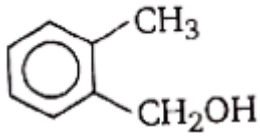
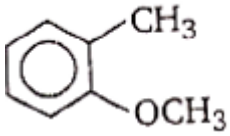
136.

The total number of atomic orbitals in fourth energy level of an atom is

1. 16
2. 32
3. 4
4. 8

137.

Which one of the following is most reactive towards electrophilic reagent?

1. 
2. 
3. 
4. 

138.

By what factor does the average velocity of a gaseous molecule increase when the temperature (in Kelvin) is doubled?

1. 2.8
2. 4.0
3. 1.4
4. 2.0

139.

In Duma's method of estimation of nitrogen 0.35 of an organic compound gave 55 mL of nitrogen collected at 300 K temperature and 715 mm pressure. The percentage composition of nitrogen in the compound would be
(Aqueous tension at 300K= 15 mm)

1. 16.45
2. 17.45
3. 14.45
4. 15.45

140.
The complex, [Pt(Py)(NH_3)BrCl] will have how many geometrical isomers?

1. 4
2. 0
3. 2
4. 3

141.

Mole fraction of solute in a 1.00 molal aqueous solution is

1. 0.0177
2. 0.0344
3. 1.770
4. 0.1770

142.

The value of ΔH for the reaction is less than zero. Formation of $X_2(g) + 4\,Y_2(g) \leftrightharpoons 2XY_4(g)$ will be favoured at

1. low pressure and low temperature
2. high temperature and low pressure
3. high pressure and low temperature
4. high temperature and high pressure

143.
The Lassaigne's extract is boiled with conc HNO_3 while testing for halogens. Because ..

1. help in the precipitation of AgCl
2. increases the solubility product of AgCl
3. increase the concentration of NO_3^- ions
4. decomposes Na_2 S and NaCN, if formed

144.

For the reaction $(N_2(g) + O_2(g) \leftrightharpoons 2NO(g))$ the equilibrium constant is K1. The equilibrium constant is K2 for the reaction $2NO(g) + O_2(g) \leftrightharpoons 2NO_2(g)$
what is K for the reaction

$NO_2(g) \leftrightharpoons \frac{1}{2}N_2(g) + O_2(g)$

1. $1/4\ (4\ K_1\ K_2)$
2. $[1/k_1k_2]^{1/2}$
3. $1/(k_1k_2)$
4. $1/(2k_1k_2)$

145.

The energies E_2 of two radiations are 25 eV and 50 eV respectively. The relation between their wavelenghs i.e., λ_1 and λ_2 will be

1. $\lambda_1 = 2\lambda_2$
2. $\lambda_1 = 4\lambda_2$
3. $\lambda_1 = \frac{1}{2}\lambda_2$
4. $\lambda_1 = \lambda_2$

146.

Which of the following has the minimum bond length?

1. O_2^-
2. O_2^{2-}
3. O_2
4. O_2^+

147.

Acidified $K_2Cr_2O_7$ solution turns green when Na_2SO_3 is added to it. This is due to the formation of

1. CrO_4^{2-}
2. $Cr_2(SO_3)_3$
3. $CrSO_4$
4. $Cr_2(SO_4)_3$

148.
Which one of the following statements is not true?

1. Concentration of dissolved oxygen below 6 ppm is good for the growth of fish

2. Clean water would have a BOD value of less than 5 ppm

3. Oxides of sulphur, nitrogen and carbon are the most widespread air pollutant

4. pH of drinking water should be between 6.5-8.5

149.

If n=6, the correct sequence for filling of electrons will be

1. ns → (n − 1) d → (n − 2) f → np

2. ns − (n − 2) f → np → (n − 1) d

3. ns − np → (n − 1)d → (n − 2) f

4. ns → (n − 2) f → (n − 1) d → np

150.

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. $CaOCl_2$

151.

A person of mass 60 kg is inside a lift of mass 940 kg and presses the button on control panel. The lift starts moving upwards with an acceleration $1.0\ m/s^2$. If $g = 10\ m/s^2$, the tension in the supporting cable is

1. 9680 N

2. 11000 N

3. 1200 N

4. 8600 N

152.

In the Davisson and Germer experiment, the velocity of electrons emitted from the electron gun can be increased by

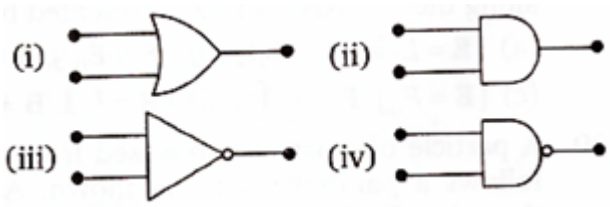
1. increasing the filament current

2. decreasing the filament current

3. decreasing the potential difference between the anode and filament

4. increasing the potential difference between the anode and filament

153.
Symbolic representation of four gates are shown as:



Pick out which ones are for AND, NAND, and NOT gates, respectively.

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

2. (ii), (iii), and (iv)

3. (ii), (iv), and (iii)

4. (ii), (iv), and (i)

154.

A radioactive nucleus of mass M emits a photon of frequency ν and the nucleus will recoil. The recoil energy will be

1. $\frac{h^2\nu^2}{2Mc^2}$

2. zero

3. $\frac{h\nu}{c\sqrt{2M}}$

4. $\frac{c\sqrt{2M}}{h\nu}$

155.

A particle moves in a circle of radius 5 cm with constant speed and time period 0.2π sec. The acceleration of the particle is:

1. $25\ m/s^2$

2. $36\ m/s^2$

3. $5\ m/s^2$

4. $15\ m/s^2$

156.

The power obtained in a reactor using U^{235}disintegration is 1000 kW. The mass decay of U^{235}per hour is approximately equal to:

1. 20 μg
2. 40 μg
3. 1 μg
4. 10 μg

157.

The half-life of a radioactive element X is 50 yrs. It decays to another element Y which is stable. The two elements X and Y were found to be in the ratio of 1:15 in a sample of a given rock. The age of the rock was estimated to be:

1. 200 yr
2. 250 yr
3. 100 yr
4. 150 yr

158.

A parallel plate condenser has a uniform electric field E (V/m) in the space between the plates. If the distance between the plates is d(m) and area of each plate is $A(m^2)$, the energy (joule) stored in the condenser is

1. $\frac{1}{2}(\varepsilon_o)(E)^2$
2. $\frac{E^2\ Ad}{\varepsilon_o}$
3. $\frac{1}{2}(\varepsilon_o)\ E^2\ Ad$
4. $(\varepsilon_o)\ EAd$

159.

The instantaneous angular position of a point on a rotating wheel is given by the equation,

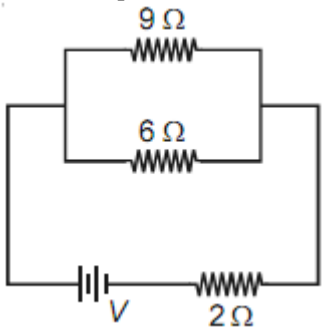
$\theta(t) = 2t^3 - 6t^2$

The torque on the wheel becomes zero at:

1. t= 0.5 s
2. t= 0.25 s
3. t= 2 s
4. t= 1 s

160.

If power dissipated in the 9 Ω resistor in the circuit shown is 36 W, the potential difference across the 2 Ω resistor is



1. 8 V
2. 10 V
3. 2 V
4. 4 V

161.

Two waves are represented by the equations $y_1 = a\ \sin(\omega t + kx + 0.57)$ m and $y_2 = a\cos(\omega t + kx)$ m, where x is in meter and t in second. The phase difference between them is

1. 1.25 rad
2. 1.57 rad
3. 0.57 rad
4. 1.0 rad

162.

In the photoelectric emission process from a metal of work function 1.8 eV, the kinetic energy of most energetic elections is 0.5 eV. The corresponding stopping potential is:

1. 1.3 V
2. 0.5 V
3. 2.3 V
4. 1.8 V

163.

A person of mass 60 kg is inside a lift of mass 940 kg and presses the button on control panel. The lift starts moving upwards with an acceleration of 1.0 ms^{-2}. If g = 10 ms^{-2}, the tension in the supporting cable is

1. 9680 N
2. 11000N
3. 1200N
4. 8600 N

164.
Out of the following functions represents motion of a particle which represent SHM

I. $y = \sin \omega t - \cos \omega t$

II. $y = \sin^3 \omega t$

III. $y = 5 \cos(\frac{3\pi}{4} - 3\omega t)$

IV. $y = 1 + \omega t + \omega^2 t^2$

1. Only (IV) does not represent SHM
2. (I) and (III)
3. (I) and (II)
4. Only (I)

165.

The moment of inertia of a thin uniform rod of mass M and length L about an axis passing through its mid-point and perpendicular to its length is I_0. Its moment of inertia about an axis passing through one of its ends and perpendicular its length is:

1. $I_0 + ML^2/4$
2. $I_0 + 2ML^2$
3. $I_0 + ML^2$
4. $I_0 + ML^2/2$

166.
If a small amount of antimony is added to germanium crystal:

1. the antimony becomes an acceptor atom
2. there will be more free electrons than holes in the semiconductor
3. its resistance is increased
4. it becomes a p-type semiconductor

167.
Sound waves travel at 350 m/s through the warm air and at 3500 m/s through brass. The wavelength of a 700 Hz acoustic wave as it enters brass from warm air:

1. increase by a factor 20
2. increase by a factor 10
3. decrease by a factor 20
4. decrease by a factor 10

168.
Light of two different frequencies whose photons have energies 1 eV and 2.5 eV respectively illuminate a metallic surface whose work function is 0.5 eV successively. Ratio of maximum speeds of emitted electrons will be

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

169.

A current of 2 A flows through a 2 Ω resistor when connected across a battery. The same battery supplies a current of 0.5 A when connected across a 9 Ω resistor. The internal resistance of the battery is :

1. 1/3 Ω
2. 1/4 Ω
3. 1 Ω
4. 0.5 Ω

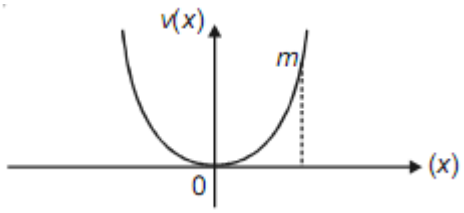
170.

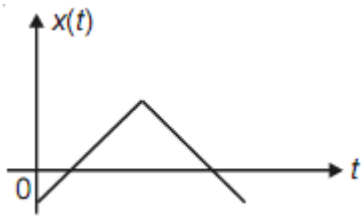
The electric and the magnetic fields, associated with an electromagnetic wave, propagating along the +z-axis, can be represented by:

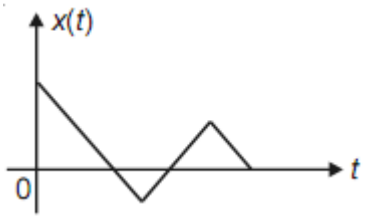
1. $[E = E_0 \hat{k},\ B = B_0 \hat{i}]$
2. $[E = E_0 \hat{j},\ B = B_0 \hat{j}]$
3. $[E = E_0 \hat{j},\ B = B_0 \hat{k}]$
4. $[E = E_0 \hat{i},\ B = B_0 \hat{j}]$

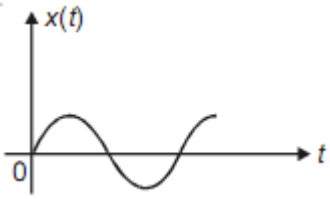
171.

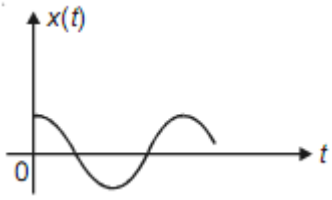
A particle of mass m is released from rest and follows a parabolic path as shown, Assuming that the displacement of the mass from the origin is small, which graph correctly depicts the position of the particle as a function of time?



1. 

2. 

3. 

4. 

172.

When 1 kg of ice at 0^0C melts into the water at 0^0C, the resulting change in its entropy, taking latent heat of ice to be 80 cal/gm, is

1. 8×10^4 cal /K
2. 80 cal /K
3. 293 cal /K
4. 273 cal /K

173.

A planet moving along an elliptical orbit is closest to the sun at a distance r_1 and farthest away at a distance of r_2. If v_1 and v_2 are the linear velocities at these points respectively, then the ratio $\frac{v_1}{v_2}$ is:

1. r_2/r_1
2. $(r_2/r_1)^2$
3. r_1/r_2
4. $(r_1/r_2)^2$

174.

A charge Q is enclosed by a Gaussian spherical surface of radius R. If the radius is doubled, then the outward electric flux will

1. be reduced to half
2. remain the same
3. be doubled
4. increased four times

175.

The rate of increase of thermo-emf with the temperature at the neutral temperature of a thermocouple

1. is zero
2. depends upon the choice of the two materials of the thermocouple
3. is negative
4. is positive

176.

Fusion reaction takes place at high temperature because:

1. atoms get ionized at high temperature
2. kinetic energy is high enough to overcome the Coulomb repulsion between nuclei
3. molecules break up at high temperature
4. nuclei break up at high temperature

177.

A nucleus ${}^{m}_{n}X$ emits one α-particle and two β^-particles. The resulting nucleus is:

1. ${}^{m-6}_{n}Z$
2. ${}^{m-4}_{n}X$
3. ${}^{m-4}_{n-2}Y$
4. ${}^{m-6}_{n-4}Z$

178.
There are four light –weight –rod sample A, B, C, D separately suspended by threads. A bar magnet is slowly brought near each sample and the following observation are noted
(i) A is feebly repelled
(ii) B is feebly attracted
(iii) C is strongly attracted
(iv) D remains unaffected

Which one of the following is true?

1. C is of a diamagnetic material
2. D is of a ferromagnetic material
3. A is of a non-magnetic material
4. B is of a paramagnetic material

179.
During an isothermal expansion, a confined ideal gas does -150 J of work against its surrounding. This implies that,

1. 300 J of heat has been added to the gas
2. No heat is transferred because the process is isothermal
3. 150 J of heat has been added to the gas
4. 150 J of heat has been removed from the gas

180.
Electrons used in an electron microscope are accelerated by a voltage of 25 kV. If the voltage is increased to 100 kV, then the de-Broglie wavelength associated with the electrons would

1. decrease by 2 times
2. decrease by 4 times
3. increase by 4 times
4. increase by 2 times

181.
In an AC circuit an alternating voltage $e = 200\sqrt{2}\sin 100t$ volt is connected to a capacitor of capacity 1μF. The RMS value of the current in the circuit is:

1. 100 mA
2. 200 mA
3. 20 mA
4. 10 mA

182.
A boy standing at the top of a tower of 20 m height drops a stone. Assuming g = 10 ms^{-2}, the velocity with which it hits the ground is

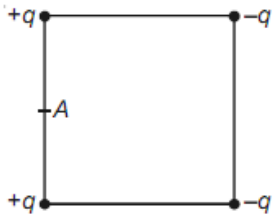
1. 20 m/s
2. 40 m/s
3. 5 m/s
4. 10 m/s

183.
A body projected vertically from the earth reaches a height equal to earth's radius before returning to the earth. The power exerted by the gravitational force is greatest:

1. at the instant just before the body hits the earth.
2. it remains constant all throughout.
3. at the instant just after the body is projected.
4. at the highest position of the body.

184.

Four electric charges +q, +q, -q and –q are placed at the corners of a square of side 2L (see figure). The electric potential at point A, mid-way between the two charges +q and +q is



1. $\frac{1}{4\pi\varepsilon_0}\frac{2q}{L}\left(1+\frac{1}{\sqrt{5}}\right)$
2. $\frac{1}{4\pi\varepsilon_0}\frac{2q}{L}\left(1-\frac{1}{\sqrt{5}}\right)$
3. zero
4. $\frac{1}{4\pi\varepsilon_0}\frac{2q}{L}\left(1+\sqrt{5}\right)$

185.

The dimensions of $(\mu_0\varepsilon_0)^{-1/2}$ are

1. $[L^{-1}\ T]$
2. $[LT^{-1}]$
3. $[L^{-1/2}\ T^{1/2}]$
4. $[L^{-1/2}\ T^{-1/2}]$

186.

A body is moving with velocity 30 m/s towards east. After 10 s its velocity becomes 40 m/s towards north. The average acceleration of the body is

1. 7 m/s^2
2. $\sqrt{7}$ m/s^2
3. 5 m/s^2
4. 1 m/s^2

187.

A biconvex lens ($\mu = 1.5$) has a radius of curvature of magnitude 20 cm. Which one of the following options describes best the image formed of an object of height 2 cm placed 30 cm from the lens?

1. Virtual, upright, height = 0.5 cm
2. Real, inverted, height =4 cm
3. Real, inverted, height = 1 cm
4. Virtual, upright, height = 1 cm

188.

The wavelength of the first line of Lyman series for hydrogen atom is equal to that of the second line of Balmer series for a hydrogen like ion. The atomic number Z of hydrogen like ion is

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

189.

Which of the following is not due to total internal reflection?

1. Difference between apparent and real depth of the pond
2. Mirage on hot summer days
3. Brilliance of diamond
4. Working of optical fiber

190.

The potential energy of a system increases if work is done

1. by the system against a conservative force
2. by the system against a non-conservative force
3. upon the system by a conservative force
4. upon the system by a non-conservative force

191.

In forward biasing of the p-n junction:

1. the positive terminal of the battery is connected to p-side and the depletion region becomes thick
2. the negative terminal of the battery is connected to n-side and the depletion region becomes thin
3. the positive terminal of the battery is connected to n-side and the depletion region become thin
4. the negative terminal of the battery is connected to p-side and the depletion region becomes thick

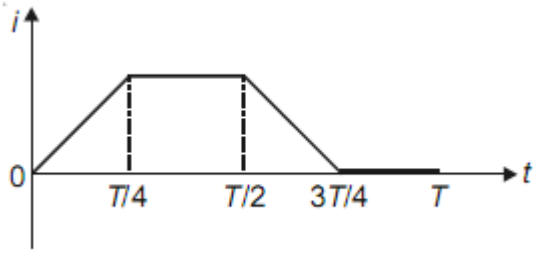
192.

A missile is fired for maximum range with an initial velocity of 20 m/s. if g= 10 m/s^2, the range of the missile is

1. 50 m
2. 60 m
3. 20 m
4. 40 m

193.

The current i in a coil varies with time as shown in the figure. The variation of induced emf with time would be:



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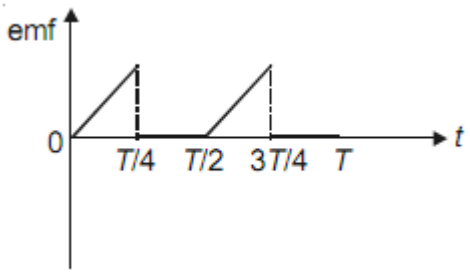

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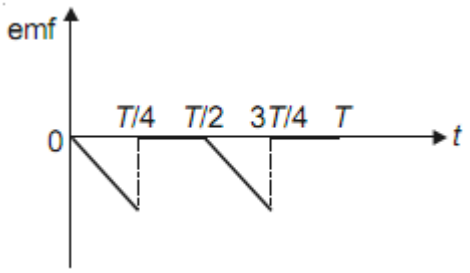

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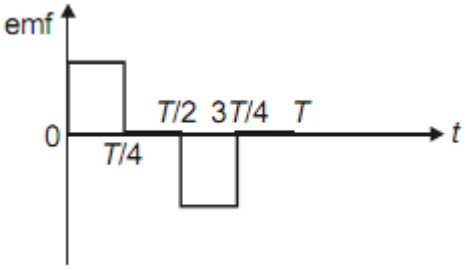

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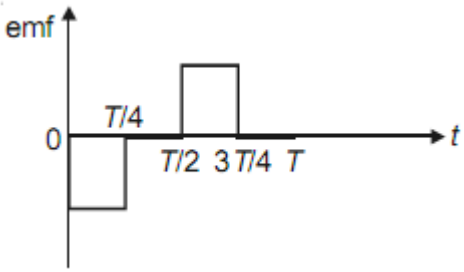


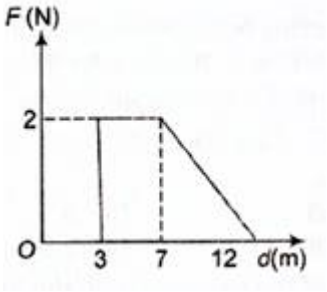
194.

An AC voltage is applied to a resistance R and an inductor L in series. If R and the inductive reactance are both equal to 3Ω, the phase difference between the applied voltage and the current in the circuit is:

1. $\frac{\pi}{4}$
2. $\frac{\pi}{2}$
3. zero
4. $\frac{\pi}{6}$

195.

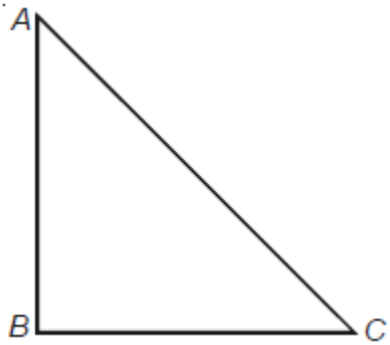
Force F on a particle moving in a straight line varies with distance d as shown in the figure. The work done on the particle during its displacement of 12 m is:



1. 21 J
2. 26 J
3. 13 J
4. 18 J

196.

A current-carrying closed loop in the form of a right isosceles triangle ABC is placed in a uniform magnetic field acting along AB. If the magnetic force on the arm BC is F, the force on the arm AC is :



1. −F
2. F
3. 2F
4. −2F

197.
The decreasing order of wavelength of infrared microwave, ultraviolet and gamma rays is

1. gamma rays, ultraviolet, infrared, microwaves
2. microwaves, gamma rays, infrared, ultraviolet
3. infrared, microwave, ultraviolet, gamma rays
4. microwave, infrared, ultraviolet, gamma rays

198.

A transistor is operated in common emitter configuration at V_c =2V such that a change in the base current from 100 μA to 300 μA produces a change in the collector current from 10 mA to 20mA. The current gain is:

1. 75
2. 100Vc = 2 V
   Base current = 100
3. 25
4. 50

199.
A body of mass M hits normally a rigid wall with velocity v and bounces back with the same velocity. The impulse experienced by the body is:

1. 1.5Mv
2. 2Mv
3. zero
4. Mv

200.
A uniform electric field and a uniform magnetic field are acting along the same direction in a certain region. If an electron is projected in the region. If an electron is projected in the region such that its velocity is pointed along the direction of fields, then the electron

1. speed will decrease
2. speed will increase
3. will turn towards the left of the direction of motion
4. will turn towards tight of direction a motion