Text Booklet Code

PLATFORM

No.**MOCK06/PCB**

the STOP to train minds

This Test Booklet contains 21 Pages

AA

Do not open this Test Booklet until you are asked to do so.

Important Instructions :

1. The Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars on **Side-1** and **Side-2** carefully with **blue / black** ballpoint pen only.
2. The test is of **3 hours** duration and Test Booklet contains **180** questions. Each question carries **4** marks. For each correct response, the candidate will get **4** marks. For each incorrect response, **one mark** will be deducted from the total score. The maximum marks are **720**.
3. Use **Blue / Black Ball point Pen only** for writing particulars on this page / marking responses.
4. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
5. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Room / Hall. *The candidates are allowed to take away Test Booklet only with them.*
6. The CODE for this Test Booklet is **AA**. Make that the CODE printed on **Side-2** of the Answer Sheet is the same as that on this Test Booklet. In Case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
7. The candidate should ensure that the Answer Sheet is not folde4) Do not make any stray marks on the Answer Sheet. Do not write you Roll No. anywhere else except in the specified space in the Test Booklet / Answer Sheet.
8. Use of white fluid for correction is ***not*** permissible on the Answer Sheet.
9. Each candidate must show on demand his / her Admit Card to the Invigilator.
10. No candidate, without special permission of the Superintendent or Invigilator, would leave his / her seat.
11. The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign the Attendance Sheet twice. **Cases where a candidate has not signed the Attendance Sheet second time will be deemed not to have handed over the Answer Sheet and dealt with as an unfair means case.**
12. Use of Electronic / Manual Calculator is prohibite4)
13. The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Boar4)
14. No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
15. The candidates will write the correct Test Booklet Code as given in the Test Booklet / Answer Sheet in the Attendance Sheet.

Name of the Candidate (in Capitals): _____

Roll Number (in Figures): _____

(In Words): _____

Centre of Examination (in Capitals): _____

Candidate's Signature: _____ Invigilator's Signature: _____

Facsimile Signature Stamp of

Centre Superintendent: _____

PLATFORM

MOCK - 06

NEET – 2021

BIOLOGICAL SCIENCE

001. Slime molds are similar to fungi in all regards except

(1) They are heterotrophic

(2) They store glycogen

(3) Their swarming cells are either flagellated or amoeboid

(4) Cell wall contains cellulose and chitin

002. Vascular bundles are conjoint, collateral, endarch and lack cambium between xylem and phloem in all, but not in

(1) Maize (2) Sunflower

(3) Wheat (4) Barley

003. The name of the class is based on sexual structure as the site of karyogamy and meiosis in

(1) Phycomycetes and Actinomycetes

(2)Deuteromycetes and Zygomycetes

(3) Ascomycetes and Basidiomycetes

(4) Basidiomycetes and Actinomycetes

004. The dominant photosynthetic phase in the lifecycle of pteridophyta is equivalent to the

(1) Gametophytic phase of Bryophyta

(2) Sporophytic phase of Bryophyta

(3) Gametophytic phase of Pteriodophyta

(4) Gametophytic phase of Gymnosperm

005. How many statements are correct of the following?

i. Multiple root cap is found in *Pandanus*

ii. *Chrysanthemum*, *Jasminum* and Pineapple one the examples of Sucker

iii. Root packet is present in hydrophytes

iv. A fleshy bud is called bulbil.

(1) iii (2) iv

(3) i (4) ii

006. Purine possess nitrogen at

(1) 1, 2, 4 & 6^{th} position

(2) 1, 3, 5 & 7^{th} position

(3) 1, 3, 7 & 9^{th} position

(4)1, 2, 7 & 9^{th} position

007. Which of the following is wrongly matched?

(1) Chloroplast: Chlorophyll

(2) Elaioplast: Starch

(3) Chromoplast: Carotenoids

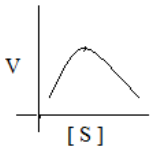
(4) Amyloplast: Carbohydrate

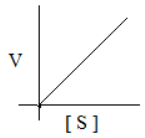
008. How many mitotic divisions must occur in a cell of root tip to form 128 cells?

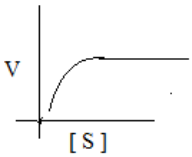
(1) 127 (2) 7

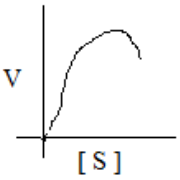
(3) 128 (4) 8

009. Which one of the following graph shows the relationship between rate of enzymatic reaction (v) and substrate concentration [S]?

(1) 

(2) 

(3) 

(4) 

010. The term New Systematics was coined by

(1) A. P. de Candolle

(2) J. Huxley

(3) C. Linnaeus

(4) E.Mayer

011. The number of Peristome teeth in the capsule of *Funaria* is

(1) 16 in one whorl

(2) 16 in two whorls

(3) 32 in one whorl

(4) 32 in two whorls

012. Mannitol is the reserved food of

(1) *Gracillaria* (2) *Fucus*

(3) *Chara* (4) *Porphyra*

013. The edible part of mushroom is

(1) Basidiosore (2) Auxospore

(3) Basidiocarp (4) Hyphae

014. The exposure of seeds to low temperature in presence of O_2 to break seed dormancy is

(1) Impaction (2) Stratification

(3) Scarification (4) Vernalisation

015. Variety of okra (Bhindi) resistant to shoot and fruit borer insect is

(1) Himgiri (2) Pusa Gaurav

(3) Prabhani Kranti (4) Pusa A_4

016. The function of macula densa cells of J. G.Apparatus is to

(1) Monitor NaCl concentration in the filtrate

(2) Add bicarbonate ions to the tubular filtrate

(3) Prevent water reabsorption in ascending limb of Henles loop.

(4) Secretes rennin in response to decreased afferent arteriole pressure.

017. If coding strand of DNA has the nitrogenous base sequence as 5' ATCTG 3' what would be the mRNA strand sequence?

(1)5' UACAG 3' (2) 5' TUGUC 3'

(3) 5' AUCUG 3' (4) 5' UAGUC 3'

018. Find the incorrect match with respect to protein synthesis

(1) DHU - mRNA

(2) *r*RNA – catalytic role in translation

(3) *t*RNA – Transfer amino acids

(4) *m*RNA – Codons

019. Find out the incorrect interpretation with respect to pulmonary volume and capacities

(1) Vital capacity = EC + RV

(2) Functional Residual capacity = TLC /IC

(3) Expiratory capacity = FRC /IC

(4) Total lung capacity = EC + RV + IRV

020. The first immunoglobulin to be produced against a pathogen in secondary immune response against it will be

(1) IgM (2) IgG

(3) IgD (4) IgE

021. The genetic material of an organism contains A = 17% which of the following base proportions confirms the dsDNA ?

(1) C = 33%, T = 17%

(2) T = 31%, C = 19%

(3) C = 23%, T = 27%

(4)T = 33% , C = 17%

022. The factors which favour the binding association of Hb with O_2 are

a. High pO_2 and low pCO_2

b. High temperature and low DPG level

c. More pH and less H^+ concentration

d. Low CO and high CO_2

(1) a, b & c only

(2) b and d only

(3) a and c only

(4) c and d only

023. Suitable time for conception in woman having menstrual cycle of 40 days is from

(1) 17^{th} to 23^{rd} day

(2) 10^{th} to 17^{th} day

(3) 14^{th} to 20^{th} day

(4) 23^{rd} to 29^{th} day

024. In large human population 36% members are colour blind. Find out the percentage of carrier members in such population

(1) 24% (2) 48%

(3) 36% (4) 14%

025. The ejection of stomach contents through the mouth is controlled by neural centers present in

(1) Medulla (2) Pons

(3) Cerebrum (4) Cerebellum

026. How many of the following plants have endospermic seeds?

Bean, Rice, Castor, Orchid, Maize, Groundnut, Pea

(1) 1 (2) 2

(3) 3 (4) 5

027. Select the correct sequential stages in ovarian cycle

a. Corpus luteum b. Graafian follicle c. Corpus albicans d. Corpus haemorrhagicum

(1) a, d, c, b (2) b, d, c, a

(3) b, d, a, c (4) b, a , d, c

028. *Wuchereria bancrofti* can cause all the following symptoms except

(1) Swelling of salivary glands and smaller joints

(2) Swelling of Scrotum in males

(3) Degeneration of external genitals

(4) Chronic inflammation of Lymphatic vessels

029. Flourishing of dark coloured moth after industrialisation in England can be considered as an example of

(1) Directional Selection

(2) Disruptive selection

(3) Stabilising Selection

(4) Progressive Natural selection

030. Choose the incorrect match

(1) Oxyntic cell : Pepsinogen

(2) Caecum : Symbiotic micrs organisms

(3) Glisson's capsule : Hepatic lobule

(4) Sphincter of Oddi : Common hepato Pancreatic duct

031. Match the correct pair

(1) Eye of Octopus and mammal – Homologous Organ

(2) Vertebrate heart and Brain – Analogous Organ

(3) Wings of insect and flipper of whale – Homologous Organ

(4) Sweet potato and Potato – Analogous Organ.

032. Which of the following substance acts as electron acceptor in PSI to produce NADP during light reaction ?

(1) Cytochrome (2) Ferredoxin

(3) Plastocyanin (4) Phaeophytin

033. Choose the odd option with respect to sickle cell Anaemia

(1) It is due to point mutation.

(2) GTG in the coding strand is replace by GAG

(3) It is a result of Transversion.

(4) Heterozygous (Hb^AHb^s) are carrier of the disease

034. How many of the following listed plants, there is a clear distinction between vegetative reproductive and senescence phases?

Rice, Mango, Apple, Orange, Radish, Bamboo

(1) 4 (2) 3

(3) 5 (4) 1

035. Which of the following is true for Ti Plasmid?

(1) It is an artificial plasmid

(2) It is a Tumour inducing plasmid of *Agrobacterium tumefaciens*

(3) It helps the λ phage vector in process of cloning

(4) both 2 and 3

036. Cells of connective tissue that releases a chemical substance responsible for stimulating local inflammation is

(1) Mast cell (2) Fibroblast

(3) Histiocyte (4) Leukocyte

037. Choose the correct sequence with respect to relative contribution of green house gases to total global warming

(1) $CO_2 > CH_4 > N_2O > CFC_5$

(2) $CO_2 > N_2O > CH_4 > CFC_5$

(3) $CO_2 > CFC_3 > CH_4 > N_2O$

(4) $CO_2 > CH_4 > CFC_3 > N_2O$

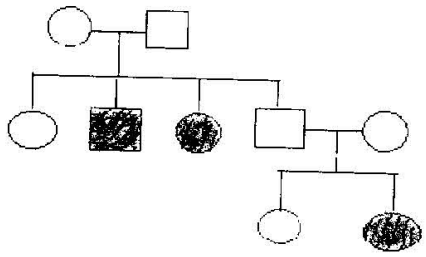
038. How many of the given plants have actinomorphic flower with superior ovary?

(Brinjal, Cotton, Sunflower, Guava, Peach, Mustard, Apple, Lily, Chinarose)

(1) 4 (2) 5

(3) 6 (4) 7

039. The given pedigree depicts the inheritance of



(1) Colour blindness

(2) Huntington chorea

(3) Myotonic dystrophy

(4) Thalassemia

040. Ootheca of cockroach is formed of ------ secreted by --------.

(1) Lipid, Seminal Vesicle

(2) Chitin, Utriculi brevores

(3) Protein, collaterial gland

(4) Chitin, collaterial gland

041. In Flavr Savr tomato, expression of a native tomato gene has been blocked which leads to not production of

(1) Heparin

(2) Polyethylene glycol

(3) α , 1 antitrypisin

(4) Polygalacturonase enzyme

042. How many amino acids can be translated from given sequence of nucleotides in mRNA if 6^{th} nucleotide undergoes deletion?

AUG UGC ACU AUA GCGUAA

(1) Two (2) One

(3) Four (4) Three

043. What type of gene interaction is to be noted when the phenotypic ration of F_2 will be 3 : 6 : 2 : 1 : 3 : 1 instead of 9 : 3 : 3 : 1

(1) Both traits show incomplete dominance

(2) Epistasis

(3) Both traits show codominance

(4) One trait shows complete dominance and the other trait shows incomplete dominance

044. Which of the following cranial nerve controls the secretion of Salivary glands?

(1) VII (2) III

(3) IX (4) both 1 and 3

045. Choose the mis matched pair with respect to function of mineral elements.

(1) Phosphorus – Constituent of Cell membrane

(2) Zinc – Synthesis of auxins

(3) Molybdenum – Pollen germination

(4) Calcium – Synthesis of middle lamella

046. Find out the incorrect match with respect to human evolution

(1) Tuang Baby – *Australopithecus africanus*

(2) Cromagnon man – Homo sapiens fassilis

(3) Java man – Sinanthropus erectus

(4) Handy man – Homo habilis

047. Compare the columns and choose the correct option

Column I	Column II	
P. Oxaloacetate	1	5C
Q. Oxalo succinate	2	4C
R. PGAId	3	2C
S. α Ketogluterate	4	6C
	5	3C

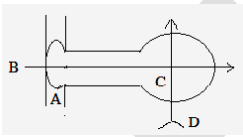
	P	Q	R	S
(1)	2	4	5	1
(2)	4	2	5	1
(3)	2	3	1	5
(4)	3	2	1	4

048. How many chromosomes a cell will have at $G_2$and after M phase respetively If it has 34 chromosomes in the meristematic cell at G_1 phase?

(1) 34, 17 (2) 17, 34

(3) 34, 34 (4) 68, 34

049. Identify A, B, C and D in the given diagram during aerobic respiration



(1) A = Outer mitochondrial membrane

(2) B = $2H^+$

(3) C = Fo

(4) D = PPi

050. Choose the odd one with respect to Agamospermy

(1) Parthenocarpy

(2) Apospory

(3) Diplospory

(4) Adventive embryony

051. In MOET, at what stages are the embryos recovered and transferred to surrogate mother ?

(1) at 6 celled stage

(2) at 8 – 32 celled stage

(3) at Zygote stage

(4) at 64 celled stage

052. Compound tubular glands are the glands having secretary portion with compound branching for which the example can be

(1) Brunner's gland

(2) Crypts of Lieberkuhn

(3) Sebaceous gland

(4) Sublingual salivary gland

053. Find out the incorrect match with respect to contraceptive device method and duration for which it is effective

(1) Lactational Amenorrhoea – 6 years

(2) Saheli pill – 1 week

(3) Nor plant – 5 years

(4) CuT 380A – 7 – 10 years

054. Select the incorrect match amongst the following

(1) Benign Tertian Malaria: Plasmodium vivax

(2) Malignant Malaria: Cerebral malaria

(3) Mild Tertian Malaria: *Plasmodium malariae*

(4) Schuffner's dot: *Plasmodium vivax*

055. Just after parturition there is a phase of Amenorrhoea because of

(1) High oxytocin level

(2) High Progesterone level

(3) High Prolactin level

(4) High FSH and LH level

056. Which of the following set includes the components of human saliva ?

(1) β amylase, Maltose, HCO_3^-

(2) Ptyalin, bicarbonates, HCl

(3) α amylase, Mucous,Cl^-, Na^+

(4) Salivary amylase, K^+, dipeptidase, Lysozyme

057. Which of the following hormone stimulates the re-absorption of Na^+ and water and excretion of K^+ and phosphate ions?

(1) Vasopressin from Hypothalamus

(2) Mineralo Corticoids from adrenal medulla

(3) Thyroxine from thyroid gland

(4) Aldosterone from Adrenal Cortex

058. Cyclosporine A in given to avoid transplant rejection which acts by

(1) Inhibition of CMI response

(2) Suppression of antibody mediated immunity

(3) Prevention of complementary system

(4) Inhibition of B cell response

059. Pyramid of biomass in Sea generally

(1) Upright

(2) Inverted

(3) Both upright and Inverted

(4) Hyperbolic

060. The compound which helps in Protoplast fusion and helps foreign DNA to enter into the host cell is

(1) Lysozyme (2) PEG

(3) Ethidium Bromide (4) Chilled ethanol

061. Dorsally 8^{th}, 9th and 10^{th} pairs of ribs articulate with

(1) Sternum (2) Vertebral Column

(3) 7^{th} rib (4) Xiphoid process

062. A cross is made between two Tall pea plants. In F_1 700 plants are produced of which 180 dwarf. The parental genotypes are

(1) TT × tt (2) TT × Tt

(3) Tt ×Tt (4) Tt × tt

063. Which of the following is not used in PCR?

(1) Taq polymerase (2) Primers

(3) Ca^{2+} (4) dNTPs

064. What is incorrect for Pollination by water?

(1) All aquatic plants are pollinated by water

(2) Pollen grains often possess mucilage sheath

(3) Emergent flowers above water level are pollinated by insects or winds.

(4) Pollination can take place inside or on water surface

065. Montreal protocol is related to

(1) CO_2 emission control

(2) SO_2 emission control

(3) Ozone layer protection

(4) CFC emission control

066. Which of the following is not correct matching of phylum and its three examples?

(1) Annelida: *Aphrodite, Chaetopterus,Bonnelia*

(2) Mollusca: *Teredo, Aplysia, Chaetopleura*

(3) Aschelminthes: *Ancylostoma, Enterobius, Tubifex*

(4) Arthropoda : *Lepisma, Buthus,Leptocorisa*

067. Consider the following modified structures in plants and select ontogenetically similar structures.

A. Phyllode in *Acacia*

B. Thorn in Cactus

C. Tendril in watermelon

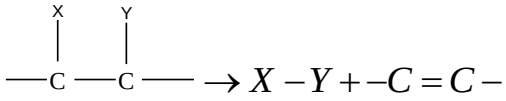
D. Cladada in *Asparagus*

E Spines in cacti

(1) A & C (2) A & D

(3) B & C (4) B & E

068. Which of the following enzyme catalyses the following reaction?



$$\rightarrow X-Y+-C=C-$$

(1) Steapsin

(2) DNA polymerase

(3) Glutamate pyruvate transaminase

(4) Histidine decarboxylase

069. Find the correct match with respect to biodiversity loss.

Column I	**Column II**
a. Lead poisoning	1. Plant pollinator mutualism
b. Over exploitation	2. *Parthenium*
c. Alien species	3. Mortality of aquatic birds
d. Coextinction	4. Dodo

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

070. A plant with genotype EEFg Gg HH Ii producing P types of gametes and another plant with genotype LlMmNnOO producing Q types of gametes. The values of P and Q are

(1) P = 8 Q = 4 (2) P = 4, Q = 4

(3) P = 8, Q = 8 (4) P = 6, Q = 6

071. Find out the correct set of homopolysaccharides

(1) Inulin, Starch, Peptidoglycan

(2) Glycogen, Hemicellulose,Pectin

(3) Cellulose, Starch,Glycogen

(4) Chitin, Inulin, Pectin

072. In male cockroach, the middle layer of trilayered spermatophere is secreted by

(1) Ejaculatory duct

(2) Mushroom gland

(3) Phallic gland

(4) All of these

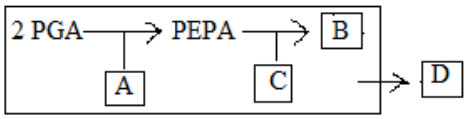
073. How many features are correct for majority of the pteridophytes ?

a. Heterosporus b. Homosporous
c. Holobiastic d. Meroblastic
e. Multiflagellate sperms
f. Biflagellate sperms

(1) a, d, f (2) b, c, e

(3) a, c, e (4) b, d, f

074. Identify A, B, C and D in the given reaction occurring during aerobic respiration from the following option



(1) A – H_2O, B – Acetyl CoA
(2) C – ADP, D – Mitochondrial matrix
(3) A – ATP, C – H_2O
(4) B – Pyruvic acid, D - Cytoplasm

075. True statement is

(1) All reptiles have

(2) In *Exocoetus* pelvic fins become large by which it can glide into air.

(3) The best characteristic feature for identifying bird is presence of wings.

(4) Endothermy allows many animals to live in cold climate.

076. How many turns of Calvin cycles are required for production of one molecule of sucrose?

(1) 12 (2) 6

(3) 3 (4) 8

077. Select the incorrect match with respect to materials absorbed in different parts of the nephron of kidney

Parts of nephron	Reabsorbed
1. PCT	Glucose, amino acid
2. DCT	NaCl, HCO_3^-
3. Ascending limb of Henle's loop	NaCl
4. Descending limb of Henle's loop	Water, NaCl

078. The highest cardiac impulse conduction speed is shown by

(1) SA Node (2) A – V Node

(3) Purkinje fibre (4) Bundle of His

079. Study the diagram given below and choose the correct option

Cell A	Cell B
$\psi_w = -2Pa$	$\psi_s = -9Pa$ $\psi_p = 7Pa$
Cell C	
$\psi_s = -5Pa$ $\psi_p = 1Pa$	

(1) Cell A, B and C are at equilibrium

(2) Cell A absorbs more water from cell C

(3) Water diffuse from cell C to B only

(4) No net movement of water occurs between cell A & B.

080. The simple permanent tissue which is absent in monocot is

(1) Prosenchyma

(2) Collenchyma

(3) Fibre

(4) Parenchyma

081. How many cervical vertebral are found in giraffe?

(1) 17 (2) 37

(3) 77 (4) 7

082. Which of the following is a matching set of phylum and its 3 examples?

(1) Porifera : *Spongilla, Euplectella, Permatula*

(2) Cridaria : *Bonellia, Physalia, Aurelia*

(3) Platyhelminthes : *Planaria, Schistosoma, Enterobius*

(4) Mollusca : *Tereda, Loligo, Octogus*

083. 'No bone' is

(1) Scapula (2) Atlas

(3) Axis (4) Radius

084. Some of the inhibitors of bacterial protein synthesis and their effect are listed in column I and column II. Match them and choose the correct option.

Column I	**Column II**
I. Chloramphenicol	*p* Inhibits binding of Aminoacyl tRNA To ribosome
II. Erythromycin	*q* Inhibits Interaction between tRNA & mRNA
III. Neomycin	*r* Inhibits initiation of translation
IV. Streptomycin	*s* Inhibits peptidyl transferase activity
	t Inhibits transferase of *m*RNA along ribosome

	I	**II**	**III**	**IV**
(1)	s	t	q	r
(2)	p	r	s	t
(3)	r	t	p	q
(4)	p	q	s	r

085. Select the incorrect match

(1) Cauline leaf: Maize

(2) Unifoliate leaf: Silk cotton

(3) Bipinnate leaf: Mimosa

(4) Simple leaf: Banyan

086. Sometimes internode between calyx and corolla becomes elongated. It is called

(1) Anthophore (2) Androphare

(3) Carpophore (4) Gynandrophore

087. Which of the following statements is incorrect?

(1) Advertisement flag of *Mussanda* is modified sepal.

(2) Papus is persistent hairy petal in asteraceae.

(3) In *Trapa* calyx is modified into spines.

(4) Aggregate fruits are formed from polycarpellary apocarpous ovary.

088.

Atropa, Cosmos, Helianthus, Sesbania, Parthenium, Vicia, Raphanus, Brassica, Chrysanthemum

How many plants mentioned above belong to Asteraceae family?

(1) 7 (2) 6

(3) 3 (4) 5

089. Root cap of monocot is derived from

(1) Calyptrogen (2) Dermatogen

(3) Protoderm (4) Periblem

090. In which one of the following male and female gamotophytes do not have free living independent existence?

(1) Marchantia

(2) Mango

(3) Selaginella

(4) All of these.

Subject: CHEMISTRY

091. N_2 and O_2 are converted to mono cations N_2^+ and O_2^+ respectively, which of the following is wrong?

(1) In N_2^+, the N – N bond weakens

(2) In O_2^+, the O – O bond order increases

(3) In O_2^+, paramagnetism decreases

(4) N_2^+ becomes diamagnetic

092. Which of the following orders is wrong?

(1) Electron affinity
$N < O < F < Cl$

(2) 1st ionisation potential
$Be < B < N < O$

(3) Basic property
$MgO < CaO < FeO < Fe_2O_3$

(4) Reactivity
$Be < Li < K < Cs$

093. $N(SiH_3)_3$ has

(1) sp^3 hybridisation, pyramidal shape

(2) sp^2 hybridisation, planar shape

(3) sp^3 hybridisation, tetrahedral shape

(4) dsp^2 hybridisation, square planar shape

094. Which of the following set is of iso-structural species?

(1) NH_4^+ and NH_2^-

(2) NH_2^- and CH_3^+

(3) SO_4^{2-} , PO_4^{3-} and $[BF_4]^-$

(4) NH_4^+ and NH_3

095. Select correct statement

(1) $(CN_2)^{2-}$ & CO_2 are isolobal

(2) Mg_2C_3 reacts with water to form propyne

(3) CaC_2 has *Nacl* type lattice

(4) All of the above

096. 2g of CO and CO_2 on reaction with excess I_2O_5 yields 2.54g I_2 (atomic Mass = 127). The percentage of CO_2 in the original mixture is

(1) 60 (2) 35

(3) 70 (4) 30

097. The change in volume in m*l* on complete decomposition of 100ml. PH_3 (g) into P_4 (g) and H_2 (g)

(1) 75 (2) 50 (3) 500 (4) 250

098. The oxidation of 25m*l* of a solution(X) containing Fe^{2+} ion required 20ml. of another solution(Y) containing $KMnO_4^-$ ion in acidic medium. What volume of Y would be required to oxidize 25ml. of X in neutral condition?

(1) 25ml. (2) 33.3ml.

(3) 35ml. (4)12ml.

099. The equilibrium pressure at 327^0 C of $NH_4CN(s) \rightleftharpoons NH_3(g) + HCN(g)$ is 1.2 atm. If 0.2mol $NH_4CN(s)$ is heated to 327^0C in a 10L container calculate the mole of $NH_4CN(s)$ left at equilibrium:

(1) 0.078 (2) 0.087

(3) 0.045 (4) 0.027

100.0.1 mole each of ethyl alcohol and acetic acid are allowed to react. At equilibrium, the acid was exactly neutralised by 100 mL of 0.85 N NaOH. If no hydrolysis of ester is supposed to have undergone, find Kc

(1) 0.041 (2) 0.031

(3) 0.021 (4) 0.010

101. The solubility of solid silver chromate, Ag_2CrO_4 (K_{sp} = 9×10^{-12}) is determined in three solvents

I. Pure water II. 0.1 M $AgNO_3$ III. 0.1 M Na_2CrO_4 Predict the relative solubility of Ag_2CrO_4, in the three solvents:

(1) I = II = III (2) I < II < III

(3) III = II < I (4) II < III < I

102. The molar conductivity at infinite dilution of $AgNO_3$, NaCl and $NaNO_3$ is 116.5, 110.3 and 105.2 $ohm^{-1}cm^2\ mol^{-1}$ respectively.The conductivity of AgCl(M=143.5) inwater is 2.4×10^{-6} $ohm^{-1}\ cm^{-1}$ and that of water used in experiment is 1.16×10^{-6} $ohm^{-1}\ cm^{-1}$. The solubility of AgCl in g dm^{-3} is

(1) 1.4622×10^{-3} g dm^{-3}

(2) 1.4622×10^{-6} g dm^{-3}

(3) 0.817×10^{-6} g dm^{-3}

(4) 4.136×10^{-6} g dm^{-3}

103. The correct relation between degree of dissociation (α) and vant-hoff factor (i) for the weak electrolyte A_xB_y is

(1) $\alpha = \frac{i-1}{x+y+1}$ (2) $\alpha = \frac{i-1}{x+y-1}$

(3) $\alpha = \frac{x+y-1}{i-1}$ (4) $\alpha = \frac{x+y+1}{i-1}$

104. Which of the following transition in Li^{2+} is forbidden?

(1) 3s → 2p (2) 3d → 2p

(3) 4s → 2p (4) 3d → 2s

105. Which is not true for spherically symmetrical orbitals

(1) they don't have any angular node

(2) they don't have any spherical node

(3)they don't have any net angular momentum vector

(4) all the above

106. 50 mL of 0.2 M solution of a compound with empirical formula $CoCl_3.4NH_3$ on treatment with excess of $AgNO_3$ (aq) yields 1.435 g of AgCl(M=143.5) . Ammonia is not removed by treatment with concentrated H_2SO_4. The formula of the compound is

(1) $[Co(NH_3)_4Cl_3]$ (2) $[Co(NH_3)_4Cl_2]Cl$

(3) $[Co(NH_3)_4]Cl_3$ (4) $[CoCl_3(NH_3)]NH_3$

107. In which the central metal ion is sp^3d^2 hybrid?

(1) $[Co(F_6)]^{3-}$ (2) $[Co(NH_3)_6]^{3+}$

(3) $[Fe(CN)_6]^{3-}$ (4) $[Cr(NH_3)_6]^{3+}$

108. John-Teller distortion is strongest in

(1) $[Co(F_6)]^{3-}$ (2) $[Co(NH_3)_6]^{2+}$

(3) $[Fe(CN)_6]^{3-}$ (4) $[Cr(NH_3)_6]^{3+}$

109. The ratio of edges of simple cubic , body centered cubic and face centered cubic unit cells formed by same atom

(1) 1:2:3 (2) 1:√2:√3

(3) 3:3√2:2√3 (4) 3:2√3:3√2

110. Which is incorrect when white ZnO is heated?

(1) it turns yellow

(2) it remains a perfect crystal

(3) it suffers metal excess defect

(4) O_2 (g) is liberated

111. Hard water when passed through ion exchange resin obtaining R'COOH, it becomes

(1) alkaline

(2) anaions free

(3) cations free

(4) both (1) and (3)

112. CrO_3 dissolves in aqueous NaOH to give

(1) CrO_4^{2-} (2) $Cr(OH)_3^-$

(3) $Cr_2O_7^{2-}$ (4) $Cr(OH)_2$

113. Larger number of oxidation states are shown by actinoides than that by lanthanoides due to

(1) low shielding power of 5f than that of 4f

(2) energy difference between 5f-6d is less than that of 4f-5d

(3) energy difference between 5f-6d is greater than that of 4f-5d

(4) both (1) and (2)

114. Which is incorrectly matched

(1) Al-electroreduction

(2) Ag-cyanide leaching

(3) Cu-spelter

(4) Fe-L.D process

115. The optical activity of freshly prepared aq. Solution of invert sugar and of the same solution after some time respectively are

(1) + and – (2) - and +

(3) – and – (4) + and +

116. Which is used to treat depression and hypertension

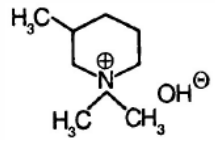
(1) equanil

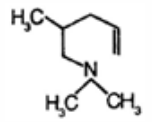
(2) sulphanilamide

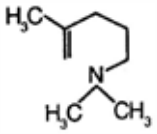
(3) barbituric acid

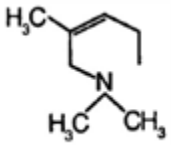
(4) aspirin

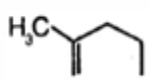
117. Elimination product of following compound is



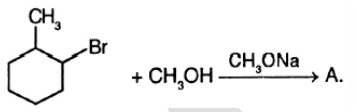
(1) 

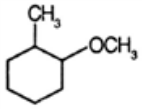
(2) 

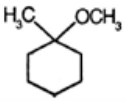
(3) 

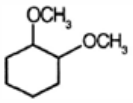
(4) 

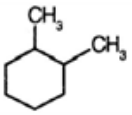
118. The major product A is



(1) 

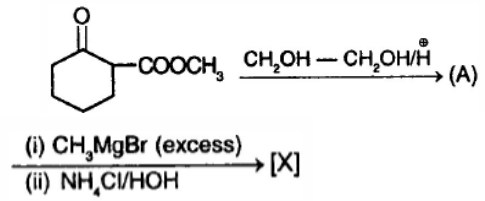
(2) 

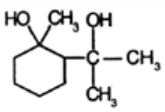
(3) 

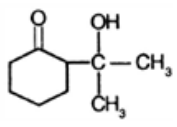
(4) 

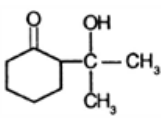
119. Which gives positive iodoform test
(1) benzaldehyde
(2) acetoacetic ester
(3) ethyl formet
(4) All of these

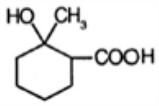
120. In the given reaction [X] is:



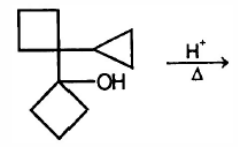
(1) 

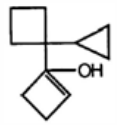
(2) 

(2) 

(4) 

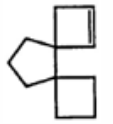
121. Rearranged alkene product after rearrangement at low temperature will be mainly



(1) 

(2) 

(3) 

(4) 

122. An example of electrophilic substitution reaction is

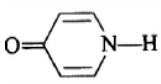
(1) Chlorination of methane

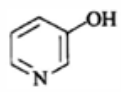
(2) Conversion of methyl chloride to methyl alcohol

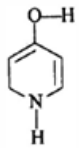
(3) Nitration of benzene

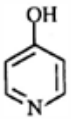
(4) Formation of ethylene from ethyl alcohol.

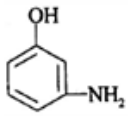
123. The enol form of following compound is



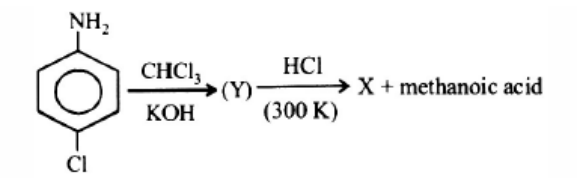
(1) 

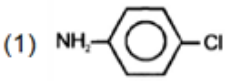
(2) 

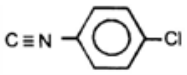
(3) 

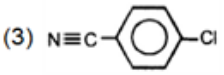
(4) 

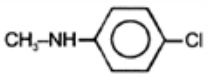
124. Identify X in the sequence given:



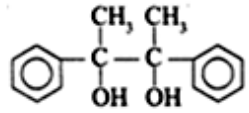
(1) 

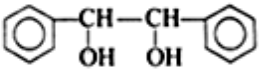
(2) 

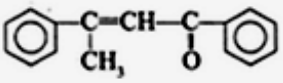
(3) 

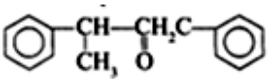
(4) 

125. Acetophenone on treatment with C_2H_5ONa gives

(1) 

(2) 

(3) 

(4) 

126. When dihydroxyacetone reacts with HIO_4, the products is/ are

(1) HCHO

(2) HCOOH

(3) HCHO and HCOOH

(4) HCHO and CO_2

127. The enthalpy of fusion of ice is x at 0^0 C, the entropy of fusion is

(1) x (2) - x

(3) –273x (4) 273x

128. For an irreversible isothermal cyclic process which is true

(1) Q = 0 (2) W = 0

(3) $\Delta U = 0$ (4) all

129. A reaction takes infinite time for completion. If it takes 20 min. for 30% completion in what time 51% will be completed

(1) 100 min. (2) 20 min.

(3) 40 min. (4) 30.3 min.

130. Which of the cataions appear in two groups in qualitative analysis of basic radicals

(1) Fe^{2+} (2) Pb^{2+}

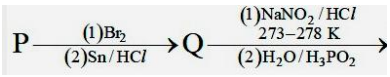
(3) Al^{3+} (4) Ag^{+}

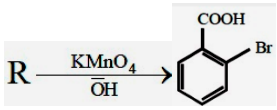
131. which anaion interferes in detection of halide ion by $AgNO^3$ in lassign`s test

(1) CN^- (2) S^{2-}

(3) both (1) and (2) (4) all

132. Identify P





(1) o-nitroaniline

(2) m-nitroaniline

(3) p-nitroaniline

(4) o-bromoaniline

133. The energies of activation for forward and reverse reactions for $A_2 + B_2 \rightleftharpoons 2AB$ are 180 kJ mol^{-1} and 200 kJ mol^{-1} respectively. The presence of a catalyst lowers the activation energy of both (forward and reverse) reactions by 100 kJ mol^{-1}. The enthalpy change of the reaction

($A_2 + B_2 \rightarrow 2AB$) in the presence of catalyst will be (in kJ mol^{-1})

(1) 120 (2) 280

(3) 20 (4) 300

134. Which produces an 2^0 alcohol

(1) acetone and CH_3MgBr

(2) acetone and $(CH_3)_2CH$ MgBr

(3) CH_3CN and CH_3MgBr

(4) CH_3CN and $(CH_3)_2CH$ MgBr

135. Which of the following reactions will not result in the formation of carbon-carbon bond?

(1) Reimer-Tieman (2) wurtz

(3) Friedel-Craft (4) Cannizero

Subject: PHYSICS

136. A body of mass 2.9 kg is suspended from a string of length 2.5 m and is at rest. A bullet of mass 100 g , strikes the block horizontally with velocity 150 ms^{-1} and sticks to it. What is the maximum angle made by the string with the vertical after the impact? ($g = 10\ m/s^2$)

(1) 30° (2) 45°

(3) 60° (4) 90°

137. The electric field of a plane electromagnetic wave varies with time of amplitude 2 Vm^{-1} propagating along z-axis. The average energy density of the magnetic field (in J m^{-3}) is

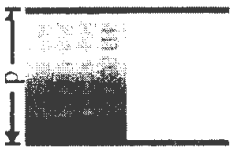
(1) 13.29×10^{-12}

(2) 8.86×10^{-12}

(3) 17.72×10^{-12}

(4) 4.43×10^{-12}

138. A parallel plate air capacitor has a capacitance C. When it is half filled with a dielectric of dielectric constant 5, the percentage increase in the capacitance will be



(1) 400% (2) 66.6%

(3) 33.3% (4) 200%

139. The electric potential at any point as a function of distance (x) in meter is given by

V = 5x2 + 10x – 9 (volt).Value of electric field at x = 1 is

(1) –20 Vm^{-1} (2) 6 Vm^{-1}

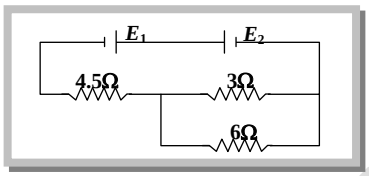
(3) 11 Vm^{-1} (4) –23 Vm^{-1}

140. If a photocell is illuminated with a radiation 1240 Å, the stopping potential is found to be 8 volt; then the work function of the emitter and the threshold wavelength are

(1) 2 eV, 2000 Å (2) 2 eV, 6200 Å

(3) 2 eV, 2480 Å (4) 3 eV, 6200 Å

141. In the circuit shown below the cells E_1 and E_2 have emf's 4 *V* and 8 *V* and internal resistance 0.5 *ohm* and 1 *ohm* respectively. Then the potential difference across cell E_1 and E_2 will be



(1) 3.75 *V*, 7.5 *V*

(2) 4.25 *V*, 7.5 *V*

(3) 3.75 *V*, 3.5 *V*

(4) 4.25 *V*, 4.25 *V*

142. The spherical shape of rain-drop is due to

(1) Density of the liquid

(2) Surface tension

(3) Atmospheric pressure

(4) Gravity

143. Find the ratio of specific heat at constant pressure to the specific heat at constant volume for NH_3

(1) 1.33 (2) 1.44

(3) 1.28 (4) 1.67

144. Two metal strips that constitute a thermostat must necessarily differ in their

(1) Mass

(2) Length

(3) Resistivity

(4) Coefficient of linear expansion

145. The mass of the moon is about 1.2% of the mass of the earth. Compared to the gravitational force the earth exerts on the moon, the gravitational force the moon exerts on earth

(1) Is the same

(2) Is smaller

(3) Is greater

(4) Varies with its phase

146. The frequency of sound wave is n and its velocity is v if the frequency is increased to 4*n* the velocity of the wave will be

(1) *v* (2) 2*v*

(3) 4*v* (4) *v*/4

147. The mass of a box is 2.3 kg. Two marbles of masses 2.15 *g* and 12.39 *g* are added to it. The total mass of the box to the correct number of significant figures is

(1) 2.340 *kg* (2) 2.3145 *kg*.

(3) 2.3 *kg* (4) 2.31 *kg*

148. An automobile engine develops 100 *kW* when rotating at a speed of 1800 rev/*min*. What torque does it deliver?

(1) 350 *N-m* (2) 440 *N-m*

(3) 531 *N-m* (4) 628 *N-m*

149. The acceleration of a particle performing S.H.M. is 12 *cm/sec*^{2} at a distance of 3 *cm* from the mean position. Its time period is

(1) 0.5 *sec* (2) 1.0 *sec*

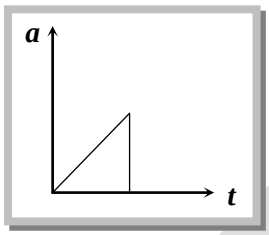
(3) 2.0 *sec* (4) 3.14 *sec*

150. Four bodies *P, Q, R* and *S* are projected with equal velocities having angles of projection 15^o, 30^o, 45^o and 60^o with the horizontal respectively. The body having shortest range is

(1) *P* (2) *Q*

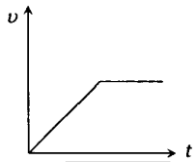
(3) *R* (4) *S*

151. The acceleration-time graph of a body is shown below

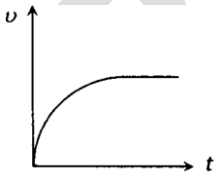


The most probable velocity-time graph of the body is

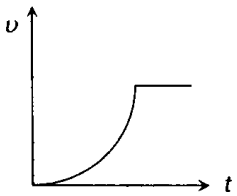
(1)



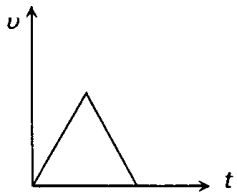
(2)



(3)



(4)



152. Two wires *A* and *B* have the same length and area of cross section. But Young's modulus of *A* is two times the Young's modulus of *B*. Then the ratio of force constant of *A* to that of *B* is

(1) 1 (2) 2

(3) $\frac{1}{2}$ (4) $\sqrt{2}$

153. A body is just floating on the surface of a liquid. The density of the body is same as that of the liquid. The body is slightly pushed down. What will happen to the body?

(1) It will slowly come back to its earlier position

(2) It will remain submerged, where it is left

(3) It will sink

(4) It will come out violently

154. A person sitting in an open car moving at constant velocity throws a ball vertically up into air. The ball fall

(1) Outside the car

(2) In the car ahead of the person

(3) In the car to the side of the person

(4) Exactly in the hand which threw it up

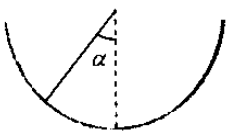
155. An insect crawls up a hemispherical surface very slowly (see the figure). The coefficient of friction between the insect and the surface is 1/3. If the line joining the centre of the hemispherical surface to the insect makes an angle α with the vertical, the maximum possible value of α is given by

(1) $\cot\alpha = 3$

(2) $\tan\alpha = 3$

(3) $\sec\alpha = 3$

(4) $\operatorname{cosec}\alpha = 3$



156. A particle of mass *m* moving with Velocity speed 6 *m*/*sec* collides elastically with a particle of M moving at 4 m/s. If *m*<<*M* then for one dimensional elastic collision, the speed of lighter particle after collision will be

(1) 2 *m*/*sec* in original direction

(2) 2 *m*/*sec* opposite to the original direction

(3) 4 *m*/*sec* opposite to the original direction

(4) 4 *m*/*sec* in original direction

157. A watch shows time as 3: 25 when seen Through a mirror, time appeared will be

(1) 8: 35 (2) 9: 35

(3) 7: 35 (4) 8: 25

158. Two objects *A* and *B* when placed one after another in front of a concave mirror of focal length 10 *cm* from images of same size. Size of object *A* is four times that of *B*. If object *A* is placed at a distance of 50 *cm* from the mirror, what should be the distance of *B* from the mirror

(1)10 *cm* (2) 20 *cm*

(3)30 *cm* (4) 40 *cm*

159. A telescope has an objective lens of 10 *cm* diameter and is situated at a distance one *kilometre* from two objects. The minimum distance between these two objects, which can be resolved by the telescope, when the mean wavelength of light is 5000 *Å*, is of the order of

(1) 0.5 *m* (2) 5 *m*

(3) 5 *mm* (4) 5*cm*

160. Two interfering wave (having intensities are 9*I* and 4*I)* path difference between them is 11λ. The resultant intensity at this point will be

(1) *I* (2) 9 *I*

(3) 4 *I* (4) 25 *I*

161. A diffraction pattern is obtained using a beam of red light. What happens if the red light is replaced by blue light?

(1) No change

(2) Diffraction bands become narrower and crowded together

(3) Bands become broader and farther apart

(4) Bands disappear

162. A heavy nucleus at rest breaks into two fragments which fly off with velocities in the ratio 8: 1. The ratio of radii of the fragments is

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

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

163. At any instant the ratio of the amount of radioactive substances is 2:1. If their half lives be respectively 12 and 16 hours, then after two days, what will be the ratio of the substances?

(1) 1: 1 (2) 2: 1

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

164. Two photons, each of energy 2.5*eV* are simultaneously incident on the metal surface. If the work function of the metal is 4.5 *eV*, then from the surface of metal

(1) Two electrons will be emitted

(2) Not even a single electron will be emitted

(3) One electron will be emitted

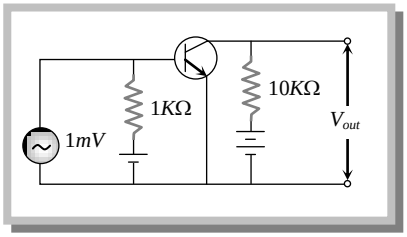
(4) More than two electrons will be emitted

165. The de-Broglie wavelength of an electron having $80eV$ of energy is nearly ($1eV = 1.6\times10^{-19}J$, Mass of electron $9\times10^{-31}kg$ and Plank's constant 6.6×10^{-34} *J-sec*)

(1) 140 $\AA$ (2) 0.14 $\AA$

(3) 14 $\AA$ (4) 1.4 $\AA$

166. In the following common emitter configuration an *NPN* transistor with current gain β = 100 is used. The output voltage of the amplifier will be



(1) 10 *mV* (2) 0.1 *V*

(3) 1.0 *V* (4) 10 *V*

167. In oscillating LC circuit the maximum charge on the capacitor is Q. The charge on the capacitor when energy is stored equally between the electric field and magnetic field is

(1) $\frac{Q}{2}$ (2) $\frac{Q}{\sqrt{3}}$

(3) $\frac{Q}{\sqrt{2}}$ (4) Q

168. One mole of a gas expands with temperature as $V = KT^{2/3}$. What is the work done when temperature changes by 30ºC?

(1) 10R (2) 20R

(3) 30R (4) 40R

169. An electron and a proton enter a magnetic field perpendicularly. Both have same kinetic energy. Which of the following is true?

(1) Trajectory of electron is less curved

(2) Trajectory of proton is less curved

(3) Both trajectories are equally curved

(4) Both move on straight line path

170. A proton of mass $1.67\times10^{-27}kg$ and charge $1.6\times10^{-19}C$ is projected with a speed of $2\times10^{6}\ m/s$ at an angle of 60^0 to the *X*-axis. If a uniform magnetic field of 0.104 *Tesla* is applied along *Y*-axis, the path of proton is

(1) A circle of radius = 0.2 *m* and time period $\pi\times10^{-7}\ s$

(2) A circle of radius = 0.1 *m* and time period $2\pi\times10^{-7}\ s$

(3) A helix of radius = 0.1 *m* and time period $2\pi\times10^{-7}\ s$

(4) A helix of radius = 0.2 *m* and time period $4\pi\times10^{-7}\ s$

171. Water is flowing in a river. If the velocity of a layer at a distance 10 cm from the bottom is 30 cmS^{-1}. The velocity of layer at a height 30 cm from the bottom is

(1) 30 cms^{-1} (2) 45 cms^{-1}

(3) 65 cms^{-1} (4) 90 cms^{-1}

172. A 100 turns coil whose resistance is 6 Ω encloses an area of 80 cm^2. How rapidly should a magnetic field parallel to its axis change to induce a current of 1 mA in the coil?

(1) 0.75 T s^{-1} (2) 0.075 T s^{-1}

(3) 0.0075 T s^{-1} (4) 7.5 T s^{-1}

173. In a series resonance LCR circuit with a source of voltage 50 V, angular frequency 50 Hz, R= 250 Ω , L = 1.0 H, C = 20 μF, the potential difference across the capacitor will be

(1) 50 V (2) 100 V

(3) 200 V (4) zero

174. The Brewster angle for the glass – air interface is 54.74^{o}. If a ray of light going from air to glass strikes at an angle of incidence 45^{o}, then the angle of refraction is ($\tan 54.74^{o} = \sqrt{2}$)

(1) 60^{o} (2) 30^{o}

(3) 25^{o} (4) 54.74^{o}

175. Angle of glass prism is 60^{o} and refractive index of the material of the prism is 1.414, then what will be the angle of incidence, so that ray should pass symmetrically through prism

(1) $38^{o}\,61'$ (2) $35^{o}\,35'$

(3) 45^{o} (4) $53^{o}\,8'$

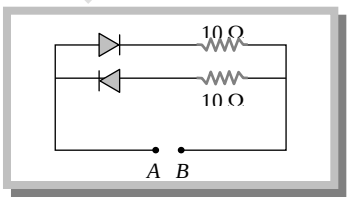
176. A 2*V* battery is connected across the points *A* and *B* as shown in the figure given below. Assuming that the resistance of each diode is zero in forward bias and infinity in reverse bias, the current supplied by the battery when its positive terminal is connected to *A* is

(1) 0.2 *A*

(3) 0.4 *A*

(3) Zero

(4) 0.1 *A*



177. Two tuning forks have frequencies 380 and 384 hertz respectively. When they are sounded together, they produce 4 beats. After hearing the maximum sound, how long will it take to hear the minimum sound?

(1) 1/2 sec (2) 1/4 *sec*

(3) 1/8 *sec* (4) 1/16 *sec*

178. At what speed should a source of sound move so that observer finds the apparent frequency equal to half of the original frequency?

(1) *v* / 2 (2) 2*v*

(3) *v* / 4 (4) *v*

179. Moment of inertia of a magnetic needle is 40 g cm^2 has time period 3 s in earth's horizontal filed having value 3.6×10^{-5} Wb m^{-2}. Its magnetic moment will be

(1) 0.5 A m^2 (2) 5 A m^2

(3) 0.250 A m^2 (4) 5×10^{2} A m^2

180. In an ammeter, 10 % of main current is passing through the galvanometer. If the resistance of the galvanometer is G, then the shunt resistance, (in Ω) is

(1) 9 G (2) G/9

(3) 90 G (4) G/90

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