ULTIMATE TEST SERIES NEET 2020

MOCK TEST-10

PATTERN : NEET

☞ Please read the instructions carefully. You are alloted 5 minutes specifically for this purpose.
☞ You are not allowed to leave the Examination Hall before the end of the test.

Name :

M.M.: 720   **Time : 3 hrs**

BRANCH : DEHRADUN, KOTDWAR, HALDWANI, AGRA, SAHARANPUR

TOPIC :

Physics   :   Full Syllabus

Chemistry   :   Full Syllabus

Biology   :   Full Syllabus

INSTRUCTIONS :

1. Attempt **All** the questions.This Test booklet consists of **180** questions. The maximum marks are 720

2. There are three parts in the question paper of **Physics, Chemistry** and **Biology (Botony, Zoology)** having **45** questions .

3. Each question is allotted **4** (**four**) marks for each correct response

4. There is **1/4th** negative marking for each wrong attempt The total duration of the test is **3 hrs**.

5. There is no negative marking for un-attempted questions.

6. Use Blue/black ball point pen to fill the **OMR**

7. Write your **Name** and **Roll number** carefully on the **OMR** sheet as well as the question paper.

BIOLOGY

1. What is common to Tapeworm, Earthworm and Silkworm ?
   (1) Calcareous shell
   (2) Complete gut
   (3) Sexual dimorphism
   (4) Bilateral symmetry

2. Chitin is a polymer of
   (1) D-glucose amine
   (2) N-acetyl muramic acid
   (3) Fructose
   (4) N-acetyl glucosamine

3. All the below given features of birds are useful for them to fly except
   (1) Air sacs connected to lungs
   (2) Pneumatisation of bones
   (3) Fore limbs are modified into wings
   (4) Heart is completely four chambered

4. Which of the following statements is incorrect ?
   (1) Stroma lamellae of chloroplasts lack PS-II and $NADP^+$ reductase enzyme
   (2) CF_0 of ATP synthase carries on facilitated diffusion of protons across the membrane
   (3) RuBP is a 5-carbon ketose sugar, which is the primary acceptor of carbondioxide in mesophyll cells of both C_3 and C_4 plants
   (4) RuBisCo has greater affinity for CO_2 than for O_2, when $CO_2 : O_2$ is nearly equal

5. In which year Mendel published his work on inheritance of characters
   (1) 2000
   (2) 1868
   (3) 1856
   (4) 1865

6. Which protistan produces spores having true cell walls, even though in normal conditions it is without cells wall ?
   (1) Slime moulds
   (2) Euglenoids
   (3) Dinoflagellates
   (4) Sporozoans

7. From the diseases mentioned below, identify the one which is not a sexually transmitted disease
   (1) Syphilis
   (2) Genital warts
   (3) Gonorrhea
   (4) Filariasis

8. Where do you find the ciliated epithelium from the following
   (1) Inner surface of bronchioles
   (2) Lining of stomach
   (3) PCT of nephron
   (4) Lining of alveoli

9. Incorrect match of the following regarding type of pollination
   (1) Maize – Geitonogamy, Xenogamy
   (2) *Commelina* – Autogamy (underground flowers), Geitonogamy, Xenogamy (aerial flowers)
   (3) Mustard – Autogamy, Geitonogamy, Xenogamy
   (4) Datepalm – Geitonogamy, xenogamy

10. Select an option having all recessive traits in *Drosophila*
    (1) Brown body, white eyes, miniature wings
    (2) Yellow body, Red eyes, miniature wings
    (3) Yellow body, white eyes, long wings
    (4) Yellow body, white eyes, miniature wings

11. Statement I : MTPs are considered relatively safe during second trimester of pregnancy
    Statement II : Government of India legalized MTP in 1971 with some strict conditions.
    (1) Statement-1 is correct, Statement-2 is wrong
    (2) Statement-1 is wrong, Statement-2 is correct
    (3) Both Statements are correct
    (4) Both Statements are wrong

12. Which of the following phylum shows chitinous exoskeleton as characteristic feature ?
    (1) Porifera
    (2) Arthropoda
    (3) Platyhelminthes
    (4) Annelida

13. Which structures of golgi apparatus exhibit polarity and are involved in the modification of proteins ?
    (1) Cis face
    (2) Cisternae
    (3) Vesicles
    (4) Vacuoles

14. Identify A, B, C, D respectively in the following representation of eukaryotic m-RNA

    ——— m-RNA ———

    | A | B | | C | D |
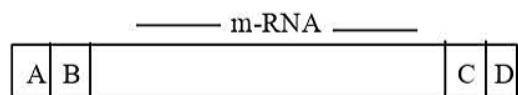
    (1) Start codon, UTR, UTR, stopcodon
    (2) UTR, start codon, UTR, stopcodon
    (3) UTR. Start codon, stop codon, UTR
    (4) Start codon, UTR, stop odon, UTR

15. The most abundant and widely distributed in the body, linking and supporting other tissues/organs is the characteristic of
    (1) Epithelial tissue
    (2) Nervous tissue
    (3) Connective tissue
    (4) Muscular tissue

16. Choose the incorrect combination

	Organ	Source for	
		Hormone	Enzyme
A	Kidney	Erythropoietin	Renin
B	Stomach	Gastrin	Pepsinogen
C	Pancreas	Insulin	Chymotrypsinogen
D	Liver	Cholecystokinin	Lipase

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

17. Prions differ from viroids in having
    (1) RNA molecule enclosed in protein coat
    (2) Naked RNA without protein coat
    (3) DNA without protein coat
    (4) Protein without having core of geneti material

18. Seminal plasma doesnot include the secretions of
    (1) Seminal vesicles
    (2) Bartholin gland
    (3) Prostate gland
    (4) Bulbourethral gland

19. Transpiration driven ascent of sap does not depend on
    (1) Cohesion
    (2) solute concentration of sap
    (3) Adhesion
    (4) Surface tension

20. In the ovary of human females a large number of primary follicles degeneration occurs during
    (1) From menarche to menopause
    (2) From birth to puberty
    (3) Before birth
    (4) After puberty

21. A synthetic auxin applied on crops as a herbicide is
    (1) Diuron
    (2) Glyphosate
    (3) 2,4-D
    (4) Paraquat

22. Which of the following hormonal combination is associated with milk formation and ejection respectively
    (1) Estrogen, Progesterone
    (2) Prolactin, Oxytocin
    (3) Insulin, Cortisol
    (4) Progesterone, Prolactin

23. Which of the following is not a criterion of genetic material ?
    (1) Chemical and structural stability
    (2) Able to generate its replica
    (3) provide scope for rapid changes required for evolution
    (4) ability to express in the form of Mendelian characters

24. Which of the following has the centres to control body temperature, urge for eating and drinking
    (1) Cerebellum
    (2) Pons varolii
    (3) Corpora quadrigemina
    (4) Hypothalamus

25. Number of chromosomes and amount of DNA present in a somatic cell at G_2 phase, in comparison with the gamete of the same species is
    (1) four times the number of chromosomes and twice the amount of DNA
    (2) twice the number of chromosomes and twice the amount of DNA
    (3) same number of chromosomes and twice the amount of DNA
    (4) Twice the number of chromosomes and four times the amount of DNA

26. _____ is a tiny finger like structure which lies at the upper junction of the two labia minora above the urethral opening
    (1) Mons Pubis
    (2) Hymen
    (3) Labia Majora
    (4) Clitoris

27. Number of phenotypes and genotypes respectively for human ABO blood types
    (1) Three and six
    (2) Six and four
    (3) Four and six
    (4) Two and four

28. ADA is an enzyme which is deficient in genetic disorder SCID. The site of production of ADA in the body is
    (1) Lymphocytes
    (2) Erythrocytes
    (3) Platelets
    (4) Osteocytes

29. Incorrect match about nature of gametes and fusion among them
    (1) *Spirogyra* – non flagellated, isogamy
    (2) *Volvox* – male and female gametes flagellated - isogamy
    (3) *Eudorina* – flagellated - anisogamy
    (4) *Ulothrix* – flagellated –isogamy

30. Highly poisonous cardiac glycosides are produced by
    (1) *Acacia*
    (2) *Cassia*
    (3) *Arabidopsis*
    (4) *Calotropis*

31. During DNA replication lagging strand is polymerised
    (1) $5' \rightarrow 3'$ continuously
    (2) $3' \rightarrow 5'$ discontinuously
    (3) $3' \rightarrow 5'$ continuously
    (4) $5' \rightarrow 3'$ discontinuously

32. Nearly 25 per cent of all insects are known to be
    (1) Sanguivorus
    (2) Frugivorus
    (3) Coprophagous
    (4) Phytophagous

33. Among bean, pea, maize, castor how many are dicotyledonous seeds with endosperm ?
    (1) Two
    (2) Three
    (3) One
    (4) Four

34. The number of immigrations plus births is several times more than emigrations plus deaths during which phase of logistic growth model of population
    (1) Acceleration phase
    (2) Lag phase
    (3) Declining phase
    (4) Asymptote phase

35. Which vectors are commonly used to deliver a desirable gene into an animal cell ?
    (1) Ti plasmid
    (2) P^{UC} plasmid
    (3) P^{BR} 322
    (4) disarmed retroviruses

36. Government of India has passed the water (prevention and control of pollution) Act in the year
    (1) 1987
    (2) 1988
    (3) 1981
    (4) 1974

37. Non functional wood present at the centre of the trunk of a tree is
    (1) Sap wood
    (2) Hard wood
    (3) Soft wood
    (4) Heart wood

38. Theoretically how many nucleosomes may be present in a diploid mammalian cell ?
    (1) 4.6×10^6
    (2) 6.6×10^7
    (3) 3.3×10^7
    (4) 3.3×10^6

39. One green house gas contributes 14% to total global warming and another contributes 6%. These gases respectively are
    (1) Methane and CO_2
    (2) CFCs and N_2O
    (3) N_2O and CO_2
    (4) O_3 and Water vapor

40. Which among the following shows highest levels of species richness and highest degree of endemism ?
    (1) Keoladeo Ghana National park
    (2) Indo–Burma and Himalaya biodiversity hotspots
    (3) Sacred grooves of Khasi and Jaintia Hills in Meghalaya
    (4) Nanda Devi Biosphere reserve

41. Heterosis means
    (1) Inbreeding depression
    (2) Heterozygous condition
    (3) Hybrid vigour
    (4) Male sterility

42. Incorrect match of the following
    (1) *Ectocarpus* – simple, branched filamentous alga
    (2) *Eudorina* – colonial alga
    (3) *Gracillaria* - agarophyte
    (4) *Polysiphonia* – thallus differentiated as holdfast, stipe, frond

43. Consider the following statements on ecological pyramids
    (1) Ecological pyramid of numbers can be either upright or inverted depending on the type of food chains
    (2) Pyramid of biomass is always upright
    (3) Pyramid of energy can never be inverted.
    How many of the above are correct ?
    (1) only 1
    (2) 1 and 2 only
    (3) 1 and 3 only
    (4) 1,2 and 3

44. "The Evil Quartet" is the sobriquet used to describe
    (1) Conservation of biodiversity
    (2) Causes of biodiversity losses
    (3) Causes of distribution of biodiversity
    (4) Patterns of regaining lost biodiversity

45. Tendrils of Gourds are modified
    (1) Axillary buds
    (2) Terminal buds
    (3) Stipules
    (4) Terminal leaflets

46. Which is edible product of apiculture?
    (1) Bees Wax
    (2) Honey
    (3) Propolis
    (4) All the above

47. Flocs mean
    (1) Primary sludge produced during physical purification of sewage
    (2) Compost produced in anaerobic sludge digester
    (3) A mesh like structure formed by association of bacteria and fungal filaments in sewage treatment
    (4) The effluent of primary sewage treatment plant

48. As per Allen's rule mammals residing in colder climates have
    (1) Longer ear lobes and shorter limbs
    (2) Shorter ear lobes and longer limbs
    (3) Shorter ear lobes and shorter limbs
    (4) Longer ear lobes and longer limbs

49. Mismatch among the following
    (1) *Equisetum* – Sporophylls arranged as compact strobilus
    (2) *Cycas* – unbranched stem with pinnate compound leaves
    (3) *Pinus* – needle like leaves, with thick cuticle, sunken stomata
    (4) *Selaginella* – monoecious prothallus

50. Study the following and choose the incorrect
    (1) Morphin and Heroin are opioids
    (2) Marijuana and hashish are cannabinoids
    (3) Crack and smack are coca alkaloids
    (4) *Atropa* and *Datura* are plants with hallucinogenic properties

51. Which of the following is not a component of down streaming process?
    (1) Preservation
    (2) Separation
    (3) Expression
    (4) Purification

52. Identify the one related to fishery industry
    (1) White revolution
    (2) Green revolution
    (3) Silver revolution
    (4) Blue revolution

53. Drupe of coconut develops from
    (1) Monocarpellary, superior ovary
    (2) Tricarpellary syncarpous, inferior ovary
    (3) Monocarpellary, half inferior ovary
    (4) Bicarpellary syncarpous, superior ovary

54. Human alpha-lactalbumin is produced by
    (1) Transgenic fish
    (2) Transgenic cow
    (3) Transgenic mouse
    (4) Transgenic monkey

55. Match the following with reference to lac-operon

List-I	List-II
A) a-gene	I) Repressor protein
B) y-gene	II) Transacetylase
C) i-gene	III) β-Galactosidase
D) z-gene	IV) Permease

	A	B	C	D
1.	IV	II	I	III
2.	II	IV	I	III
3.	II	IV	III	I
4.	II	III	IV	I

56. Choose the option in which the disease, its mode of infection and two symptoms are correctly matched.

	Disease	Mode of infection	Symptom
(1)	Diphtheria	Through contaminated food	Intestinal perforation
(2)	Pneumonia	Through blood transfusion	Alveoli get filled with fluid
(3)	Common cold	Through droplets from infected persons	Sore throat
(4)	Amoebiasis	Bite of female mosquito	Stool with mucus and blood

57. Incorrect match with reference to symbiotic nitrogen fixation
    (1) *Alnus - Frankia*
    (2) *Cycas* corolloid roots - *Anabaena*
    (3) Lentils - *Rhizobium*
    (4) *Azolla – Azotobacter*

58. Method of sex determination in poultry birds is
    (1) ZO – ZZ type
    (2) ZW – ZZ type
    (3) XX – XO type
    (4) XX – XY type

59. The process of deliberately introducing naked or purified DNA into prokaryotic cells and eukaryotic cells respectively is called
    (1) Transformation and transfection
    (2) Transduction and transformation
    (3) Transfection and transformation
    (4) Induction and transformation

60. Secondary succession takes place on
    (1) Bare rock
    (2) Newly cooled lava
    (3) Degraded forest
    (4) Newly created lake

61. A haemophilic father passes the defective gene
    (1) either to his sons or to his daughters
    (2) neither to his sons nor to his daughters
    (3) to all his sons
    (4) to all his daughters

62. Identify the bactericidal and activator enzymes from the following
    (1) Secretin and Enterocrinin
    (2) Aminopeptidase and Carboxy peptidase
    (3) Nuclease and Nucleosidase
    (4) Lysozyme and Enterokinase

63. Multiple alleles are present
    (1) On non sister chromatids
    (2) On different chromosomes
    (3) At different loci on the same chromosome
    (4) At the same locus of the different chromosome

64. Which of the following is common to respiratory break down of fats, carbohydrates and proteins?
    (1) Glucose-6-phosphate
    (2) Glyceraldehyde-3- phosphate
    (3) Acetyl CoA
    (4) Pyruvic acid

65. Peripheral chemoreceptors associated with aortic arch and carotid artery recognise changes in CO_2 and H^+ concentration and send necessary signals to
(1) Pneumotaxic centre of Cerebrum
(2) Central chemoreceptors of Hypothalamus
(3) Respiratory rhythm centre of Medulla oblongata
(4) Apneustic centre of Cerebellum

66. Given below are four matching of an animal and its kind of respiratory organ
A) Dolphin – Gills
B) Periplaneta – Trachea
C) Salpa – Skin
D) Pheretima – Moist cuticle
The correct matching are
(1) A and B
(2) A , B and C
(3) B , C and D
(4) B and D

67. Incorrect match of the following
(1) *Trichoderma polysporum* – cyclosporin A - immunosuppressive agent
(2) *Monascus purpureus* – statins – blood cholesterol lowering agent
(3) *Trichoderma harzianum* - biological control - Fungicide
(4) *Staphylococcus* – streptokinase – clot buster

68. Select an option among the following with all correct statements
(A) Except for plants in shade, light is never a limiting factor for carbon assimilation

(B) Water is one of the reactants in light reaction hence its effect more and direct on the process of photosynthesis
(C) CO_2 saturation in C_3 is plants is at about 360 ml L^{-1}
(D) Though light reactions are temperature sensitive, they are effected to a much lesser extent than dark reaction
(1) B,C
(2) A,D
(3) C,D
(4) B,D

69. In limbs, lymph never reaches the blood without passing through at least one lymph node. This is for
(1) Absorption of fatty acids
(2) Filteration of dust particles
(3) Absorption of glucose
(4) Filtration of micro organisms

70. Starting from the heart, arrange the vessels in order through which blood passes from the heart to stomach and back to the heart
(a) Systemic aorta
(b) Hepatic portal vein
(c) Posterior vena cava
(d) Gastric artery
(1) a – d – b – c
(2) a – b – c – d
(3) a – b – d – c
(4) a – c – d – b

71. The purpose of bagging in artificial hybridization is to
(1) Promote autogamy
(2) Prevent self pollination
(3) Prevent contamination of stigmas with unwanted pollen
(4) Protect flowers from environmental variations

72. The life cycle of *Fucus* is
    (1) Diplontic
    (2) Diplohaplontic
    (3) Haplodiplontic
    (4) Haplontic

73. Which genetic disorder is not the resultant of aneuploidy ?
    (1) Edward's syndrome
    (2) Klinefelter's syndrome
    (3) Turner's syndrome
    (4) Myotonic dystrophy

74. High threshold substances are
    (1) Glucose, Sodium and Creatinine
    (2) Urea, Uric acid and Amino acid
    (3) Creatinine, Urocochrome and Hippuric acid
    (4) Glucose , Amino acids and Vitamins

75. DNA fragments generated by endonucleases can be separated by
    (1) Centrifugation
    (2) Polymerase chain reaction
    (3) Electrophoresis
    (4) Restriction mapping

76. At what phase of cell cycle histone proteins are synthesised in a eukaryotic cell
    (1) Prophase
    (2) Metaphase
    (3) Telophase
    (4) S-phase

77. In thick filament the heads of myosin molecules are directed towards
    (1) Sarcolemma
    (2) H-zone
    (3) M-line
    (4) Z-membrane

78. Hypoglycemic hormone is <u>A</u>. It is secreted by <u>B</u>, in response to <u>C</u> and promotes <u>D</u>.
    In the above A,B,C,D respectively
    (1) Insulin, β cells, hyperglycemia, glyco genesis
    (2) Glucagon, α cells, hypoglycemia, glycolgenolysis
    (3) Insulin, β cells, hypoglycemia, glycolgenolysis
    (4) Glucagon, α cells, hypoglycemia, glycogenesis

79. Correct option with reference to Krebs cycle
    (1) One turn yields $4NADH+H^+$, 1 $FADH_2$ and 1 ATP
    (2) OAA regenerated at the end is a C_5 dicarboxylic acid
    (3) Citrate and Cisaconitic acid are isomers
    (4) Substrate level phosphorylation occurs when succinyl CoA is converted to succinic acid

80. Find out the correct statement about the different kinds of joints in humans?
    (1) Flexion and extension movements are performed by fibrous joints
    (2) Gliding joint is responsible for more free movement of thumb than the rest of the fingers
    (3) Articulation of the limbs to the girdles is made possible by ball & socket joints
    (4) Restricted rotatory movements of the wrist is due to saddle joint

81. The full potential of penicillin as an effective antibiotic was established by
    (1) Alexander Flemming
    (2) Ernest Chain and Howard Florey
    (3) Waksman
    (4) Albert Schatz

82. After heavy monsoon and floods, several cases of human deaths due to snake bite were reported from different parts of rural India. Medical authorities revealed that majority of these deaths are due to asphyxia. Which regions of the brain are most probably affected in the deceased?
    (1) Associated areas of cerebrum
    (2) Coordinating centers of cerebellum
    (3) Respiratory centers of medulla
    (4) Satiety centers of hypothalamus

83. Incorrect match of the following regarding stamens
    (1) Monadelphous – China rose
    (2) Polyandrous – *Citrus*
    (3) Epiphyllous – Lily
    (4) Diadelphous – Pea

84. Some children may hold a book very close to read or put their head almost on the desk to write. This focusing problems is associated with
    (1) Iris
    (2) Lens
    (3) Receptor cells
    (4) Conjunctiva

85. Phytochrome is
    (1) A phytohormone involved in photo morphogenises
    (2) Phytol of chlorophyll
    (3) Cytochrome of plants controlling developmental process including flowering, germination etc
    (4) An ubiquitous chromoprotien in plants involved in photo morphogenesis

86. Inter fascicular cambium of dicot stem is formed by
    (1) Redifferentiation
    (2) Differentiation
    (3) Dedifferentiation
    (4) Proliferation

87. Which of the following used hides to protect their body and buried their dead ?
    (1) *Homo erectus*
    (2) *Homo habilis*
    (3) Neanderthal man
    (4) Dryopithecus

88. Charles Robert Darwin was influenced by
    (1) Mutation theory of de Vries
    (2) Work of Thomas Malthus on populations
    (3) Work of Lamarck
    (4) Mendel's laws of inheritance

89. Incorrect match of the following
    (1) Ethidium bromide – visualization of DNA fragments on agarose gel
    (2) *Taq* polymerase – heat resistant polymerase in PCR
    (3) Primase – chemical synthesis of DNA primers
    (4) Glyphosate – herbicide

90. Basis of DNA fingerprinting is
    (1) relative proportion of nitrogen bases
    (2) relative difference in DNA occurrence in blood , skin and saliva
    (3) satellite DNA occurring as highly repeated short DNA segments
    (4) differences in the total number of genes on a particular chromosome

CHEMISTRY

91. If an electron has spin quantum number of +1/2 and a magnetic quantum number of -1, then it cannot be represented in:
    (1) s-orbital   (2) p-orbital
    (3) d-orbital   (4) f-orbital

92. A gaseous mixture contains CH_4 and C_2H_6 in equimolar proportion. The weight of 2.24 litres of this mixture at STP is
    (1) 4.6 g
    (2) 1.6 g
    (3) 2.3 g
    (4) 23 g

93. In the reaction,
    $$Hg_2S + MnO_4^- + H^+ \longrightarrow Hg^{+2} + SO_4^{2-} + Mn^{+2} + H_2O$$
    the n-factor for Hg_2S will be:
    (1) 8
    (2) 10
    (3) 6
    (4) 3

94. For the reaction $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$, equilibrium mixture contained 3 moles each of PCl_5, PCl_3 and Cl_2. If the total pressure is 3 atm. What is the value of Kp?
    (1) 1
    (2) 3
    (3) 4
    (4) 6

95. The half life of a radioactive substance is 10days. What weight of it is left undecayed in 5 days, if 2 grams of it is taken initially?
    (1) 1 g
    (2) 0.5 g
    (3) 1.75 g
    (4) 1.414 g

96. The reduction potential of hydrogen electrode when Pt wire is dipped in 0.001M HCl and hydrogen gas at 10atm is passed around Pt is:
    (1) - 0.36V
    (2) -0.28V
    (3) -0.21V
    (4) +0.18V

97. Match the following

I	II
A) Calcination	a) $2Cu_2S + 3O_2 \longrightarrow 2Cu_2O + 2SO_2$
B) Roasting	b) $Fe_2O_3.xH_2O_{(s)} \longrightarrow Fe_2O_{3(s)} + xH_2O_{(g)}$
C) Flux	c) $Cr_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Cr$
D) Thermite	d) $SiO_2 + FeO \longrightarrow FeSiO_3$

    The correct match is
    (1) A - a, B - b, C - c, D - d
    (2) A - b, B - a, C - d, D - c
    (3) A - d, B - a, C - b, D - c
    (4) A - c, B - a, C - b, D - d

98. How many faradays of electricity are required for the reduction of 1mole of $KMnO_4$ in acidic medium to Mn^{+2} ion?
    (1) 2
    (2) 7
    (3) 5
    (4) 6

99. For the reaction $X_2O_{4(l)} \longrightarrow 2XO_{2(g)}$, ΔH = 3.3 Kcal and ΔS = 20 cal/K at 300 K. Hence ΔG is
    (1) 2.7 Kcal
    (2) – 2.7 Kcal
    (3) 9.3 Kcal
    (4) – 9.3 Kcal

100. Canesugar + $H_2O \longrightarrow$ Glucose + Fructose. What is the final product of reduction of above glucose by HI in presence of red P ?

   (1) Fructosazone
   (2) Penta acetyl galactose
   (3) Sorbitol and penta acetyl fructose
   (4) Hexane

101. All the following are Lewis acids except

   (1) BF_3
   (2) SO_3
   (3) CO_2
   (4) PH_3

102. In CaF_2 , having the fluorite structure, the coordination numbers for calcium ion and fluoride ion are:

   (1) 6 and 6
   (2) 4 and 12
   (3) 8 and 4
   (4) 4 and 6

103. Incorrect statement is

   (1) Generally emulsions are negatively charged colloids
   (2) Emulsions can be diluted with any amount of the dispersion medium
   (3) Milk is water in oil colloid
   (4) Soap can act as emulsifier for both o/w and w/o emulsions

104. $$\underset{}{\bigcirc} \xrightarrow[AlCl_3]{CH_3CH_2CH_2Cl} A \xrightarrow[b)H^+]{a)O_2} C + D.$$
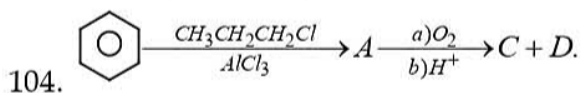
   If "D" is simplest aliphatic ketone then conversion "C" to a mixture of o-hydroxy acetophenone and p-hydroxy acetophenone with $(CH_3CO)_2O$ and $AlCl_3$ is

   (1) Kolbe's reaction
   (2) Dow's process
   (3) Raschig reaction
   (4) Fries reaction

105. When zeolite which is hydrated sodium aluminium silicate is treated with hard water, the sodium ions are exchanged with:

   (1) H^+ ions
   (2) Ca^{+2} ions only
   (3) Both Ca^{+2} and Mg^{+2} ions
   (4) HCO_3^{-1} ions

106. Wrong match is

   (1) Cellulose acetate….SPM in reverse osmosis
   (2) 90% N_2…. Respiratory kit in scuba diving
   (3) 0.9% (w/v) NaCl …. Saline water
   (4) Amalgams …. true solution of liquid dissolved in solid

107. Incorrect statement among the following is:

   (1) Vulcanisation is carried out by heating rubber with sulphur at 373 to 415K
   (2) PHBV is homo polymer
   (3) Natural rubber is cis poly isoprene
   (4) HDPE is formed in the presence of Ziegler – Natta catalyst.

108. Wrong match is

   (1) Seldane …antibiotic
   (2) Syphilis ….. treated with Salvarsan
   (3) C_6H_5COONa…. Food preservative
   (4) Disydazirine … toxic towards certain strains of cancer cells

109. $CN^- + H_2O \rightleftharpoons HCN + OH^-, K = 10^{-9}$ then equilibrium constant for the neutralization of HCN with strong base will be
(1) 10^{-6}
(2) 10^4
(3) 10^9
(4) 10^{-14}

110. $Fe(OH)_3 \underset{(s)}{\rightleftharpoons} \underset{(aq)}{Fe^{+3}} + 3\underset{(aq)}{OH^-}$,

Solubility of ferric hydroxide is maximum at
(1) $P^H = 14$
(2) $P^H = 1$
(3) $P^H = 7$
(4) $P^H = 10$

111. Vant Hoff's factor for aq.K_2SO_4 is maximum at
(1) 0.1m
(2) 0.01 m
(3) 0.001m
(4) Vanthoff factor is independent of molality

112. For a reaction: A + B $\leftrightarrow$ AB, ΔH =+30K.Cal , the activation energy of forward reaction is 42 K.Cal, then the activation energy of backward reaction is:
(1) 72 K.Cal
(2) 24 K.Cal
(3) 12 K.Cal
(4) 36 K.Cal

113. $H_{2(g)} + \frac{1}{2}O_{2(g)} \longrightarrow H_2O_{(g)}$,

from the above reaction the bond energies of H-H, O = O, O - H are x_1, x_2, x_3 respectively and enthalpy of vaporization of liquid water into water vapour is x_4, then ΔH_f^0 of water is

(1) $2x_1 + \dfrac{x_2}{2} - x_3 + 2x_4$

(2) $2x_3 - x_1 - \dfrac{x_2}{2} - x_4$

(3) $x_1 + \dfrac{x_2}{2} - 2x_3 - x_4$

(4) $x_1 - \dfrac{x_2}{2} - 2x_3 + x_4$

114. Which of the following water sample is toxic. The sample containing
(1) $SO_4^{-2} = 600 ppm$
(2) $NO_3^- = 60 ppm$
(3) $Pb = 55 ppb$
(4) All of these
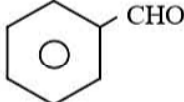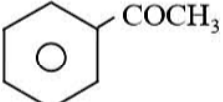
115. The ratio of rates of diffusion of SO_2, O_2 and CH_4 is
(1) $1:2:\sqrt{2}$
(2) $2:\sqrt{2}:1$
(3) $1:2:4$
(4) $1:\sqrt{2}:2$

116. In thin layer chromatography the components A,B,C,D have their retardation factors on silica gel as 0.2,0.4,0.3, 0.05 respectively. Most adsorbed component is
(1) D
(2) C
(3) B
(4) A

117. Which one is most reactive towards nucleophilic addition reaction

118.

$\xrightarrow[\text{sunlight}]{NBS}$ X (major).

"X" is

(1)

(2)

(3)

(4)
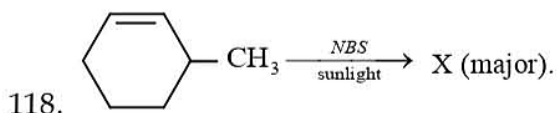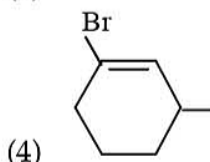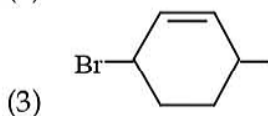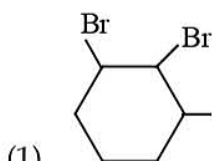
119. Most reactive towards SN$_2$ reaction is

(1) CH$_3$CH$_2$Br

(2)

(3) $(CH_3)_3 CCl$

(4) $CH_3 I$
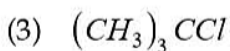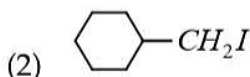
120. Propene on hydroboration oxidation gives

(1) n-propyl alcohol

(2) isopropyl alcohol

(3) propanal

(4) propanone

121. $CH_3 - O - C(CH_3)_3 \xrightarrow{Conc.HI/\Delta} A + B$. A and B are respectively

(1) $CH_3 I, (CH_3)_3 COH$

(2) $CH_3 OH, (CH_3)_3 CI$

(3) $CH_3 OH, (CH_3)_3 COH$

(4) $CH_3 OH, (CH_3)_2 CHCH_2 I$
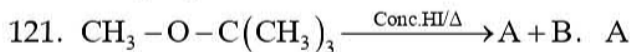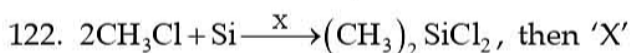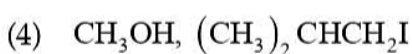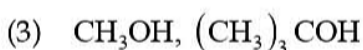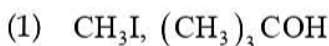
122. $2CH_3 Cl + Si \xrightarrow{X} (CH_3)_2 SiCl_2$, then 'X' is

(1) Ni/ 573K

(2) Cu powder/ 573K

(3) V$_2$O$_5$/ 573K

(4) Fe powder/ 573K

123. $H_3 C - CH = CH_2 + HCl \longrightarrow$ product.
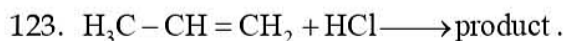
The most stable intermediate formed during this process is

(1) $H_3 C - \overset{\bullet}{C} H - CH_3$

(2) $H_3 C - CH_2 - \overset{\bullet}{C} H_2$

(3) $H_3 C - \overset{\oplus}{C} H - CH_3$

(4) $H_3 C - CH_2 - \overset{\oplus}{C} H_2$
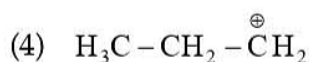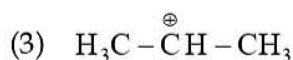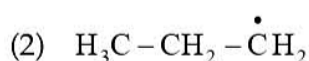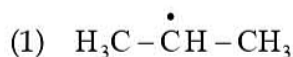
124. Incorrect among the following

(1) $Al^+ > Al^{+3}$ .... stability

(2) $CO > SiO$ ....stability at room temperature

(3) $BCl_3 > AlCl_3 > GaCl_3$ ....Lewis acid strength

(4) $C > Pb > Si = Ge = Sn$ ....electronegativity

125. Allotropy is not exhibited

(1) Phosphorous(s)

(2) Sulphur(s)

(3) Boron(s)

(4) Nitrogen(g)

126. $CH_3 COOH \xrightarrow{B_2H_6} A \xrightarrow{PCC} B \xrightarrow[\text{dry HCl}]{2CH_3OH} C$
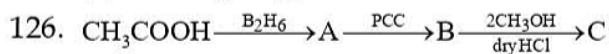
(1) Oxime

(2) Hydrazone

(3) Acetal

(4) Hemiacetal

127. P – O – P bond is absent in

(1) (HPO$_3$)$_2$

(2) H$_4$P$_2$O$_7$

(3) P$_4$O$_6$

(4) H$_4$P$_2$O$_6$

128. Hybridisation of sulphur and the ratio of $p\pi - d\pi$ bonds in SO_2 and SO_3 molecules

(1) sp^3, $1:1$

(2) sp^2, $1:2$

(3) sp^3, $2:1$

(4) sp, $2:3$

129. Incorrect about XeF_4 is

(1) It has square planar shape

(2) It can sublime

(3) It is prepared when Xe and fluorine react in the ratio 1:5 at 7 bar

(4) It is a polar molecule

130. Correct order of basic strength in aqueous medium

A) $(CH_3)_2 NH$

B) $CH_3CH_2NH_2$

C) $(CH_3CH_2)_3 N$

D) $(C_2H_5)_2 NH$

(1) $A > B > C > D$

(2) $D > C > A > B$

(3) $B > D > C > A$

(4) $C > D > B > A$

131. $CH_3 - CH = CH - CH_2 - \overset{O}{\overset{\|}{C}} - CH_3 \xrightarrow{NaOCl}$ $CHCl_3 + X.$ "X" is

(1) $CH_3CH = CH - CH_2 - COO^-Na^+$

(2) $CH_3CH_2CH_2CH_2CHO$

(3) $CH_3CH_2CH_2CH_2COO^-Na^+$

(4) $CH_3CH = CHCH_2CHO$

132. Dative bond is absent in:

(1) Al_2Cl_6

(2) NH_4Cl

(3) B_2H_6

(4) $B_3N_3H_6$

133. Resonance cannot be exhibited by

(1) $CH_2 = CH - Cl$

(2) CO_3^{-2}

(3) $CH_2 = CH - \overset{+}{N}H_3$

(4) ClO_3^-

134. Based on spectrochemical series, the correct field strength of ligand is

(1) $I^- > Br^- > SCN^-$

(2) $H_2O > C_2O_4^{-2} > OH^-$

(3) $CN^- > CO > NO_2^-$

(4) $H_2O > NH_3 > en$

135. Among the following correct basic strength

(i) $La(OH)_3$

(ii) $Ce(OH)_3$

(iii) $Lu(OH)_3$

(1) $i > ii > iii$

(2) $i > iii > ii$

(3) $iii > ii > i$

(4) $iii > i > ii$

PHYSICS

136. A scalar quantity is one that

(1) Can never take negative values

(2) Must be dimensionless

(3) Does not vary from one point to another in space

(4) Has the same value for observers with different orientation of axes

137. The amplitude (A) of damped oscillations is given as $A = a \cdot e^{-bt}$, where t is the time and a, b are constants. The product ab may represent

(1) Speed

(2) Angular momentum

(3) Acceleration

(4) Linear momentum

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138. For a particle projected vertically upwards under gravity travels equal distance during 5th and 6th second of its motion. Find its projection speed (g=9.8 m/s^2)

   (1) 50 m/s

   (2) 30 m/s

   (3) 49 m/s

   (4) 29.4 m/s

139. If v = x^2 – 5x + 4, find the acceleration of particle when velocity of the particle is zero

   (1) 4

   (2) 1

   (3) 3

   (4) 0

140. Three blocks with masses m, 2m and 3m are connected by strings, as shown in the figure. After an upward force F is applied on block m, the masses move upward at constant speed v. What is the net force on the block of mass 2m ? (g is the acceleration due to gravity).
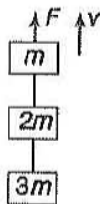
   (1) Zero

   (2) 2 mg

   (3) 3 mg

   (4) 6 mg

141. Acceleration time graph of a particle moving in a straight line is shown. Velocity of particle at t=0 is 5m/s. The velocity of the particle at the end of fourth second is
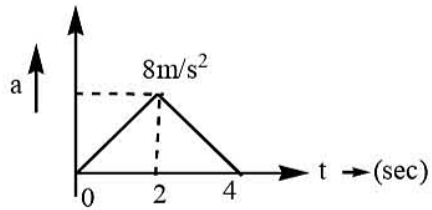
   (1) 16 m/s

   (2) 11 m/s

   (3) 21 m/s

   (4) 5 m/s

142. Two particles A and B initially at rest move towards each other under a mutual force of attraction. At the instant when speed of A is v and speed of B is 2v, speed of center of mass of the system is

   (1) Zero

   (2) v

   (3) $\dfrac{3v}{2}$

   (4) 3v

143. A particle of mass m, initially at rest is acted upon by a variable force f varying with time t. It begins to move with a velocity u after the force stops acting (curve is a semi circle)
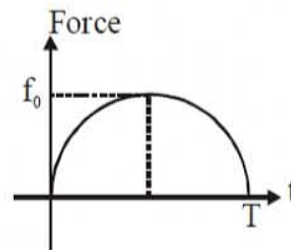
   (1) $u = \dfrac{\pi f_0^{2}}{2m}$

   (2) $u = \dfrac{\pi T^{2}}{8m}$

   (3) $u = \dfrac{\pi f_0 T}{4m}$

   (4) $u = \dfrac{f_0 T}{2m}$

144. A particle of mass m is moving in a circular path of constant radius r such that its tangential acceleration varies with time as $a_t = K^2 r t^2$ (K is a constant) Select the correct statement

(1) Centripetal acceleration remains constant

(2) Power delivered by tangential force will be zero

(3) Power delivered by Net force will be zero

(4) Power delivered by centripetal force will always be zero

145. A ring of mass m is attached to a spring of spring constant k and natural length l_0 (as given in the figure). Other end of spring is fixed and ring can slide on a smooth horizontal rod as shown. Now the ring is shifted to position B and released, speed of ring when spring attains it's natural length is
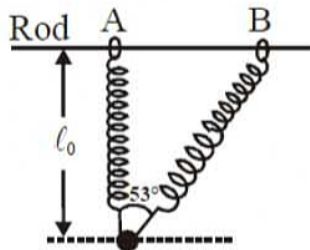
(1) $\dfrac{2l_0}{3}\sqrt{\dfrac{k}{m}}$

(2) $\dfrac{l_0}{3}\sqrt{\dfrac{k}{m}}$

(3) $\dfrac{3l_0}{2}\sqrt{\dfrac{k}{m}}$

(4) $l_0\sqrt{\dfrac{k}{m}}$

146. The adjoining diagram shows the electric lines of force emerging from a charged body. If the electric fields at A and B are E_A and E_B respectively and the distance between them is r, then
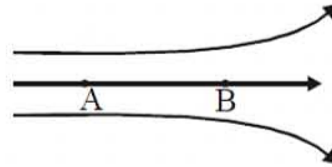
(1) $E_A > E_B$

(2) $E_A < E_B$

(3) $E_A = E_B$

(4) $E_A = \dfrac{E_B}{r^2}$

147. A sphere of radius R and charge Q is placed inside a concentric imaginary sphere of radius 2R. The flux associated with the imaginary sphere is

(1) $\dfrac{Q}{e_0}$

(2) $\dfrac{Q}{2e_0}$

(3) $\dfrac{Q}{3e_0}$

(4) $\dfrac{Q}{4e_0}$

148. The vibrations of a string fixed at both ends are represented by $y = A\sin\dfrac{\pi x}{15}$ Cos $(16\pi t)$ where x and y are in cm and t in seconds. Then the phase difference between the points at x = 13 cm and x = 16 cm in radian is
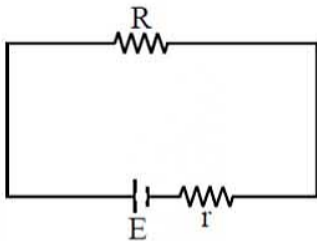
(1) $\dfrac{\pi}{5}$

(2) π

(3) 0

(4) $\dfrac{2\pi}{5}$

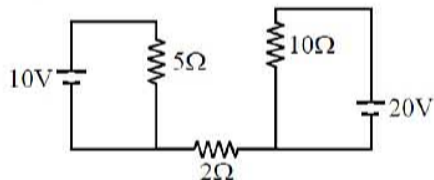149. The equivalent capacitance between the points a and b is
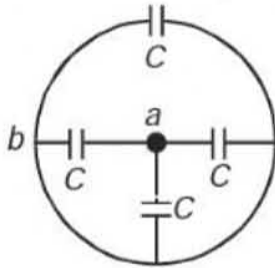
(1) 3C

(2) $\dfrac{3C}{4}$

(3) $\dfrac{4C}{3}$

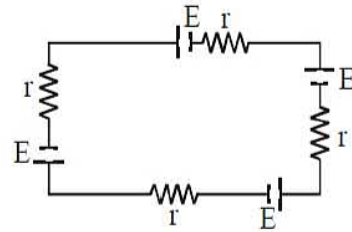(4) C

150. If power in external resistance R is maximum then

i) R = r

ii) Power in R is $\dfrac{E^2}{4R}$

iii) Input power $\dfrac{E^2}{2R}$

iv) Efficiency is 50%

(1) i, ii

(2) i, iii

(3) i, ii, iii

(4) All
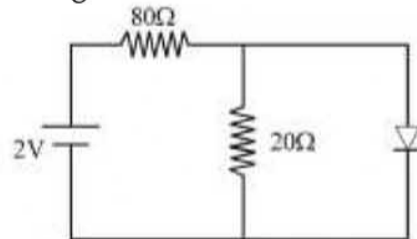
151. In given circuit current related 2Ω resistance is

(1) 5A

(2) 2A

(3) Zero

(4) 4A

152. Four identical cells of EMF E and internal resistance r are connected as shown in figure, find terminal voltage across any one cell

(1) $\dfrac{2E}{3}$

(2) $\dfrac{3E}{2}$

(3) E

(4) Zero

153. In the circuit shown, the current through the ideal diode is

(1) 75mA

(2) 20mA

(3) 100mA

(4) 25mA

154. Current through ABC and $A'B'C'$ is I. What is the magnetic field at P? BP= $PB'=r$ (Here $C'B'PBC$ are collinear)
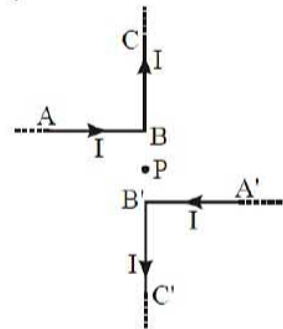
(1) $\dfrac{1}{4\pi}\dfrac{2I}{r}$

(2) $\dfrac{\mu_0}{4\pi}\left(\dfrac{2I}{r}\right)$

(3) $\dfrac{\mu_0}{4\pi}\left(\dfrac{I}{r}\right)$

(4) zero

155. In case of pure rolling of a disc on a rough ground. The ratio of speed at topmost point and at the centre of mass is

(1) $2:1$

(2) $1:2$

(3) $1:1$

(4) $\sqrt{2}:1$

156. Initially switch S is open. When it is closed?
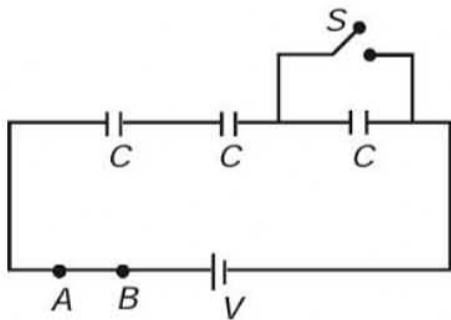
(1) Charge $\dfrac{CV}{3}$ flows from B to A

(2) There is not flow of charge

(3) Charge $\dfrac{CV}{6}$ flows from A to B
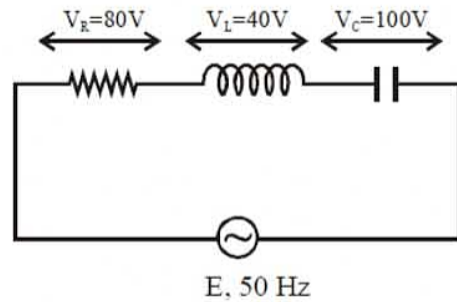
(4) Charge $\dfrac{CV}{6}$ flows to B to A

157. Two vectors $\vec{A}$ and $\vec{B}$ are such that $\left|\vec{A}+\vec{B}\right|=\left|\vec{A}-\vec{B}\right|$ then the angle between $\vec{A}$ and $\vec{B}$ is

(1) 0^0

(2) 90^0

(3) 120^0

(4) 180^0

158. The value of alternating emf E in the given circuit will be

(1) 220 V

(2) 140 V

(3) 100 V

(4) 20 V

159. The radii of curvature of the faces of a double convex lens are 10cm and 15cm. Its focal length is 12cm. What is the refractive index of glass

(1) 1.33

(2) 1.5

(3) 1.4

(4) 2

160. A block of mass 1kg is placed on a rough horizontal surface. Find acceleration of body if horizontal force F=10N applied on it. (Initially block is at rest)
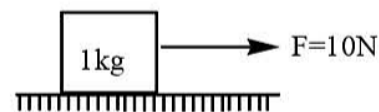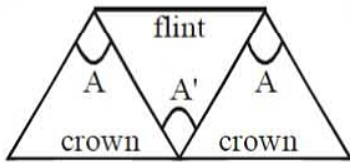

$m_s = 0.6$

$m_k = 0.2$

(1) 1 m/s^2

(2) 8 m/s^2

(3) Zero

(4) 1.2 m/s^2

161. Three thin prisms are combined as shown in figure. The refractive indices of the crown glass for red, yellow and violet rays are m_r, m_y and m_v respectively and those for the flint glass are m_r', m_y', m_v' respectively, if there is not net deviation in the yellow ray then the ratio A'/A will be
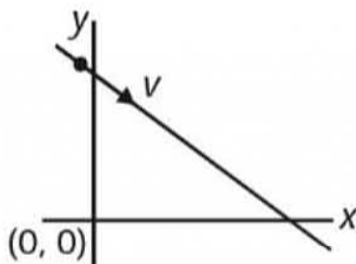

(1) $\dfrac{2\left(\mu_v - \mu_r\right)}{\left(\mu_v' - \mu_r'\right)}$

(2) $\dfrac{2\left(\mu_y - 1\right)}{\left(\mu_y' - 1\right)}$

(3) $\dfrac{2\left(\mu_v' - \mu_r'\right)}{\left(\mu_v - \mu_r\right)}$

(4) $\dfrac{2\left(\mu_y' - 1\right)}{\left(\mu_y - 1\right)}$

162. The angular momentum of particle about origin moving with uniform velocity moving along straight line as shown in the figure is

(1) Constant
(2) First increases then decreases
(3) First decreases then increases
(4) Decreases continuously

163. A slit of width 'a' illuminated by red light of wavelength $6500A^0$. The first minimum will fall at $\theta = 30^0$ if 'a' is equal to

(1) $3250 A^0$
(2) $6.5 \times 10^{-4} mm$
(3) $1.3 \mu m$
(4) $2.6 \times 10^{-4} cm$

164. Three identical bodies of equal mass M each are moving along a circle of radius R under the action of their mutual gravitational attraction. The speed of each body is

(1) $\sqrt{\dfrac{GM}{R}}$

(2) $\sqrt{\dfrac{GM}{3R}}$

(3) $\sqrt{\dfrac{GM}{\sqrt{3}R}}$

(4) $\sqrt{\dfrac{GM}{\sqrt{2}R}}$

165. The work function of metal A and B are in the ratio 1 : 2. If light of frequencies f and 2f are incident on the surfaces of A and B respectively, the ratio of the maximum kinetic energy of photo electrons emitted will be (f and 2f both frequency greater than threshold frequency of metal A and B)

(1) 1 : 1
(2) 1 : 2
(3) 1 : 3
(4) 1 : 4

166. The radioactivity of sample is R_1 at a time T_1 and R_2 at a time T_2. If the half life of the specimen is T, the number of atoms that have disintegrated in the time $(T_2 - T_1)$ is proportional to
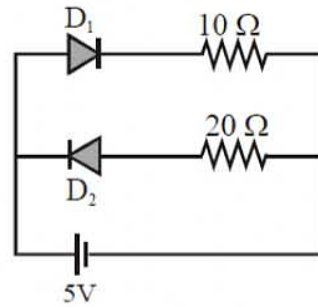
(1) $R_1T_1 = R_2T_2$

(2) $\dfrac{(R_2 - R_1)}{T}$

(3) $\dfrac{R_1 - R_2}{T}$

(4) $(R_1 - R_2)$

167. A ball of mass 1kg moving with a velocity of $100ms^{-1}$ strikes a wall at an angle 60^0 (as shown in figure). If the ball rebounds with same speed, the impulse acted on it is
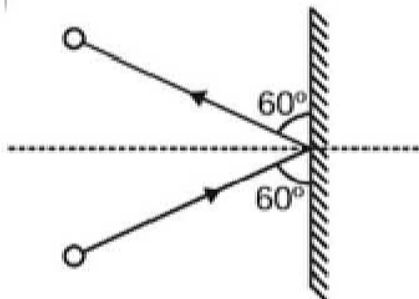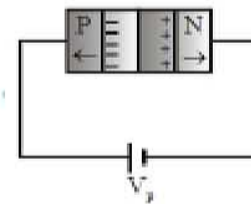

(1) 100 N – S

(2) $100\sqrt{3}N - S$

(3) 200 N – S

(4) $200\sqrt{3}N - S$

168. Two ideal diodes are connected to a battery as shown in the circuit. The current supplied by the battery is

(1) 0.75 A
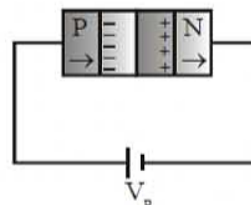
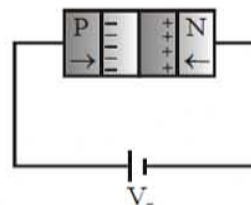(2) 0.43 A

(3) 0.25 A

(4) 0.5 A

169. In the case of forward biasing of PN junction, which one of the following figures correctly depicts the direction of flow of carries
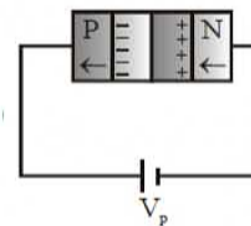

(1)

(2)

(3)

(4)

170. A transverse wave is described by the equation $y = y_0 \sin 2\pi \left(ft - \dfrac{x}{\lambda} \right)$. The maximum particle velocity is equal to four times wave velocity if

(1) $\lambda = \dfrac{\pi y_0}{4}$

(2) $\lambda = \dfrac{\pi y_0}{2}$

(3) $\lambda = \pi y_0$

(4) $\lambda = 2\pi y_0$

171. Two waves represented by $y_1 = a \sin \dfrac{2\pi}{\lambda}(vt - x)$ and $y_2 = a \cos \dfrac{2\pi}{\lambda}(vt - x)$ are superposed. The resultant wave has an amplitude equal to

(1) zero

(2) 2a

(3) a

(4) $a\sqrt{2}$

172. Electric field strength at an internal point of a uniformly charged non – conducting solid sphere of radius R at a distance x(x < R) from the centre is proportional to

(1) x

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

(3) x^2

(4) Independent of x

173. The length of an elastic string is x meter when the tension is 8N and y meter when the tension is 10N. The length in meter when the tension is 18 N is

(1) 4x – 5y

(2) 5y – 4x

(3) 9x – 4y

(4) 4y – 9y

174. If a section of soap bubble (of radius R) through its center is considered, then force on one half due to surface tension is

(1) $2\pi RT$

(2) $4\pi RT$

(3) $\pi R^2 T$

(4) $\dfrac{4T}{R}$

175. The heat is flowing through two cylindrical rods of same material. The diameters of the rods are in the ratio 1:2 and their lengths are in the ratio 2:1. If the temperature difference between their ends is the same, the ratio of rates of flow of heat through them will be

(1) 1 : 1

(2) 2 : 1

(3) 1 : 4

(4) 1 : 8

176. Six persons are standing of a regular hexagon of side 'a'. Each person starts moving towards the person standing at the adjacent corner with speed 'v'. (such that velocity of each is always pointed towards next). They will meet after a time

(1) $\dfrac{3v}{a}$

(2) $\dfrac{6v}{a}$

(3) $\dfrac{a}{6v}$

(4) $\dfrac{2a}{v}$

177. 1 mole gas expand with temperature according to the relation $V = KT^{2/3}$. When the temperature changes by 30^0C, the work done will be
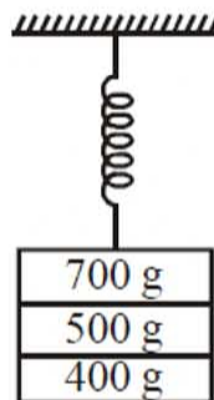
(1) 10R

(2) 20 R

(3) 30R

(4) 40R

178. A pendulum clock (fitted with a small heavy bob that is connected with a metal rod) is 5 seconds fast each day at a temperature of 15^0C and 10 seconds slow at a temperature of 30^0C. The temperature at which it is designed to give correct time, is

(1) 18^0C

(2) 20^0

(3) $24^0 C$

(4) $25^0 C$

179. The total mechanical energy of a particle executing simple harmonic motion is E. When the displacement is half the amplitude, its kinetic energy will be

(1) $\dfrac{3}{4}E$

(2) E

(3) $\dfrac{E}{2}$

(4) $\dfrac{E}{4}$

180. Three masses 700g, 500g and 400 g are suspended at the end of a spring as shown and are in equilibrium. When the 700g mass is removed, the system oscillates with a period of 3 seconds when the 500g mass is also removed, it will oscillate with a period of

(1) 1s

(2) 2s

(3) 3s

(4) $\sqrt{\dfrac{12}{5}}s$