NEET QUESTION PAPER (2018) BOOKLET CODE - CHLAA (FF)

1.	Tł c0	ne geor mplex	metry ar [Ni(CO) ₄	nd mag] are	netic behaviour of th	e 6 .	Whi	ch one of the following elements is unable to ME^{3-} ion 2
	(1)) squ	are plana	ar geome	etry and diamagnetic		10111	
	(2)	tetr	ahedral (geometr	y and diamagnetic		(1)	Ga
	(3)	squa	are plana	ar geome	etry and paramagnetic		(2)	Al
	(4̃)	tetr	ahedral g	geometr	y and paramagnetic		(3)	В
2.	Iro	on carbo	onyl, Fe(CO) ₅ is			(4)	In
	(1) (2)	tetr: mon	anuclear Ionuclear	r		7.	The decr	correct order of N-compounds in its reasing order of oxidation states is
	(3)	trin	uclear				(1)	HNO_3 , NO, N ₂ , NH ₄ Cl
	(4)	dinu	ıclear				(2)	HNO_3 , NO, NH_4Cl , N_2
3.	Wh d-d	nich o I transi	ne of ition and	the fo	llowing ions exhibit	s	(3)	HNO_3 , NH_4Cl , NO , N_2
	(1)	Сю	2- 4	. p			^{<i>t</i>} (4)	$\rm NH_4Cl, N_2$, NO, HNO ₃
	(2)	Cr ₂	D_7^{2-}			8.	Cons follo	sidering Ellingham diagram, which of the wing metals can be used to reduce alumina?
	(3)	Mn	D_{A}^{-}				(1)	Fe
			- 2-				(2)	Zn
	(4)	Min(\mathcal{I}_4				(3)	Μσ
4.	The	e type	of isom	nerism s	shown by the comple	x	(4)	Cu
	[Co	oCl ₂ (en) ₂] is					
	(1)	Geor	netrical	isomeris	sm	9.	Whie	ch of the following statements is <i>not</i> true for opens?
	(2)	Coor	dination	isomer	ism		(1)	All form monobasic ovvacids
	(3)	Ioniz	ation iso	omerism	l		(2)	All are ovidizing agents
	(4)	Link	age ison	nerism			(2)	All but fluoring show positive ovidation
5.	Mat	Match the metal ions given in Column I with the						states.
0.	spir Col	n mag umn II	netic m and ass	oments ign the	of the ions given i correct code	n	(4)	Chlorine has the highest electron-gain enthalpy.
		Colu	Column I		Column II	10	In th	he structure of CIF., the number of lone pairs
	а.	Co ³⁺		1.	√8 B.M .		of el	lectrons on central atom 'Cl' is
	b.	Cr ³⁺		11.	√3€ B.M.		(1)	one
	C.	Fe ³⁺		iii.	$\sqrt{3}$ B.M.		(2)	two form
	L.	N7; ²⁺		iv.	$\sqrt{24}$ B.M.		(3)	three
	α.	141			√15 B M		(4)	three
				۷.		11.	The	correct order of atomic radii in group 13
		a	b	С	đ			$\mathbf{D} = \mathbf{A} + \mathbf{E} = \mathbf{C} + \mathbf{E}$
	(1)	iv	v	11	i		(1)	B < AI < III < Ga < III D < AI < Ga < In < TI
	(2)	i	ii	iii	iv		(2)	D < AI < Oa < III < In
	(3)	iv	i	11	iii		(3)	B < Ga < AI < II < III
	(4)	iii	v	1	ü		(4)	D <ua<ai<iii< th=""></ua<ai<iii<>

- Nitration of aniline in strong acidic medium also 17. 12. gives m-nitroaniline because
 - In spite of substituents nitro group always (1) goes to only m-position.
 - (2)electrophilic In substitution reactions amino group is meta directive.
 - In absence of substituents nitro group $(\mathbf{3})$ always goes to m-position.
 - In acidic (strong) medium aniline is present (4) as anilinium ion.
- Regarding cross-linked or network polymers, 13. which of the following statements is *incorrect* ?
 - They contain covalent bonds between (1) various linear polymer chains.
 - (2) They are formed from bi- and tri-functional monomers.
 - (3)Examples are bakelite and melamine.
 - (4) They contain strong covalent bonds in their polymer chains.
- 14. The difference between amylose and amylopectin 18. is
 - Amylopectin have $1 \rightarrow 4$ α -linkage and (1) $1 \rightarrow 6 \alpha$ -linkage
 - (2) $1 \rightarrow 4$ Amylose have α -linkage and $1 \rightarrow 6 \beta$ -linkage
 - Amylopectin have $1 \rightarrow 4 \alpha$ -linkage and (3) $1 \rightarrow 6 \beta$ -linkage
 - Amylose is made up of glucose and (4) galactose
- A mixture of 2.3 g formic acid and 4.5 g oxalic 15. acid is treated with conc. H_2SO_4 . The evolved gaseous mixture is passed through KOH pellets. Weight (in g) of the remaining product at STP will be 6.8
 - (1)1.4
 - (2) 3.0

- $2\cdot 8$ (3) (4)**4**·4
- Which of the following oxides is most acidic in 16. nature?
 - MgO (1)
 - BeO (2)
 - (3) BaO
 - CaO (4)

Compound A, $C_8H_{10}O$, is found to react with NaOI (produced by reacting Y with NaOH) and yields a yellow precipitate with characteristic smell.

A and Y are respectively



(3)
$$\bigcirc$$
 CH – CH₃ and I₂
OH



In the reaction



- dichloromethyl cation (CHCl₂) (1)
- Ð
- formyl cation (CHO) (2)
- dichloromethyl anion (CHCl₂) (3)
- (4) dichlorocarbene (:CCl₂)

Carboxylic acids have higher boiling points than 19. aldehydes, ketones and even alcohols of comparable molecular mass. It is due to their

- formation of intramolecular H-bonding (1)
- (2) formation of carboxylate ion
- more extensive association of carboxylic (3) acid via van der Waals force of attraction
- formation of intermolecular H-bonding (4)

- 20. Which of the following molecules represents the order of hybridisation sp², sp², sp, sp from left to right atoms ?
 - (1) $HC \equiv C C \equiv CH$
 - (2) $CH_2 = CH C \equiv CH$
 - (3) $CH_2 = CH CH = CH_2$
 - $(4) \quad CH_3 CH = CH CH_3$
- 21. Which of the following carbocations is expected to 24. be most stable ?









- Which of the following is correct with respect to
 I effect of the substituents ? (R = alkyl)
 - (1) $-NH_2 < -OR < -F$
 - (2) $-NR_2 < -OR < -F$
 - (3) $-NH_2 > -OR > -F$
 - (4) $-NR_2 > -OR > -F$

- Which oxide of nitrogen is **not** a common pollutant introduced into the atmosphere both due to natural and human activity ?
- $(1) N_2O_5$
- (2) NO₂
- (3) N₂O
- (4) NO
- The compound A on treatment with Na gives B, and with PCl_5 gives C. B and C react together to give diethyl ether. A, B and C are in the order
- (1) C_2H_5OH , C_2H_6 , C_2H_5Cl
- (2) C_2H_5OH , C_2H_5Cl , C_2H_5ONa
- (3) $C_2H_5Cl, C_2H_6, C_2H_5OH$
- (4) C_2H_5OH , C_2H_5ONa , C_2H_5Cl
- **25.** The compound C_7H_8 undergoes the following reactions:

$$C_7H_8 \xrightarrow{3 Cl_2/\Delta} A \xrightarrow{Br_2/Fe} B \xrightarrow{Zn/HCl} C$$

The product 'C' is

- (1) *m*-bromotoluene
- (2) o-bromotoluene
- (3) 3-bromo-2,4,6-trichlorotoluene
- (4) *p*-bromotoluene
- 26. Hydrocarbon (A) reacts with bromine by substitution to form an alkyl bromide which by Wurtz reaction is converted to gaseous hydrocarbon containing less than four carbon atoms. (A) is
 - (1) $CH \equiv CH$
 - $(2) \quad CH_2 = CH_2$
 - (3) $CH_3 CH_3$
 - (4) CH₄

Identify the major products P, Q and R in the 29. 27. following sequence of reactions :



$$CH_2CH_2CH_3$$
 CHO
, $CH_3CH_2 - OH$

Q

R

CH2CH2CH3 CHO COOH (2)

(3)
$$CH(CH_3)_2$$
 OH
, $CH_3CH(OH)CH_3$

(4)
$$CH(CH_3)_2$$
, $CH_3 - CO - CH_3$

Which of the following compounds can form a 28. zwitterion?

- Aniline (1)
- (2)Acetanilide
- (3)Benzoic acid

(4)Glycine For the redox reaction

 $MnO_4^- + C_2O_4^{2-} + H^+ \longrightarrow Mn^{2+} + CO_2 + H_2O_4$

the correct coefficients of the reactants for the balanced equation are

	MnO_4^-	$C_2 O_4^{2-}$	H^+
(1)	16	5	2
(2)	2	5	16
(3)	2	16	5
(4)	5	16	2

30. Which one of the following conditions will favour maximum formation of the product in the reaction,

 $A_2(g) + B_2(g) \rightleftharpoons X_2(g) \Delta_r H = -X kJ?$

- (1) Low temperature and high pressure
- Low temperature and low pressure (2)
- High temperature and high pressure (3)
- (4)High temperature and low pressure
- 31. When initial concentration of the reactant is doubled, the half-life period of a zero order reaction
 - (1)is halved
 - (2)is doubled
 - is tripled (3)
 - (4)remains unchanged
- 32. The bond dissociation energies of X_2 , Y_2 and XYare in the ratio of 1:0.5:1. ΔH for the formation of XY is -200 kJ mol^{-1} . The bond dissociation energy of X₂ will be
 - 200 kJ mo!⁻¹ (1)
 - 100 kJ mol⁻¹ (2)
 - 800 kJ mol^{-1} (3)
 - 400 kJ mol^{-1} (4)
- The correction factor 'a' to the ideal gas equation 33. corresponds to
 - (1)density of the gas molecules
 - (2)volume of the gas molecules
 - electric field present between the gas (3)molecules
 - (4) forces of attraction between the gas molecules

(1

34. Given van der Waals constant for NH_3 , H_2 , O_2 38. and CO_2 are respectively 4.17, 0.244, 1.36 and 3.59, which one of the following gases is most easily liquefied ?

- (1) NH₃
- (2) H_2
- (3) O₂
- (4) CO₂
- **35.** Following solutions were prepared by mixing different volumes of NaOH and HCl of different concentrations

a.60 mL $\frac{M}{10}$ HCl + 40 mL $\frac{M}{10}$ NaOHb.55 mL $\frac{M}{10}$ HCl + 45 mL $\frac{M}{10}$ NaOHc.75 mL $\frac{M}{5}$ HCl + 25 mL $\frac{M}{5}$ NaOH100 mL $\frac{M}{10}$ HCl + 100 mL $\frac{M}{10}$ NaOH

pH of which one of them will be equal to 1?

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

36. The solubility of $BaSO_4$ in water is 2.42×10^{-3} gL⁻¹ at 298 K. The value of its solubility product (K_{sp}) will be

(Given molar mass of $BaSO_4 = 233 \text{ g mol}^{-1}$)

- (1) $1.08 \times 10^{-10} \text{ mol}^2 \text{ L}^{-2}$
- (2) $1.08 \times 10^{-12} \text{ mol}^2 \text{ L}^{-2}$
- (3) $1.08 \times 10^{-14} \text{ mol}^2 \text{ L}^{-2}$
- (4) $1.08 \times 10^{-8} \text{ mol}^2 \text{ L}^{-2}$
- **37.** On which of the following properties does the coagulating power of an ion depend ?
 - (1) The magnitude of the charge on the ion alone
 - (2) Size of the ion alone
 - (3) Both magnitude and sign of the charge on the ion
 - (4) The sign of charge on the ion alone

The correct difference between first- and second-order reactions is that

- the rate of a first-order reaction does not depend on reactant concentrations; the rate of a second-order reaction does depend on reactant concentrations
- (2) the half-life of a first-order reaction does not depend on [A]₀; the half-life of a second-order reaction does depend on [A]₀
- (3) a first-order reaction can be catalyzed; a second-order reaction cannot be catalyzed
- (4) the rate of a first-order reaction does
- depend on reactant concentrations; the rate of a second-order reaction does not depend on reactant concentrations
- **39.** Consider the change in oxidation state of Bromine corresponding to different emf values as shown in the diagram below

$$BrO_{4}^{-1.82 V} BrO_{3}^{-1.5 V} HBrO_{4}^{-1.5 V}$$

$$Br_{1.0652 V}^{-1.595 V} Br_{2} \leftarrow 1.595 V$$

Then the species undergoing disproportionation is

- (1) BrO_{3}^{-}
- (2) BrO_{4}^{-}
- $(3) \quad Br_2$
- (4) HBrO
- **40.** In which case is the number of molecules of water maximum ?
 - (1) 18 mL of water
 - (2) 0.18 g of water
 - (3) 0.00224 L of water vapours at 1 atm and 273 K
 - (4) 10^{-3} mol of water
- 41. Among CaH₂, BeH₂, BaH₂, the order of ionic character is
 - (1) $BeH_2 < CaH_2 < BaH_2$
 - (2) $CaH_2 < BeH_2 < BaH_2$
 - (3) $BeH_2 < BaH_2 < CaH_2$
 - (4) $BaH_2 < BeH_2 < CaH_2$

Magnesium reacts with an element (X) to form an 46. ionic compound. If the ground state electronic configuration of (X) is $1s^2 2s^2 2p^3$, the simplest

- (1) Mg_2X_3
- $(2) MgX_2$
- $(3) \quad Mg_2X$
- $(4) \quad Mg_3X_2$
- 43. Iron exhibits bcc structure at room temperature. Above 900°C, it transforms to fcc structure. The 47. ratio of density of iron at room temperature to that at 900°C (assuming molar mass and atomic radii of iron remains constant with temperature) is
 - (1) $\sqrt{3}$ $\sqrt{2}$
 - (2) $\begin{array}{c} 4\sqrt{3} \\ 3\sqrt{2} \end{array}$
 - $\begin{array}{c} (3) \quad \begin{array}{c} 3\sqrt{3} \\ \underline{4\sqrt{2}} \end{array}$

$$(4) \quad \frac{1}{2}$$

44. Consider the following species :

 CN^+ , CN^- , NO and CN

Which one of these will have the highest bond order?

- (1) NO
- (2) CN⁻
- (3) CN^{+}
- (4) CN

45. Which one is a *wrong* statement?

- Total orbital angular momentum of electron in 's' orbital is equal to zero.
- (2) An orbital is designated by three quantum numbers while an electron in an atom is designated by four quantum numbers.
- (3) The electronic configuration of N atom 15



(4) The value of m for d_z^2 is zero.

Hormones secreted by the placenta to maintain pregnancy are

- (1) hCG, hPL, progestogens, prolactin
- (2) hCG, hPL, estrogens, relaxin, oxytocin
- (3) hCG, hPL, progestogens, estrogens
- (4) hCG, progestogens, estrogens, glucocorticoids
- The contraceptive 'SAHELI'
 - (1) blocks estrogen receptors in the uterus, preventing eggs from getting implanted.
 - (2) increases the concentration of estrogen and prevents ovulation in females.
 - (3) is an IUD.
 - (4) is a post-coital contraceptive.
- **48.** The difference between spermiogenesis and spermiation is
 - In spermiogenesis spermatids are formed, while in spermiation spermatozoa are formed.
 - (2) In spermiogenesis spermatozoa are formed, while in spermiation spermatids are formed.
 - (3) In spermiogenesis spermatozoa from sertoli cells are released into the cavity of seminiferous tubules, while in spermiation spermatozoa are formed.
 - (4) In spermiogenesis spermatozoa are formed, while in spermiation spermatozoa are released from sertoli cells into the cavity of seminiferous tubules.
- 49. The amnion of mammalian embryo is derived from
 - (1) ectoderm and mesoderm
 - (2) endoderm and mesoderm
 - (3) mesoderm and trophoblast
 - (4) ectoderm and endoderm

- 50. In a growing population of a country,
 - (1) pre-reproductive individuals are more than the reproductive individuals.
 - (2) reproductive individuals are less than the post-reproductive individuals.
 - (3) reproductive and pre-reproductive individuals are equal in number.
 - (4) pre-reproductive individuals are less than the reproductive individuals.
- 51. All of the following are included in 'Ex-situ conservation' except
 - (1) Wildlife safari parks
 - (2) Sacred groves
 - (3) Botanical gardens
 - (4) Seed banks
- **52.** Which one of the following population interactions is widely used in medical science for the production of antibiotics ?
 - (1) Commensalism
 - (2) Mutualism
 - (3) Parasitism
 - (4) Amensalism
- 53. Which part of poppy plant is used to obtain the drug "Smack"?57.
 - (1) Flowers
 - (2) Latex
 - (3) Roots
 - (4) Leaves
- 54. Match the items given in Column I with those in Column II and select the *correct* option given below :
 - Column II Column I **UV-B** radiation 1. Eutrophication a. Sanitary landfill ii. Deforestation **b**. m. Nutrient Snow blindness C. enrichment iv. Waste disposal Jhum cultivation d. d b С a iii iv 1 ii (1) iii iv 11 i (2) iv 1 11 iii (3)iv 1)1 (4) i 11

- 55. Which of the following gastric cells indirectly help in erythropoiesis?
 - (1) Chief cells
 - (2) Mucous cells
 - (3) Goblet cells
 - (4) Parietal cells
- 56. Match the items given in Column I with those in Column II and select the *correct* option given below :

	Colı	ımn I		Column II			
a.	Fibr	ino g en	1.	Os	motic bala	nce	
b.	Glob	oulin	ii,	Blo	ood clotting	5	
c.	Albu	min	iii.	Defence mechanism			
	a	b	с				
(1)	111	ii					
(2)	i	ii	iii				
(3)		iii	11				
(4) 、	ii	iii					
Calc	cium tractic	is imp	oortant	ın	skeletal	muscle	
LUII		ni neudus					

- (1) binds to troponin to remove the masking of active sites on actin for myosin.
- (2) activates the myosin ATPase by binding to it.
- (3) detaches the myosin head from the actin filament.
- (4) prevents the formation of bonds between the myosin cross bridges and the actin filament.
- 58. Which of the following is an occupational respiratory disorder ?
 - (1) Anthracis
 - (2) Silicosis
 - (3) Botulism
 - (4) Emphysema

- 69.
- Ciliates differ from all other protozoans in
 - using flagella for locomotion having a contractile vacuole for removing
 - (3)
 - using pseudopodia for capturing prey having two types of nuclei (4)
- 60.
- Which of the following features is used to identify a male cockroach from a female cockroach ?
 - Presence of a boat shaped sternum on the 9th abdominal segment
 - Presence of caudal styles (2)
 - (3)
 - Forewings with darker tegmina Presence of anal cerci (4)
- Which of the following organisms are known as 61. chief producers in the oceans?
 - Dinoflagellates (1)
 - (2)Diatoms
 - (3)Cyanobacteria
 - (4)Euglenoids
- Identify the vertebrate group of animals 62. characterized by crop and gizzard in its digestive system.
 - (1)Amphibia
 - (2)Reptilia
 - (3)Aves
 - Osteichthyes (4)
- Which of the following animals does not undergo 63. metamorphosis?
 - (1)Earthworm
 - (2)Tunicate
 - Moth (3)
 - Starfish (4)
- is not a animals these of 64. one Which homeotherm ?
 - (1)Macropus
 - Chelone (2)
 - Camelus (3)
 - Psittacula (4)

65.

66.

The similarity of bone structure in the forelimbs of many vertebrates is an example of

- Homology
- (2)Analogy
- (3) Convergent evolution (4)
- Adaptive radiation

In which disease does mosquito transmitted chronic lymphatic vessels ? inflammation of

- (1)Elephantiasis
- (2)Ascariasis
- Ringworm disease (3)
- (4)Amoebiasis
- Conversion of milk to curd improves its 67. nutritional value by increasing the amount of
 - (1)Vitamin D
 - (2)Vitamin A
 - (3)Vitamin B₁₂
 - (4)Vitamin E
- Which of the following characteristics represent 68. 'Inheritance of blood groups' in humans?
 - Dominance 8
 - b. Co-dominance
 - Multiple allele C.
 - d. Incomplete dominance
 - e. **Polygenic** inheritance
 - (1)b, c and e
 - (2)a, b and c
 - (3)b. d and e
 - (4) a, c and e
- 69. Which of the following is not an autoimmune disease ?
 - (1)**Psoriasis**
 - Rheumatoid arthritis (2)
 - Alzheimer's disease (3)
 - (4)Vitiligo
- Among the following sets of examples for divergent evolution, select the incorrect option : 70.
 - Forelimbs of man, bat and cheetah (1)
 - Heart of bat, man and cheetah
 - (2) Brain of bat, man and cheetah (3)
 - Eye of octopus, bat and man (4)

ly

71. Match the items given in Column I with those in 73.Column II and select the *correct* option given below :

	Col	umn I		Column II
а.	Gly	cosuria	i.	Accumulation of uric acid in joints
b.	Gou	ıt	11.	Mass of crystallised salts within the kidney
c.	Renal calculi		iii.	Inflammation in glomeruli
d.	Glomerular nephritis		iv.	Presence of glucose in urine
	a	b	c	d
(1)	iii	11	iv	i
(2)		11	iii	iv
(3)	ii	iii		1V
(4)	ıv	1	ii	m

72. Match the items given in Column I with those in Column II and select the *correct* option given below :

	Co	lumn I			Column II
	(F)	unction,)		(Part of Excretory System)
a.	Ul	trafiltra	tion	i.	Henle's loop
b.	Co of u	ncentra urine	tion	11.	Ureter
C.	Tra uri	ansport ne	of	iii.	Urinary bladder
d.	Sto	rage of	urine	iv.	Malpighian corpuscle
				v.	Proximal convoluted tubule
	a	b	С	d	
(1)	iv	v	11	ii	i
(2)	iv	1	п	ii	i
(3)	v	iv	i	11	
(4)	v	iv	1	iii	l

Nissl bodies are mainly composed of

- (1) Proteins and lipids
- (2) DNA and RNA
- (3) Nucleic acids and SER
- (4) Free ribosomes and RER
- 74. Which of the following terms describe human dentition?
 - (1) Thecodont, Diphyodont, Homodont
 - (2) Thecodont, Diphyodont, Heterodont
 - (3) Pleurodont, Monophyodont, Homodont
 - (4) Pleurodont, Diphyodont, Heterodont
- 75. Many ribosomes may associate with a single mRNA to form multiple copies of a polypeptide simultaneously. Such strings of ribosomes are termed as
 - (1) Polysome
 - (2) Polyhedral bodies
 - (3) Plastidome
 - (4) Nucleosome
- 76. Which of these statements is *incorrect*?
 - (1) Enzymes of TCA cycle are present m mitochondrial matrix.
 - (2) Glycolysis occurs in cytosol.
 - (3) Glycolysis operates as long as it is supplied with NAD that can pick up hydrogen atoms.
 - (4) Oxidative phosphorylation takes place in outer mitochondrial membrane.
- 77. Which of the following events does not occur in rough endoplasmic reticulum?
 - (1) Protein folding
 - (2) Protein glycosylation
 - (3) Cleavage of signal peptide
 - (4) Phospholipid synthesis
- 78. Select the *incorrect* match :

(1)	Lampbrush chromosomes	 Diplotene bivalents
(2)	Allosomes	Sex chromosomes

- (3) Submetacentric L-shaped chromososmes
- (4) Polytene Oocytes of amphibians chromosomes

79. 80.	All 0 (1) (2) (3) (4) A wo X 0 inhe	 (1) of the following are part of an operon except (1) an operator (2) structural genes (3) an enhancer (4) a promoter (5) woman has an X-linked condition on one of her (6) chromosomes. This chromosome can be 				84.	Which horm (1) (2) (3)	ch of the following is an none? Epinephrine Ecdysone Estradiol	amino acid derived
	(1) (2) (3) (4)	herited by Only daughters Only sons Only grandchildren Both sons and daughters						ch of the following structure ch of the following structure correctly paired with its Medulla oblongata :	uctures or regions is function ? controls respiration and cardiovascular
81.	Mato Colu belov a.	th the items f mn II and s w: <i>Column I</i> Proliferative	;iven in elect the Phase	Column I w correct o Colum i. Breakdo endome	ith those in option given an II own of otrial		(2)	Limbic system	reflexes. consists of fibre tracts that interconnect different regions of brain; controls movement.
	b. c.	Secretory Pl Menstruatic a b	nase on c	lining ii. Follicul iii. Luteal I	ar Phase Phase		(3)	Hypothalamus	production of releasing hormones and regulation of temperature, hunger and thirst.
	(1) (2) (3)	iii 11 iii 11 iii	i ii 1				(4)	Corpus callosum	band of fibers connecting left and right cerebral hemispheres.
82.	(4) Acco evol (1) (2) (3) (4)	111 rding to Hug ution is Multiple ste Saltation Phenotypic v Minor muta	ii _{go} de Vi p mutati variatior tions	ries, the ma ions is	echanism of	86.	Whi sign (1) (2) (3) (4) S The	ich of the following h nificant role in osteopore Aldosterone and Prola Progesterone and Ald Estrogen and Parathy Parathyroid hormone e transparent lens in th	normones can play a osis ? actin osterone yroid hormone and Prolactin e human eye is held in
83.	AGG stra: sequ (1) (2) (3) (4)	 Minor mutations GGTATCGCAT is a sequence from the coding crand of a gene. What will be the corresponding equence of the transcribed mRNA ? AGGUAUCGCAU UGGTUTCGCAT ACCUAUGCGAU UCCAUAGCGUA 					its (1) (2) (3) (4)	place by ligaments attached to ligaments attached to smooth muscles attac smooth muscles attac	o the ciliary body o the iris hed to the iris hed to the ciliary body

88. Which of the following options corre	ctly 91. Caspon
emphysema, respectively?	and (1) This
(1) Inflammation of bronchieless D	(1) Epidermis
respiratory surface	sed (2) Pericycle
(2) Increased number of bronchioles: Ingree	(3) Cortex
(3) Increase	sed (*) Endodermis
(b) Increased respiratory surface; Inflammation of bronchioles (4) Degreesed	92. Plants having little or no secondary growth are (1) Grasses
Inflammation of h	(2) Deciduous angiosperms
80 Martin of bronchioles	(3) Conifers
Column II and given in Column I with those	(4) Cycads
below :	93. Pneumatophores occur in
Column I	(1) Halophytes
B Trigueri I I	(2) Free-floating hydrophytes
Between left atrium	m (3) Carnivorous plants
b. Biguerid and left ventricle	(4) Submerged hydrophytes
ii. Between right	94. Sweet potato is a modified
ventricle and	(1) Stem
c. Semilunar value	(2) Adventitious most
Between right	(3) Tap root
atrium and right	(4) Rhizoma
a b c	OF Q
(1) iii i ii	90. Secondary xylem and phloem in dicot stem are produced by
(2) 1 iii ii	(1) Apical meristems
(3) i ii iii	(2) Vascular cambium
(4) ii i iii	(3) Phellogen
90. Match the items given in Column I will it	(4) Axillary meristems
Column II and select the <i>correct</i> option given below :	96. Which of the following statements is correct?
Column I Column II	gymnosperms.
a. Tidal volume i. 2500 – 3000 mL	(2) Selaginella is heterosporous, while Salvinia is homosporous.
b. Inspiratory Reserve ii. 1100 – 1200 mL	(3) Horsetails are gymnosperms
volume	(4) Stems are usually unbranched in both
c. Expiratory Reserve iii. 500 – 550 mL	Cycas and Cedrus.
volume	97. Select the upong statement .
d. Residual volume iv. 1000 - 1100 mL	(1) Call wall is present in the state
a b c d	and Plantae.
(1) iii ii i iv	(2) Mushrooms belong to Basidiomycetes.
(2) iii i iv ii	(3) Pseudopodia are locomotory and feeding structures in Sporozoans.
(3) i iv ii iii	(4) Mitochondria are the powerhouse of the cell
(4) iv iii ii i	in all kingdoms except Monera.

90	Co	lumn II low :	and	select	the correct option given	102.	Wh	ich of the following elements is responsible for
		Colum	n T		8-101		(1)	Magnesium
		Horbs			Column II		(2)	Sodium
	a.	nerba	rium	i. (It is a place having a		(3)	Potassium
					collection of preserved	1	(4)	Calcium
				4	plants and animals	103	Ov	
	b.	Key		ii.	A list that anymoust	100.	(1)	Green mich a log of the second during photosynthesis by
					methodically all the	0	(2)	Noster
				1	Species found in	N	(2)	Nostoc Cueso
					with brief deam' to	1 t	(4)	Cycus
					aiding identif	101	(+)	Chara
	c.	Museu	m	iii 1	landing identification.	104.	Dou	ible fertilization is
			02		pressed plant specimens		(1)	Fusion of two male gametes of a pollen tube with two different eggs
				1	mounted on sheets are		(2)	Fusion of one male gamete with two polar
		0.11		1	sept.		1	nuclei
	d.	Catalog	gue	iv.	A booklet containing a list		(3)	Fusion of two male gametes with one egg
				(of characters and their	1000	(4)	Syngamy and triple fusion
				8	alternates which are	105.	Whi	ich one of the following plants shows a very
				ł	nelpful in identification of		clos	e relationship with a species of moth, where
				1	arious taxa.		non	e of the two can complete its life cycle without
		a	b	с	d		the	other ?
	(1)	i	iv	iii			(1)	Hydrilla
	(9)				ii in		(2)	Yucca
	*		н	1	IV		(3)	Banana
	(3)	n	1V	m	1	1.11	(4)	Viola
-	(A)	m	iv	, i	ii	106.	Poll liqu	en grains can be stored for several years in id nitrogen having a temperature of
99.	Win	ged polle	en gra	ins ar	e present in	1	(1)	– 120°C
	(1)	Mustar	ď				(2)	– 80°C
	(2)	Cycas			Statement and the		(3)	– 196°C
	(3)	Mango					(4)	– 160°C
	(4)	Pinus						i a la start i la
	*					107.	Wha	at is the role of NAD in cellular
100.	Afte	r karyog	amy f	followe	ed by meiosis, spores are		resp	It functions on on surveyo
	proc	luced exo	genou	usly in			(1)	It functions as an enzyme.
	(1)	Neuros	pora		and the second se		(2)	It functions as an electron carrier.
	(2)	Alterna	ria				(3)	It is a nucleotide source for ATT synthesis.
	(3)	Agaricu	S		Contraction of the local division of the loc		(4)	It is the final electron acceptor for anacronic
	(1)	Sacchar	omve	es	1 Contract (1 Con			respiration.
	(+)	Sacenar	Singe		1.500 B	108.	In w	which of the following forms is iron absorbed
101.	Whie	h one is	wron	gly m	atched ?		by p	lants ?
	(1)	Uniflage	ellate	game	tes – Polysiphonia		(1)	Ferric
	(2)	Biflagel	late z	oospor	es – Brown algae		(2)	Ferrous
	(2)	Comagen	cune		– Marchantia		(3)	Free element
	(3)	Gemma	lang	rganis	m – Chlorella	-	(4)	Both ferric and lerrous
-	(4)	Unicellu	nar of	Banno	Contraction of the second		T	English

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CHLAA/FF/Page 14 SPACE FOR F	OUGH WORK
(4) Barrel shaped	(4) Transduction was discovered by State
(3) Rectangular	(4) Transduction was discovered by S. Altman.
(2) Kidney shaped	(2) Collectore take part in translation
(1) Dumb-bell shaped	(2) Punnett square was developed by a British
116 Stomata in grass leaf are	(1) Franklin Stahl coined the term "linkage".
(4) carbonyl and hydroxyl	123. Select the <i>correct</i> statement :
(3) carbonyl and phosphate	(4) T.H. Morgan : Linkage
(2) carbonyl and methyl	determination
(1) hydroxyl and methyl	(3) XO type sex : Grasshopper
sugars are	(2) ABO blood grouping : Co-dominance
115 The two functional groups characteristic of	(1) Starch synthesis in pea : Multiple alleles
(4) Oscillatoria	matched ?
(3) Nostoc	122. Which of the following pairs is wrongly
(2) Mycobacterium	(4) Sporopollenin
(1) Saccharomyces	(3) Oil content
114 Which among the following is not a prohomate 2	(2) Cellulosic intine
(4) CO ₂ concentration	(1) Pollenkitt
(5) O ₂ concentration	 preserving pollen as fossils ?
(2) Light	121. Which of the following has proved helpful in
(1) Temperature	(4) Papaya
113. Stomatal movement is not affected by	(3) Mango
(4) Oxygen	(1) Bamboo species (2) Lackfmit
(3) NADPH	life-time ?
(2) NADH	120. Which of the following flowers only once in its
(1) ATP	(4) Parthenogenesis
112. Which of the following is not a product of light	(3) Parthenocarpy
(4) Activation of amino acid	(2) Mitotic divisions
(3) Respiration in bacteria	(1) Meiotic divisions
(2) Formation of secretory vesicles	110 Officia and produced by
(1) Fatty acid breakdown	(3) Plant $(4) Virus$
111. The Golgi complex participates in	(2) Bacterium
synthesis.	(1) Fungus
(4) It is a site for active ribecomel DNA	118. The experimental proof for semiconservative
(3) It takes part in spindle formation	Jacques Monod
(2) It is a membrane-bound structure	(4) Francois Jacob and – Lac operon
(1) Larger nucleoli are present in divid:	and F. Stahl
110. Which of the following is true for pueles land	(3) Matthew Meselson – Pisum sativum
(4) Zygotene	Martha Chase
(3) Diakinesis	(2) Alfred Hershey and - TMV
(1) Pachytene (2) Diplotone	pneumoniae 1
homologous chromosomes begins is	(1) Alec Jeffreys – Streptococcup
109. The stage during which separation of the paired	1 117. Select the correct match :

124. The correct order	
Reaction (PCR) is Reaction (PCR) is	
(1) Extension, Depathenet 130.	Niche is
(2) Annealing, Extension, Annealing	(1) all the biological factors in A
(3) Denaturation Extension, Denaturation	environment
(4) Denaturation, Annealing	 (2) the physical space where an organism lives (3) the physical space where an organism lives
125. In India, the	needs to live
assessing the safety of introducing genetically modified organisms for public use is	 (4) the functional role played by the organism where it lives
(1) Indian Council of Medical Research 131.	Which of the following is a secondary pollet and
(2) Council for Scientific and L	(1) CO
Research (CSIR)	(2) CO ₂
(3) Research Committee on Genetic	(3) SO ₂
(4) Genetic Engine	(4) O ₃
(GEAC) Appraisal Committee 132.	Natality refers to
126. Which of the fall	(1) Death rate
vector for introducing a DNA farmenty used as a	(2) Birth rate
lymphocytes ?	(3) Number of individuals leaving the habitat
(1) Retrovirus	(4) Number of individuals entering a habitat
(2) Ti plasmid 133.	World Ozone Day is celebrated on
(3) λ phage	(1) 5 th June
(4) pBR 322	(2) 21 st April
127. Use of bioresources by multinational companies	(3) 16 th Sentember
and organisations without authorisation from the concerned country and its people is called	(4) 22^{nd} April
(1) Bio-infringement	What time of colorial amount would be
(2) Biopiracy	obtained with the following data?
(3) Biodegradation	Secondary consumer : 120 g
(4) Bioexploitation	Primary consumer : 60 g
199 A torright of rice was patented by a foreign	Primary producer : 10 g
company though such varieties have been	(1) Inverted pyramid of biomass
present in India for a long time. This is related to	(2) Pyramid of energy
(1) Co-667	(3) Upright pyramid of numbers
(2) Sharbati Sonora	(4) Upright pyramid of biomass
(3) Lerma Rojo 135. 1	In stratosphere, which of the following elements
(4) Basmati >	acts as a catalyst in degradation of ozone and
129. Select the correct match :	(1) Carbon
(1) Ribozyme – Nucleic acid	
(2) E × Recessive parent – Dihybrid cross	3) Fe
(2) $T_2 \times Recent - Transduction (2) T H Morgan - (1)$	4) Oxygen
(i) G. Mondel – Transformation	English
(4) G. Mender SPACE FOR ROUGH	
	124. The correct order of steps in Polymerase Chain 130. (1) Extension, Denaturation, Annealing (2) Annealing, Extension, Denaturation (3) Denaturation, Extension, Denaturation (3) Denaturation, Annealing, Extension (4) Denaturation, Annealing, Extension (4) Denaturation, Annealing, Extension (5) Denaturation, Annealing, Extension (5) Denaturation, Annealing, Extension (5) Denaturation, Annealing, Extension (5) Denaturation, Annealing, Extension (4) Denaturation, Annealing (5) Denaturation (7) Indian Council of Medical Research (1CMR) (3) Research Committee on Genetic (GEAC) (3) Research Committee on Genetic (GEAC) (3) Research (CSIN) (4) Genetic Engineering Appraisal Committee (GEAC) (3) (5) Ti plasmid (3) (3) A phage (4) pBR 322 (27) Use of bioresources by multinational companies and organisations without authorisation from the concerned country and its people is called (1) Bio-infringement (2) Biopiracy (3) Biodegradation (4) Biosyme (3) Lerma Rojo (3) (4) Basmati (3) (5) Lerma Rojo (4) (4) Basmati (4) (5) F ₂ × Recessive parent Dihybrid cross (3) T.H. Morgan Transduction

E

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- 136. A metallic rod of mass per unit length 140. An object is placed at a distance of 40 cm from a 0.5 kg m⁻¹ is lying horizontally on a smooth inclined plane which makes an angle of 30° with the horizontal. The rod is not allowed to slide down by flowing a current through it when a magnetic field of induction 0.25 T is acting on it in the vertical direction. The current flowing in the rod to keep it stationary is
 - (1)7.14 A
 - (2)5.98 A
 - (3)14.76 A
 - (4)11.32 A
- 137. A thin diamagnetic rod is placed vertically between the poles of an electromagnet. When the current in the electromagnet is switched on, then the diamagnetic rod is pushed up, out of the horizontal magnetic field. Hence the rod gains gravitational potential energy. The work required to do this comes from
 - the current source (1)
 - (2)the magnetic field
 - the lattice structure of the material of the (3)rod
 - the induced electric field due to the (4)changing magnetic field
- 138. An inductor 20 mH, a capacitor 100 µF and a resistor 50 Ω are connected in series across a source of emf, V = 10 sin 314 t. The power loss in the circuit is
 - 0.79 W (1)
 - (2)0.43 W
 - 2.74 W (3)

(4)

1.13 W

- 0 00 S
- 139. Current sensitivity of a moving coil galvanometer is 5 div/mA and its voltage sensitivity (angular deflection per unit voltage applied) is 20 div/V. The resistance of the galvanometer is
 - (1) 40Ω
 - 25Ω (2)
 - 250Ω
 - 500 Ω

- concave mirror of focal length 15 cm. If the object is displaced through a distance of 20 cm towards the mirror, the displacement of the image will be
 - 30 cm away from the mirror (1)
 - (2)36 cm away from the mirror
 - (3) 30 cm towards the mirror
 - 36 cm towards the mirror (4)
- 141. An em wave is propagating in a medium with a velocity $\overrightarrow{V} = V \overrightarrow{i}$. The instantaneous oscillating electric field of this em wave is along +y axis Then the direction of oscillating magnetic field of the em wave will be along
 - (1)- z direction
 - (2)+ z direction
 - y direction (3)
 - x direction (4)
- 142. The refractive index of the material of a prism is $\sqrt{2}$ and the angle of the prism is 30°. One of the two refracting surfaces of the prism is made a mirror inwards, by silver coating. A beam of monochromatic light entering the prism from the other face will retrace its path (after reflection from the silvered surface) if its angle of incidence on the prism is
 - 60° (1)
 - (2) 45°
 - (3) 30°
 - (4)zero
- 143. The magnetic potential energy stored in a certain inductor is 25 mJ, when the current in the inductor is 60 mA. This inductor is of inductance
 - 0.138 H (1)
 - 138.88 H (2)
 - 1.389 H (3)
 - 13.89 H (4)

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144.

English

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SPACE FOR ROUGH WORK

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144. In the circuit shown in the figure, the input 147. Unpolarised light is incident from air on a plane values of $I_B,\,I_C$ and β are given by



- (1) $I_B = 40 \ \mu A$, $I_C = 10 \ mA$, $\beta = 250$
- (2) $I_B = 25 \ \mu A$, $I_C = 5 \ mA$, $\beta = 200$
- (3) $I_B = 20 \ \mu A$, $I_C = 5 \ mA$, $\beta = 250$
- (4) $I_B = 40 \ \mu A$, $I_C = 5 \ mA$, $\beta = 125$
- 145. In a p-n junction diode, change in temperature due to heating
 - (1)affects only reverse resistance
 - (2)affects only forward resistance
 - (3)does not affect resistance of p-n junction
 - affects the overall V I characteristics of (4)p-n junction
- 146. In the combination of the following gates the output Y can be written in terms of inputs A and B as



surface of a material of refractive index 'µ'. At a particular angle of incidence 'i', it is found that reflected and refracted rays are perpendicular to each other. Which of the following options is correct for this situation ?

- Reflected light is polarised with its electric (1)vector parallel to the plane of incidence
- Reflected light is polarised with its electric (2)vector perpendicular to the plane of incidence



d between the slits is 2 mm, the wavelength λ of the light used is 5896 Å and distance D between the screen and slits is 100 cm. It is found that the angular width of the fringes is 0.20°. To increase the fringe angular width to 0.21° (with same λ and D) the separation between the slits needs to be changed to

- 1.8 mm (1)
- 1.9 mm (2)
- (3) 2.1 mm
- (4)1.7 mm

149. An astronomical refracting telescope will have large angular magnification and high angular 0resolution, when it has an objective lens of

- small focal length and large diameter (1)
- large focal length and small diameter (2)
- large focal length and large diameter (3)
- small focal length and small diameter (4)

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English

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A + B

(4)

- 150. The ratio of kinetic energy to the total energy of 154. A tuning fork is used to produce resonance in an electron in a Bohr orbit of the hydrogen atom,
 - (1)1:1
 - (2)1:-1
 - (3)2:-1
 - (4)1:-2
- 151. An electron of mass m with an initial velocity $\vec{V} = V_0 \hat{i} (V_0 > 0)$ enters an electric field $\vec{E} = -\vec{E}_0 \vec{i}$ ($\vec{E}_0 = \text{constant} > 0$) at t = 0. If λ_0 is 155. its de-Broglie wavelength initially, then its de-Broglie wavelength at time t is

$$\begin{array}{ccc} (1) & \displaystyle \frac{\lambda_0}{\left(1+\frac{eE_0}{mV_0}t\right)} \\ (2) & \displaystyle \lambda_0\left(1+\frac{eE_0}{mV_0}t\right) \\ (3) & \displaystyle \lambda_0\,t \end{array}$$

- (4)20
- 152. For a radioactive material, half-life is 10 minutes. If initially there are 600 number of nuclei, the time taken (in minutes) for the disintegration of 450 nuclei is

(1)20 6000 100 150 the 15 (2)10 (3)30 (4)15

- 153. When the light of frequency $2v_0$ (where v_0 is threshold frequency), is incident on a metal 157. A pendulum is hung from the roof of a plate, the maximum velocity of electrons emitted is v_1 . When the frequency of the incident radiation is increased to $5v_0$, the maximum velocity of electrons emitted from the same plate is v₂. The ratio of v₁ to v₂ is
 - (1)1:2
 - (2)1:4
 - (3)4:1
 - (4)2:1

glass tube. The length of the air column in the tube can be adjusted by a variable piston A room temperature of 27°C two succession resonances are produced at 20 cm and 73 cm / column length. If the frequency of the tuning for is 320 Hz, the velocity of sound in air at 27°C is (1)

- 330 m/s (2)
- 339 m/s (3)350 m/s
- (4) 300 m/s
- The electrostatic force between the metal plates of an isolated parallel plate capacitor C having a charge Q and area A, is
 - independent of the distance between the (1)plates.
 - linearly proportional to the distance (2)between the plates. 15
 - proportional to the square root of the (3)distance between the plates.
 - inversely proportional to the distance (4)between the plates.
- 156. An electron falls from rest through a vertical distance h in a uniform and vertically upward directed electric field E. The direction of electric field is now reversed, keeping its magnitude the same. A proton is allowed to fall from rest in it through the same vertical distance h. The time of fall of the electron, in comparison to the time of fall of the proton is
 - (1)smaller
 - (2)5 times greater
 - (3)10 times greater
 - (4)equal
 - sufficiently high building and is moving freely to 16 and fro like a simple harmonic oscillator. The acceleration of the bob of the pendulum is 20 m/s² at a distance of 5 m from the mean position. The time period of oscillation is
 - (1) $2\pi s$
 - (2)πs
 - 2 s (3)
 - (4)1 s

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CH English

158

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vertical upward f electric itude the rest in it e time of e time of



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158. The power radiated by a black body is P and it 162. A toy car with charge q moves on a frictionless the temperature of the black body is now changed so that it radiates maximum energy at $\frac{3}{4}\lambda_0$, the power radiated by it becomes nP. The value of n is

- 3 (1)4
- (2)3 256 (3)
- 81 81 (4)256

159. Two wires are made of the same material and have the same volume. The first wire has cross-sectional area A and the second wire has cross-sectional area 3A. If the length of the first wire is increased by Δl on applying a force F, how much force is needed to stretch the second wire by the same amount ?

- 9F(1)
- (2)6 F
- 4F(3)
- (4) F
- 160. A small sphere of radius 'r' falls from rest in a viscous liquid. As a result, heat is produced due to viscous force. The rate of production of heat when the sphere attains its terminal velocity, is 164. The moment of the force, $\vec{F} = 4\hat{i} + 5\hat{j} - 6\hat{k}$ at proportional to
 - r^3 (1)
 - r^2 (2)
 - r^5 (3)
 - r⁴ (4)
- 161. A sample of 0.1 g of water at 100°C and normal pressure $(1.013 \times 10^5 \text{ Nm}^{-2})$ requires 54 cal of heat energy to convert to steam at 100°C. If the volume of the steam produced is 167.1 cc, the change in internal energy of the sample, is
 - 104·3 J (1)
 - 208.7 J (2)
 - 42.2 J (3)
 - 84.5 J (4)

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horizontal plane surface under the influence of a uniform electric field \vec{E} . Due to the force $q \vec{E}$, its velocity increases from 0 to 6 m/s in one second duration. At that instant the direction of the field is reversed. The car continues to move for two more seconds under the influence of this field. The average velocity and the average speed of the toy car between 0 to 3 seconds are respectively

- 2 m/s, 4 m/s (1)
- (2)1 m/s, 3 m/s
- (3)1 m/s, 3.5 m/s
- (4) 1.5 m/s, 3 m/s
- 163. A block of mass m is placed on a smooth inclined wedge ABC of inclination θ as shown in the figure. The wedge is given an acceleration 'a' towards the right. The relation between a and $\boldsymbol{\theta}$ for the block to remain stationary on the wedge is



1)
$$a = \frac{\theta}{\cos \theta}$$

2)
$$a = \frac{g}{\sin \theta}$$

$$(3) \quad \mathbf{a} = \mathbf{g} \cos \theta$$

(4) $a = g \tan \theta$ -2), is given by

(2, 0, -3), about the point (2, -2)
(1)
$$-8\hat{i} - 4\hat{j} - 7\hat{k}$$

(2) $-4\hat{i} - \hat{j} - 8\hat{k}$
(3) $-7\hat{i} - 8\hat{j} - 4\hat{k}$
(4) $-7\hat{i} - 4\hat{j} - 8\hat{k}$

A student measured the diameter of a small steel ball using a screw gauge of least count 165. 0.001 cm. The main scale reading is 5 mm and zero of circular scale division coincides with 25 divisions above the reference level. If screw gauge has a zero error of - 0.004 cm, the correct diameter of the ball is

- 0.521 cm (1)0.525 cm (2)
- 0.053 cm (3)
- 0.529 cm (4)

English

English



166. A moving block having mass m, collides with 170. A solid sphere is rotating freely about its lighter block comes to rest after collision. When the initial velocity of the lighter block is v, then the value of coefficient of restitution (e) will be

- (1)0.5
- (2)0.25
- (3)0.8
- (4)0.4
- 167. A body initially at rest and sliding along a frictionless track from a height h (as shown in 171. The kinetic energies of a planet in an elliptical the figure) just completes a vertical circle of diameter AB = D. The height h is equal to



- 168. Three objects, A : (a solid sphere), B : (a thin circular disk) and C : (a circular ring), each have the same mass M and radius R. They all spin with the same angular speed ω about their own symmetry axes. The amounts of work (W) required to bring them to rest, would satisfy the relation
 - (1) $W_C > W_B > W_A$
 - (2) $W_A > W_B > W_C$
 - $W_B > W_A > W_C$ (3)
 - (4) $W_A > W_C > W_P$
- 169. Which one of the following statements is incorrect?
 - Rolling friction is smaller than sliding (1)friction.
 - Limiting value of static friction is directly (2)proportional to normal reaction.
 - Frictional force opposes the relative motion. (3)
 - Coefficient (4)of sliding friction has dimensions of length.

- - symmetry axis in free space. The radius of the sphere is increased keeping its mass same Which of the following physical quantities would remain constant for the sphere ?
 - (1)Angular velocity
 - (2)Moment of inertia
 - (3)Rotational kinetic energy
 - (4) Angular momentum
 - orbit about the Sun, at positions A, B and C are KA, KB and KC, respectively. AC is the major axis and SB is perpendicular to AC at the position of the Sun S as shown in the figure, Then



- (1) K_A < K_B < K_C
- (2) $K_A > K_B > K_C$
- (3) $K_B < K_A < K_C$
- (4) $K_{\rm R} > K_{\rm A} > K_{\rm C}$
- 172. A solid sphere is in rolling motion. In rolling motion a body possesses translational kinetic energy (Kt) as well as rotational kinetic energy $(\mathbf{K}_{\mathbf{r}})$ simultaneously. The ratio $\mathbf{K}_{\mathbf{t}}$: $(\mathbf{K}_{\mathbf{t}}$ + $\mathbf{K}_{\mathbf{r}})$ for the sphere is
 - (1)7:10
 - (2)5:7
 - (3)10:7
 - (4)2:5
- 173. If the mass of the Sun were ten times smaller and the universal gravitational constant were ten times larger in magnitude, which of the following is not correct ?
 - (1)Raindrops will fall faster.
 - Walking on the ground would become more (2)difficult.
 - Time period of a simple pendulum on the (3)Earth would decrease.
 - 'g' on the Earth will not change. (4)

English

174. At what temperature will the rms speed of 178. A carbon resistor of (47 ± 4.7) k Ω is to be marked oxygen molecules become just sufficient carbon resistor of (47 ± 4.7) k Ω is to be marked for just its the ame. ould Mass of oxygen molecule (m) = 2.76×10^{-26} kg Boltzmann's constant $k_{\rm B} = 1.38 \times 10^{-23}~{\rm J~K^{-1}})$ $8.360 \times 10^4 \text{ K}$ (2) $5.016 \times 10^4 \text{ K}$ (3)ical 1.254×10^4 K (4)are 175. The volume (V) of a monatomic gas varies with Jor its temperature (T), as shown in the graph. The the ratio of work done by the gas, to the heat Ire. absorbed by it, when it undergoes a change from state A to state B, is 0 25 (1) (2)3 (3)3 (4)176. The fundamental frequency in an open organ pipe is equal to the third harmonic of a closed organ pipe. If the length of the closed organ pipe

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with rings of different colours for its identification. The colour code sequence will be

- Violet Yellow Orange Silver (2)
- Yellow Violet Orange Silver

Yellow - Green - Violet - Gold (3)

Green - Orange - Violet - Gold (4)

179. A set of 'n' equal resistors, of value 'R' each, are connected in series to a battery of emf 'E' and internal resistance 'R'. The current drawn is I. Now, the 'n' resistors are connected in parallel to the same battery. Then the current drawn from battery becomes 10 I. The value of 'n' is

- (1)10
- (2)11
- (3)20
- (4)9
- 180. A battery consists of a variable number 'n' of identical cells (having internal resistance 'r' each) which are connected in series. The terminals of the battery are short-circuited and the current I is measured. Which of the graphs shows the correct relationship between I and n?

(1) $\rightarrow n$



