MY DREAMz ACADEMY

Dilsuknagar,HYD.Contact:7995918905/06.

Test Name : NEET GRAND TEST -01

Batch : 01 & 02

No Questions : 180   **Time : 180 MIN**

IMPORTANT INSTRUCTIONS:

Please read the instructions carefully

- The candidate must immediately fill their details on the **OMR SHEET** before attempting the test booklet.
- Duration of the test is **3hrs(180Min)**,test booklet contains **180 questions**.
- This test paper comprises of **two sections**.Each subject consist of two sections i.e., Section A which consist of **35 questions** and Section B which consist of 15 questions,Out of these **15 questions** candidate can choose to attempt all questions.
- Each question carries **4 Marks** for each correct response,For each incorrect response **1 mark** will be deducted from the total score.The maximum marks are **720**.
- Use **BLUE/BLACK** Ball point pen only for writing responses on **OMR SHEET**.Use of pencil,sketch pen,gell pens are strictly prohibited.
- No candidate is allowed to carry any textual material,printed or written,bits of papers,pager,mobile phone any electronic gadgets etc.. Except the Identity card and hall ticket into the examination hall.
- **Rough work** is to be done only on the space provided in the test booklet.
- Don't fold or make any stray marks on the **ANSWER SHEET**.
- Use of white fluid for correction is not permissiable on the ANSWER SHEET.
- On the completion of the test the candidate must hand over the answer sheet to the invigilator after completing the time.However the candidate is allowed to take away this test booklet with them.

ALL THE BEST

NAME:...

BATCH:………………………….. TEST DATE:…………..

ROLL NO:…………………….INVIGILATOR SIGN:……………

SET: A
Test Id: 684264
Part - A Zoology

Section - I: Single Correct

This section contains a total of 45 questions.
All questions in this section are mandatory.
For every correct response you shall be awarded 4 marks.
For every incorrect response -1 marks shall be deducted.

1. In Hardy-Weinberg principle, frequency of homozygous recessive is represented by:

   (a) p^2 (b) q^2
   (c) 2pq   (d) pq

2. Aorta receives blood from:

   (a) Pulmonary artery
   (b) Left ventricle
   (c) Superior vena cava
   (d) Right ventricle

3. Hypothalamic hormones are secreted by:

   (a) Glial cells
   (b) Schwann cells
   (c) Oligodendrocytes
   (d) Neurosecretory cells

4. What percentage of CO_2 is carried in dissolved state through plasma?

   (a) 20−25%
   (b) 3%
   (c) 7%
   (d) 30−35%

5. Which of the following statement is incorrect?

   (a) Cancer is one of the most dreaded diseases of humans and is the major cause of death all over the globe
   (b) Normal cells show the property of contact inhibition
   (c) Cancer cells possess the property of contact inhibition
   (d) Benign tumors do not spread

6. Which of the following is/are the bacterial diseases in humans?

   (a) Pneumonia
   (b) Malaria
   (c) Plague
   (d) Both A and C

7. Match Column-I with Column-II:

	Column I		Column II
A.	Origin of the universe	(i)	4.5 billion years ago
B.	Origin of earth	(ii)	4 billion years ago
C.	Origin of life	(iii)	2.7 billion years ago
D.	Origin of first eukaryote	(iv)	20 billion years ago

   Select the correct option.

   (a) A - (i), B - (iv), C - (ii), D - (iii)
   (b) A - (iv), B - (i), C - (ii), D - (iii)
   (c) A - (iv), B - (ii), C - (i), D - (iii)
   (d) A - (iv), B - (i), C - (iii), D - (ii)

8. All vertebrates:

   (a) Are chordates but all chordates are not vertebrates
   (b) Lack notochord in embryonic stage but possess it in adult stage
   (c) Have heart with two, three or four chambers
   (d) More than one option is correct

9. Inflammatory substance produced during allergic reactions by mast cells is:

   (a) Histamine
   (b) Heparin
   (c) Glutamine
   (d) Fibrinogen

10. Which of the following muscular disorders is inherited?

    (a) Tetany
    (b) Muscular dystrophy
    (c) Myasthenia gravis
    (d) Botulism

11. Select the correct match:

    (a) Increase in GFR → Activate the JG cells to release renin
    (b) Angiotensin II → Decrease the glomerular blood pressure and thereby GFR
    (c) Renin → Carries out the conversion of angiotensinogen to angiotensin I
    (d) Aldosterone → Causes reabsorption of Na$^+$ and water from the initial parts of the tubule. This also leads to an increase in blood pressure and GFR

12. Hormone responsible for the control of the development of secondary sexual characters in females is

    (a) Androgen
    (b) Oestrogen
    (c) Progesterone
    (d) Oxytocin

13. Read the given statements and select the correct option:
   Statement 1: All triploblastic animals are eucoelomates.
   Statement 2: Triploblastic animals have a false coelom.

   (a) Both statements 1 and 2 are correct

   (b) Statement 1 is correct but statement 2 is incorrect

   (c) Statement 1 is incorrect but statement 2 is correct

   (d) Both statements 1 and 2 are incorrect

14. Match the columns:

Column-I		Column-II
(I)	Sponges and coelenterates	(a) O_2 /CO_2 exchange by gills.
(II)	Aquatic arthropods	(b) Trachea for transport of gases.
(III)	Insects	(c) Lungs for gaseous exchange.
(IV)	Mammals, birds and reptiles.	(d) O_2 /CO_2 exchange by simple diffusion over entire body surface.

   (a) (I) = (a), (II) = (b), (III) = (d), (IV) = (c)

   (b) (I) = (d), (II) = (b), (III) = (c), (IV) = (a)

   (c) (I) = (d), (II) = (a), (III) = (b), (IV) = (c)

   (d) (I) = (c), (II) = (b), (III) = (a), (IV) = (d)

15. Trachea divides into right and left:

   (a) Secondary bronchi

   (b) Tertiary bronchi

   (c) Bronchioles

   (d) Primary bronchi

16. 'Rivet Popper' hypothesis was given by

   (a) David Tilman

   (b) Paul Ehrlich

   (c) Alexander Humboldt

   (d) E. P. Odum

17. Which of the following blood groups can receive blood from any other blood groups as per ABO blood grouping?

   (a) Group AB

   (b) Group B

   (c) Group A

   (d) Group O

18. Read the following statements (assertion-A and reason-R) and select the correct option.

   A: The dark band on myofibril is anisotropic band.
   R: The light band on myofibril is isotropic band.

   (a) Both A and R are true and R is correct explanation of A

   (b) Both A and R are true but R is not the correct explanation of A

   (c) A is true but R is false

   (d) Both A and R are false statements

19. Which of the following is an autoimmune disease?

   (a) Asthma

   (b) Cirrhosis

   (c) AIDS

   (d) Rheumatoid arthritis

20. Identify the structures labelled as I, II, III, IV and V for frogs:
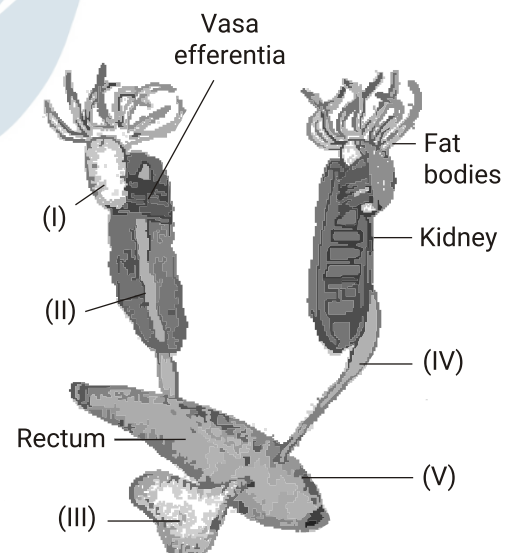
   (a) **I** - Testes, **II** - Cloaca, **III** - Adreanal gland, **IV** - Urinary bladder, **V** - Urinogenital duct

   (b) **I** - Testes, **II** - Cloaca, **III** - Urinary bladder, **IV** - Adreanal gland, **V** - Urinogenital duct

   (c) **I** - Testes, **II** - Adreanal gland, **III** - Urinary bladder, **IV** - Urinogenital duct, **V** - Cloaca

   (d) **I** - Testes, **II** - Urinary bladder, **III** - Adreanal gland, **IV** - Cloaca, **V** - Urinogenital duct

21. Match List - I with List - II

	List - I		List - II
(A)	Scapula	(i)	Cartilaginous joints
(B)	Cranium	(ii)	Flat bone
(C)	Sternum	(iii)	Fibrous joints
(D)	Vertebral column	(iv)	Triangular flat bone

   Choose the correct answer from the options given below.

   (a) (A) - (iv), (B) - (ii), (C) - (iii), (D) - (i)

   (b) (A) - (iv), (B) - (iii), (C) - (ii), (D) - (i)

   (c) (A) - (i), (B) - (iii), (C) - (ii), (D) - (iv)

   (d) (A) - (ii), (B) - (iii), (C) - (iv), (D) - (i)

22. ELISA is based on the principle of:

   (a) Antigen - antibody interaction

   (b) Antigen - antigen interaction

   (c) Antibody - antibody interaction

   (d) All of the above

23. Number of biosphere reserves, national parks, and wildlife sanctuaries in India are respectively:

   (a) 90, 14, 448

   (b) 14, 90, 448

   (c) 90, 448, 14

   (d) 14, 448, 90

24. Flame cells and nephridia are excretory organs of .... and .... respectively.

   (a) Annelida and Arthropoda

   (b) Platyhelminthes and Annelida

   (c) Coelenterata and Annelida

   (d) Aschelminthes and Annelida

25. cDNA is:

   (a) Circular DNA in the bacteria

   (b) Complementary DNA

   (c) Covalently closed DNA

   (d) Both B and C

26. During periodic abstinence, the couples abstain from coitus from .... day of the menstrual cycle.

   (a) 10 - 17

   (b) 1 - 7

   (c) 18 - 25

   (d) 10 - 15

27. In the given diagram of mature human sperm, identify the parts named I – V.
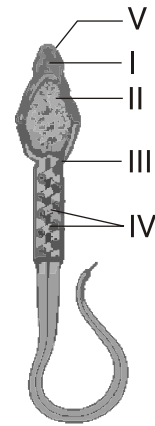
   (a) I - Nucleus, II - Tail, III - Mitochondira, IV - Acrosome, V - Centriloe

   (b) I - Acrosome, II - Nucleus, III - Neck, IV - Mitochondira, V - Plasma membrane

   (c) I - Nucleus, II - Mitochondira, III - Plasma membrane, IV - Centriloe, V - Neck

   (d) I - Acrosome, II - Centriloe, III - Mitochondira, IV - Plasma membrane, V - Tail

28. The DCTs of many nephrons open into a straight tube called:

   (a) PCT

   (b) Loop of Henle

   (c) Collecting duct

   (d) Bowman's capsule

29. About 70% of CO_2 is transported as:

   (a) Carbonic acid

   (b) Carboxyhaemoglobin

   (c) Bicarbonates

   (d) Carbamino compounds

30. Proximal convoluted tubule (PCT):

   (a) Is lined by simple cuboidal brush border epithelium that increases the surface area for reabsorption

   (b) 70 - 80% of electrolytes and water are discarded by this segment

   (c) Rarely maintains the pH balance of the body

   (d) Rarely absorbs HCO_3^- from the filtrate

31. Which of the following statements is true for cockroach?

   (a) The number of ovarioles in each ovary are ten

   (b) The larval stage is called caterpillar

   (c) Anal styles are absent in females

   (d) They are ureotelic

32. 'Eye of octopus' and 'eyes of mammals' are example of:

(a) Homologous organ

(b) Analogous organ

(c) Vestigial organ

(d) Atavism

33. Choose the incorrect statement for the hormones I, II, III and IV in graph shown. These hormones include estrogen, lutenizing hormone, progesterone and follicle stimulating hormone:
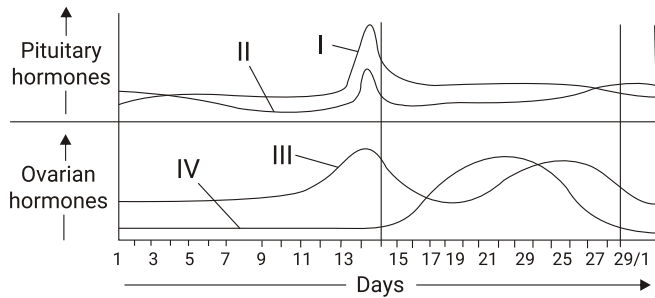
(a) 'II' is required for development of follicles

(b) 'IV' is secreted by corpus luteum

(c) Both 'I' and 'II' attain a peak level in the middle of cycle (about 14th day)

(d) 'I' which is steroidal causes ovulation.

34. Read the following statements (assertion-A and reason-R) and select the correct option.

A: hCG, and hPL are produced in women only during pregnancy.
R: These hormones are produced by placenta.

(a) Both A and R are true and R is correct explanation of A

(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) Both A and R are false statements

35. Identify the labelled parts I - IV in the given figure of human foetus within the uterus:
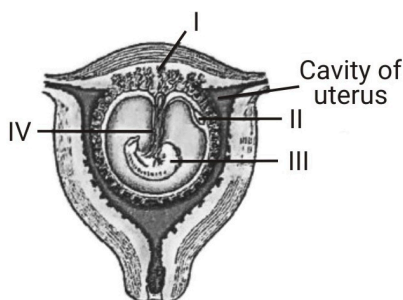
(a) I - Umbilical cord, II - Placental villi, III - Yolk sac, IV - Embryo

(b) I - Yolk sac, II - Umbilical cord, III - Embryo, IV - Placental villi

(c) I - Placental villi, II - Yolk sac, III - Embryo, IV - Umbilical cord

(d) I - Placental villi, II - Embryo, III - Yolk sac, IV - Umbilical cord

36.
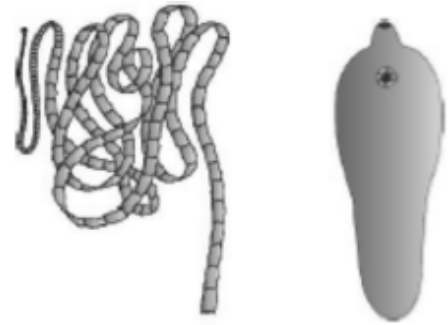
Which of the following feature is incorrect about the diagrams given above?

(a) Dorsoventrally flat body

(b) Bilaterally symmetrical

(c) Diploblastic

(d) Flame cells for excretion

37. The functional junction between the axon of one neuron and the dendrite of the next is called

(a) Desmosome

(b) Synapse

(c) Oblique bridge

(d) Tight junction

38. Fitness, according to Darwin, refers to:

(a) Physical fitness

(b) Reproductive fitness

(c) Psychological fitness

(d) Population fitness

39. The 'family planning' programmes were periodically assessed over the past decades. Improved programmes covering wider reproductive-related areas are currently in operation under the popular name:

(a) RCH programmes

(b) ART programmes

(c) MTP programmes

(d) Test tube baby programmes

40. Ventricular depolarisation is depicted by:

(a) T-wave

(b) P-wave

(c) QRS complex

(d) P-Q interval

41. On what basis, neurons are classified as unipolar, bipolar or multipolar?

(a) Transmission of impulse

(b) Number of axons and dendrites

(c) Sensory or motor nature

(d) Number of nuclei within the cell body

42. Which of the following recombinant product has been produced by transgenic sheep for treating emphysema?

(a) Tissue plasminogen activator (tpa)

(b) α-1 antitrypsin

(c) Lactalbumin

(d) Lactoferrin

43. The zygote or early embryos (with upto 8 blastomeres) are transferred into

(a) Uterus

(b) Cervix

(c) Fallopian tubes

(d) Uterus or fallopian tubes

44. Which of the following hormones is responsible for gigantism?

(a) Growth hormone

(b) Somatostatin

(c) Adrenaline

(d) GnRH

45. Which of the following is a method of gene transfer in animals?

(a) Microinjection

(b) Gene gun

(c) *Agrobacterium* mediated gene transfer

(d) All of the above

Part - B Chemistry

Section - I: Single Correct

This section contains a total of 45 questions.
All questions in this section are mandatory.
For every correct response you shall be awarded 4 marks.
For every incorrect response -1 marks shall be deducted.

46. 7.5 grams of a gas occupy 5.6 litres of volume at STP. The gas is

(a) NO

(b) N_2O

(c) CO

(d) CO_2

47. The incorrect postulates of the Dalton's atomic theory are :
(A) Atoms of different elements differ in mass.
(B) Matter consists of divisible atoms.
(C) Compounds are formed when atoms of different elements combine in a fixed ratio.
(D) All the atoms of given element have different properties including mass.
(E) Chemical reactions involve reorganization of atoms.
Choose the correct answer from the options given below :

(a) (B), (D), (E) only

(b) (A), (B), (D) only

(c) (C), (D), (E) only

(d) (B), (D) only

48. If the empirical formula and gram molecular mass of a compound are CH_2O and 180 g/mol respectively then what will be molecular formula of the compound?

(a) $C_9H_{18}O_9$

(b) CH_2O

(c) $C_6H_{12}O_6$

(d) $C_2H_4O_2$

49. Choose the pair of species in which the oxidation number of nitrogen is the same:-

(a) NO_2^-, N_2O_3

(b) NO_3^-, NO_2

(c) NO, N_2O_5

(d) None of these

50. Correct order of radius of the 1st orbit of H, He^+, Li^{2+}, Be^{3+} is :

(a) $H > He^+ > Li^{2+} > Be^{3+}$

(b) $Be^{3+} > Li^{2+} > He^+ > H$

(c) $He^+ > Be^{3+} > Li^{2+} > H$

(d) $He^+ > H > Li^{2+} > Be^{3+}$

51. What is the maximum number of lines emitted in the visible range of spectrum when a sample of H-atoms de-excite from n = 7 to n = 1 ?

(a) 5   (b) 21   (c) 15   (d) 8

52. Which of the following set of quatum numbers is impossible for an electron?

(a) $n = 1, l = 0, m = 0, s = +\frac{1}{2}$

(b) $n = 9, l = 7, m = -6, s = -\frac{1}{2}$
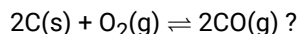
(c) $n = 2, l = 1, m = 0, s = +\frac{1}{2}$

(d) $n = 3$, $l = 2$, $m = -3$, $s = +\dfrac{1}{2}$

53. If the value of equilibrium constant K_c for the reaction, $N_2 + 3H_2 \rightleftharpoons 2NH_3$ is 7. The equilibrium constant for the reaction, $2N_2 + 6H_2 \rightleftharpoons 4NH_3$ will be

(a) 49   (b) 7   (c) 14   (d) 28

54. What is the effect of the reduction of the volume of the system for the equilibrium
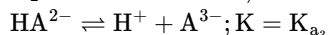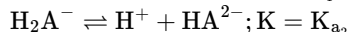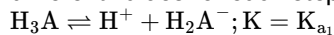$2C(s) + O_2(g) \rightleftharpoons 2CO(g)$?

(a) The equilibrium will be shifted to the left by the increased pressure caused by the reduction in volume

(b) The equilibrium will be shifted to the right by the decreased pressure caused by the reduction in volume

(c) The equilibrium will be shifted to the left by the increased pressure caused by the increase in volume

(d) The equilibrium will be shifted to the right by the increased pressure caused by the reduction in volume

55. For a polybasic acid, the dissociation constants have a different values for each step, e.g.,
$H_3A \rightleftharpoons H^+ + H_2A^-; K = K_{a_1}$
$H_2A^- \rightleftharpoons H^+ + HA^{2-}; K = K_{a_2}$
$HA^{2-} \rightleftharpoons H^+ + A^{3-}; K = K_{a_3}$
What is the observed trend of dissociation constants in successive stages ?

(a) $K_{a_1} > K_{a_2} > K_{a_3}$

(b) $K_{a_1} = K_{a_2} = K_{a_3}$

(c) $K_{a_1} < K_{a_2} < K_{a_3}$

(d) $K_{a_1} = K_{a_2} + K_{a_3}$

56. What is the hybridisation state of central atom and shape in conjugate base of ammonium ion:-

(a) sp^3, trigonal planer
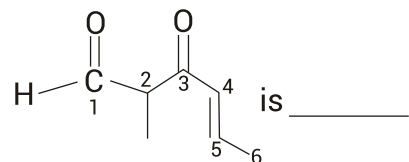
(b) sp^2, trigonal planer

(c) sp^3, pyramidal

(d) sp^3d, T-shape

57. The IUPAC name of $N \equiv C - CH_2 - CH_2 - OH$ is;

(a) 1-hydroxy ethanenitrile

(b) 3-hydroxy propanenitrile

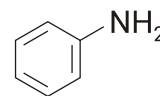(c) 2-hydroxy ethyl cyanide

(d) 1-hydroxy-2-cyanoethane

58. The IUPAC name of the compound

is _____.

(a) 3-keto-2-methylhex-4-enal

(b) 5-formylhex-2-en-3-one

(c) 5-methyl-4-oxohex-2-en-5-al

(d) 3-keto-2-methylhex-5-enal

59. Among the following compounds, the increasing order of their basic strength is:
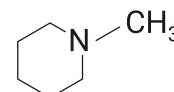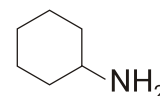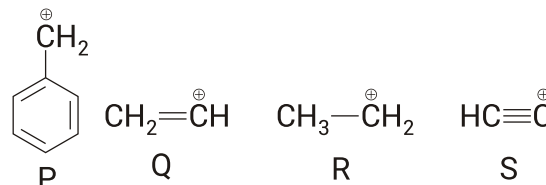
(I)

(II)

(III)

(IV)

(a) (I) < (II) < (IV) < (III)

(b) (I) < (II) < (III) < (IV)

(c) (II) < (I) < (IV) < (III)

(d) (II) < (I) < (III) < (IV)

60. Conjugate base for Bronsted acids H_2O and HF are :

(a) OH^- and H_2F^+, respectively

(b) H_3O^+ and F^-, respectively

(c) OH^- and F^-, respectively

(d) H_3O^+ and H_2F^+, respectively

61.

$\overset{\oplus}{C}H_2$ $CH_2 = \overset{\oplus}{C}H$ $CH_3 - \overset{\oplus}{C}H_2$ $HC \equiv \overset{\oplus}{C}$

P   Q   R   S

The correct order of stability of given carbocation is

(a) R > P > S > Q

(b) S > Q > R > P

(c) P > R > Q > S

(d) S > Q > P > R

62. Statement I: Boiling point of n-pentane is more than neopentane but the melting point of neopentane is more than n-pentane.
Statement II: Branching decreases the boiling point but increases the melting point.

(a) Statement I and Statement II are true and the Statement II is the correct explanation of the Statement I

(b) Statement I and Statement II are true but the Statement II is not the correct explanation of the Statement I

(c) Statement I is true but Statement II is false

(d) Statement I and Statement II are false

63. Which of the following reagents can be used to separate a mixture of pyridine and cresol.
P. NaOH, Q. Water, R. $NaHCO_3$, S. HCl

(a) P and Q

(b) Q and R

(c) Q and S

(d) P and S

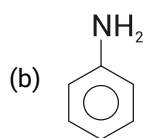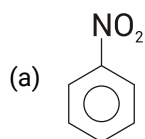64. Compound with molecular formula C_3H_6O can show:

(a) Positional isomerism

(b) Both positional isomerism and metamerism

(c) Metamerism

(d) Functional group isomerism

65. Which of the following compound gives poor yield in Friedel Craft reaction

(a)
NO_2 group on benzene ring

(b)
NH_2 group on benzene ring

(c)
CF_3 group on benzene ring
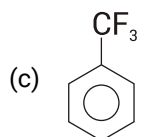
(d) All of these

66. Which element is not present in Nessler's reagent?

(a) Potassium

(b) Oxygen

(c) Mercury

(d) Iodine

67. The correct pair(s) of the ambient nucleophiles is (are):
(P) AgCN/KCN
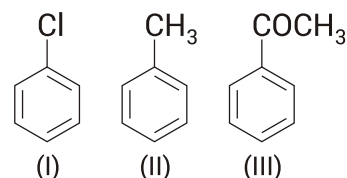(Q) RCOOAg/RCOOK
(R) $AgNO_2/KNO_2$
(S) AgI/KI

(a) (Q) and (R) only

(b) (P) only

(c) (P) and (R) only

(d) (Q) only

68. The increasing order of the reactivity of the following compounds towards electrophilic aromatic substitution reactions is :

Cl (I) CH_3 (II) $COCH_3$ (III)

(a) I < III < II

(b) III < II < I

(c) II < I < III

(d) III < I < II

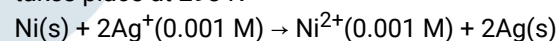69. Which one of the following group−15 hydride is the strongest reducing agent?

(a) AsH_3 (b) PH_3

(c) SbH_3 (d) BiH_3

70. Find the emf of the cell in which the following reaction takes place at 298 K
$Ni(s) + 2Ag^+(0.001\ M) \rightarrow Ni^{2+}(0.001\ M) + 2Ag(s)$
$\left(\text{Given that } E^o_{cell} = 10.5\ V, \dfrac{2.303\ RT}{F} = 0.059 \text{ at } 298\ K\right)$

(a) 1.05 V

(b) 1.0385 V

(c) 1.385 V

(d) 10.4115 V

71. E^o for $F_2 + 2e^- \rightleftharpoons 2F^-$ is 2.7 V.
Thus E^o for $F^- \rightleftharpoons \dfrac{1}{2}F_2 + e^-$ is.

(a) 1.35 V

(b) − 1.35 V

(c) − 2.7 V

(d) 2.7 V

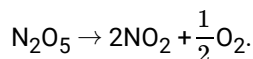72. The number of atoms in 0.1 mol of a tetraatomic gas is $(N_A = 6.02 \times 10^{23}\ mol^{-1})$

(a) 2.4×10^{22}

(b) 6.026×10^{22}

(c) 2.4×10^{23}

(d) 3.600×10^{23}

73. For the reaction,

$N_2O_5 \rightarrow 2NO_2 + \frac{1}{2}O_2$.

Given :- $\dfrac{d[N_2O_5]}{dt} = K_1[N_2O_5]$

$\dfrac{d[NO_2]}{dt} = K_2[N_2O_5]$

and $\dfrac{d[O_2]}{dt} = K_3[N_2O_5]$

The relation between K_1, K_2 and K_3 is

(a) $2K_1 = K_2 = 4K_3$

(b) $K_1 = K_2 = K_3$

(c) $2K_1 = 4K_2 = K_3$

(d) $K_1 = 2K_2 = 3K_3$

74. In a reaction A → B, A decomposes to 50% in 7min, 75% in 14min. and 87.5% in 21 min. The reaction follows the

(a) Zero order kinetics

(b) First order kinetics

(c) Second order kinetics

(d) $\frac{3}{2}$ th order kinetics

75. Identify the mixture that shows positive deviations from Raoult's Law

(a) $(CH_3)_2CO + C_6H_5NH_2$

(b) $CHCl_3 + C_6H_6$

(c) $CHCl_3 + (CH_3)_2CO$

(d) $(CH_3)_2CO + CS_2$

76. Match List I with List II.

List I (Process)	List II (Conditions)
A. Isothermal process	I. No heat exchange
B Isochoric process	II. Carried out at constant temperature
C. Isobaric process	III. Carried ou at constant volume
D. Adiabatic Process	IV. Carried out at constant pressure

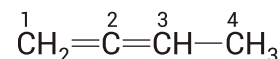Choose the correct answer from the options given below:

(a) A−IV, B−III, C−II, D−I

(b) A−IV, B−II, C−III, D−I

(c) A−I, B−II, C−III, D−IV

(d) A−II, B−III, C−IV, D−I

77. The name 'Rare earths' is used for -

(a) Lanthanides only

(b) Actinides only

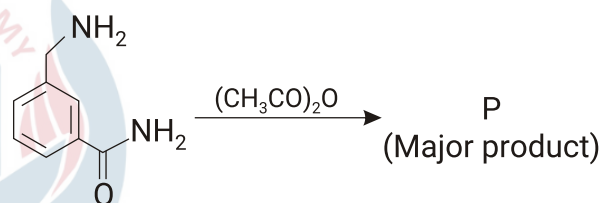(c) Both lanthanides and actinides

(d) All metalloids

78. In

$$\overset{1}{C}H_2=\overset{2}{C}=\overset{3}{C}H-\overset{4}{C}H_3$$

molecule, the hybridization of carbon 1,2,3 and 4 respectively are:

(a) sp^3, sp, sp^3, sp^3

(b) sp^2, sp^2, sp^2, sp^3

(c) sp^2, sp, sp^2, sp^3

(d) sp^2, sp^3, sp^2, sp^3

79. For the reaction A + 2B → C + 3D, 5 moles of A and 8 moles of B will produce

(a) 15 moles of D

(b) 5 moles of C

(c) 8 moles of C

(d) 12 moles of D

80.

The major product in the above reaction is:

(a)

(b)

(c)

(d)

81. Which of the following will be readily soluble in water?

(a)

(b)

(c)

(d)

82. $CH_3-C\equiv C-CH_3$ and $CH_2=CH-CH=CH_2$ are:

(a) Metamers

(b) Position isomers

(c) Chain isomers

(d) Functional group isomers

83. The decreasing order of boiling points is

(a) n-Pentane > iso-Pentane > neo-Pentane

(b) iso-Pentane > n-Pentane > neo-Pentane

(c) neo-Pentane > iso-Pentane > n-Pentane

(d) n-Pentane > neo-Pentane > iso-Pentane

84. Statement I: FeO is basic in character.
Statement II: Oxides of Transition metals are basic when metal is in lower oxidation state.

(a) Statement I and Statement II are true and the Statement II is the correct explanation of the Statement I

(b) Statement I and Statement II are true but the Statement II is not the correct explanation of the Statement I

(c) Statement I is true but Statement II is false

(d) Statement I and Statement II are false

85. Glucose on prolonged heating with HI (& red P) gives:

(a) Hexanoic acid

(b) 6-iodohexanal

(c) n-Hexane

(d) 1-Hexene

86. **Assertion:** Glucose does not give 2, 4-DNP test.
Reason: Glucose exists in cyclic hemiacetal form.

(a) Both assertion and reason are true, and the reason is the correct explanation for the assertion.

(b) Both assertion and reason are true, but the reason is not the correct explanation for the assertion.

(c) Assertion is true but reason is false.

(d) Assertion is false but reason is true.

87. Hoffmann bromamide degradation reaction is shown by

(a) $Ar-NH_2$

(b) $Ar-CONH_2$

(c) $Ar-NO_2$

(d) $Ar-CH_2NH_2$

88. The correct name of $[Pt(NH_3)_4Cl_2][PtCl_4]$ is -

(a) Tetraamminedichloroplatinum(IV) tetrachloroplatinate(II)

(b) Dichlorotetraammineplatinium(IV) tetrachloroplatinate(II)

(c) Tetrachloroplatinum(II) tetraammineplatinate(IV)

(d) Tetrachloroplatinum(II) dichlorotetraamineplatinate(IV)

89. The correct statement/s about Hydrogen bonding is/are :
A. Hydrogen bonding exists when H is covalently bonded to the highly electro negative atom.
B. Intermolecular H bonding is present in o−nitro phenol
C. Intramolecular H bonding is present in HF.
D. The magnitude of H bonding depends on the physical state of the compound.
E. H−bonding has powerful effect on the structure and properties of compounds.
Choose the correct answer from the options given below :

(a) A only

(b) A, D, E only

(c) A, B, D only

(d) A, B, C only

90. $[Fe(H_2O)_6]^{3+}$ and $[Fe(CN)_6]^{3-}$ differ in

(a) Oxidation number

(b) Coordination number

(c) Structure

(d) Magnetic nature

Part - C Physics

Section - I: Single Correct

This section contains a total of 45 questions.
All questions in this section are mandatory.
For every correct response you shall be awarded 4 marks.
For every incorrect response -1 marks shall be deducted.

91. If the radius of a uniform solid sphere is 35 cm, calculate the radius of gyration when the axis is along tangent.
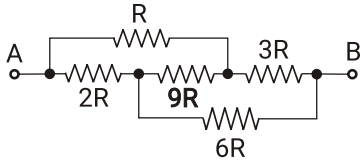
(a) $7\sqrt{10}$ cm

(b) $7\sqrt{35}$

(c) $\frac{7}{5}$ cm

(d) $\frac{2}{5}$ cm

92. A body is rolling down an inclined plane. If K.E. of rotation is 40% of K.E. of translation, then the body is a:
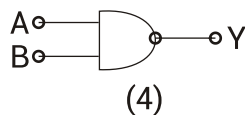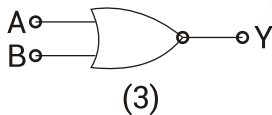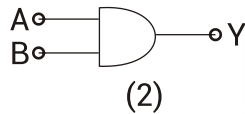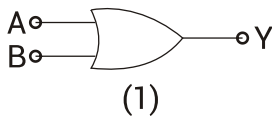
(a) Ring

(b) Cylinder

(c) Hollow ball

(d) Solid ball

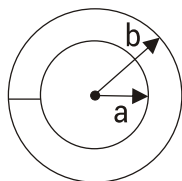93. The equivalent resistance between A and B of the network shown in the figure is

(a) $\dfrac{8R}{3}$

(b) $21R$

(c) $14R$

(d) $11R$

94. Given below are four logic gate symbols. Those for OR, NOR and NAND are respectively :-

(a) 1, 4, 3

(b) 4, 1, 2

(c) 1, 3, 4

(d) 4, 2, 1

95. The conducting spherical shells shown in the figure are connected by a conductor. The capacitance of the system is
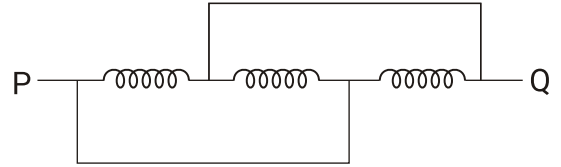

(a) $4\pi\varepsilon_0 \dfrac{ab}{b-a}$

(b) $4\pi\varepsilon_0 a$

(c) $4\pi\varepsilon_0 b$

(d) $4\pi\varepsilon_0 \dfrac{a^2}{b-a}$

96. Pure inductors each of inductance 3 H are connected as shown. The equivalent induction of the circuit is (ignore mutual induction)

(a) 1 H

(b) 2 H

(c) 3 H

(d) 9 H

97. The ratio of magnitude of average velocity and r.m.s speed of an ideal gas

(a) $\sqrt{\dfrac{8}{3\pi}}$

(b) $\sqrt{\dfrac{3\pi}{8}}$

(c) 0

(d) $\sqrt{\dfrac{3}{2}}$

98. A particle of mass m is projected with a velocity u making an angle of $30°$ with the horizontal. The magnitude of the angular momentum of the projectile about the point of projection when the particle is at its maximum height h is:

(a) Zero

(b) $\dfrac{mu^3}{\sqrt{2}g}$

(c) $\dfrac{\sqrt{3}}{16}\dfrac{mu^3}{g}$

(d) $\dfrac{\sqrt{3}}{2}\dfrac{mu^2}{g}$

99. If the velocity of a wave produced in a string is 200 m/s and the tension in the string is 500 N. Find the linear mass density.

(a) $\dfrac{4}{5}\times10^{-2}\dfrac{Kg}{m}$

(b) $\dfrac{5}{4}\times10^{-2}\dfrac{Kg}{m}$

(c) $2\times10^{-3}\dfrac{Kg}{m}$

(d) None of these

100. If $\vec{P}=\hat{i}+2\hat{j}+6\hat{k}$, its direction cosines are

(a) $\dfrac{1}{41}$, $\dfrac{2}{41}$ and $\dfrac{6}{41}$

(b) $\dfrac{1}{\sqrt{41}}$, $\dfrac{2}{\sqrt{41}}$ and $\dfrac{6}{\sqrt{41}}$

(c) $\dfrac{3}{\sqrt{41}}$, $\dfrac{8}{\sqrt{41}}$ and $\dfrac{7}{\sqrt{41}}$

(d) 1, 2 and 6

101. A square loop of wire of edge length a carries a current I. Find out the value of magnetic induction at the centre of the square loop?

(a) $\dfrac{\mu_0 i}{\pi a}$

(b) $\dfrac{2\sqrt{2}\mu_0 i}{\pi a}$

(c) $\dfrac{\mu_0 i}{\sqrt{2}\pi a}$

(d) $\dfrac{2\mu_0 i}{\pi a}$

102. A body weighs 72 N on the surface of the earth. What is the gravitational force on it, at a height equal to half the radius of the earth?

(a) 24 N (b) 48 N

(c) 32 N (d) 30 N

103. An unpolarised beam of light of intensity I is incident on two polarisers in contact. The angle between the axes of the two polarisers is θ. Intensity of the light finally emerging from the combination is

(a) $I\cos^2\theta$

(b) $\left(\dfrac{I}{2}\right)\cos^2\theta$

(c) $I\cos^4\theta$

(d) $\left(\dfrac{I}{2}\right)\cos\theta$

104. If magnetic flux (in SI units) through a loop varies according to $\phi = 3t^2 + 4t + 2$, find the magnitude of the induced emf at $t = 2$ sec.

(a) 22 volt

(b) 18 volt

(c) 20 volt

(d) 16 volt

105. Two bodies, A (of mass 1 kg) and B (of mass 3 kg), are dropped from heights of 16 m and 25 m respectively. The ratio of the time taken by them to reach the ground is:

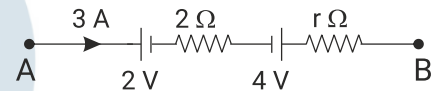(a) $\dfrac{5}{4}$

(b) $\dfrac{12}{5}$

(c) $\dfrac{5}{12}$

(d) $\dfrac{4}{5}$

106. The speed of an electron in the orbit of hydrogen atom in the ground state is

(a) c

(b) $\dfrac{c}{10}$

(c) $\dfrac{c}{2}$

(d) $\dfrac{c}{137}$

107. The readings of ammeter A_1 and A_2 in the given diagram will be (neglect the resistance of ammeters)
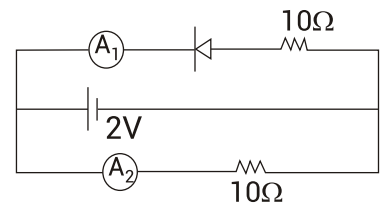
(a) Zero, Zero

(b) Zero, 0.1 A

(c) 0.1 A, Zero

(d) Zero, 0.2 A

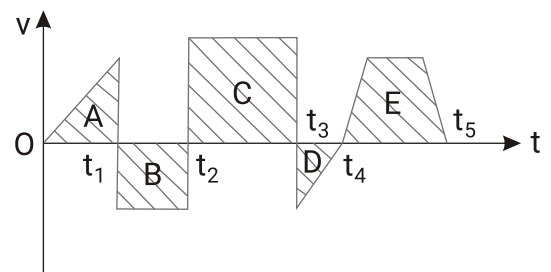108.

In the shown part of the circuit, $V_A - V_B = 7$ Volt. Find the resistance r.

(a) 1 (b) 2

(c) 1.5 (d) 2.5

109. The velocity-time graph of an object is shown. The displacement during the interval 0 to t_4 is:

(a) Area A + Area B + Area C + Area D + Area E

(b) Area A + Area C − Area B − Area D

(c) Area A + Area B + Area C + Area D

(d) Area A + Area C + Area E − Area B + Area D

110. Two identical balls A and B having velocities of 0.5 m/s and −0.3 m/s respectively collide elastically in one dimension. The velocities of B and A after the collision respectively will be: -

    (a) −0.3 m/s and 0.5 m/s

    (b) 0.3 m/s and 0.5 m/s

    (c) −0.5 m/s and 0.3 m/s

    (d) 0.5 m/s and −0.3 m/s

111. Two balls carrying charges +7 μC and −5 μC attract each other with a force F. If a charge +5 μC is added to both, the force between them will be

   (a) F

    (b) zero

    (c) 2F

    (d) $\dfrac{F}{2}$

112. A ball is thrown at an angle θ with the horizontal. Its horizontal range is equal to its maximum height. This is possible only when the value of $\tan\theta$ is

    (a) 4   (b) 2

    (c) 1   (d) 0.5

113. Two springs of constant k_1 and k_2 are joined in series. The effective spring constant of the combination is given by
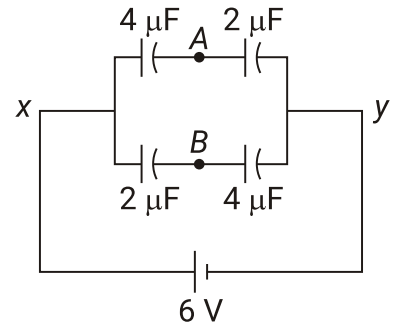
    (a) $\sqrt{k_1 k_2}$

    (b) $\dfrac{(k_1 + k_2)}{2}$

    (c) $k_1 + k_2$

    (d) $\dfrac{k_1 k_2}{(k_1 + k_2)}$

114. A sample of ideal mono-atomic gas is taken round the cycle ABCA as shown in the figure. Find out the work done by gas during the cycle?
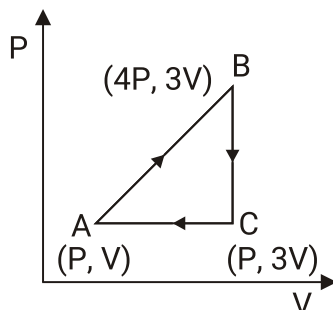
    (a) $2\,PV$

    (b) $-3\,PV$

    (c) $3\,PV$

    (d) $-2\,PV$

115. What is the potential difference between A and B in the circuit shown?

    (a) 2 V   (b) 4 V

    (c) 3 V   (d) 12 V

116. If the junction P is in equilibrium then $\dfrac{T_1}{T_2}$ is
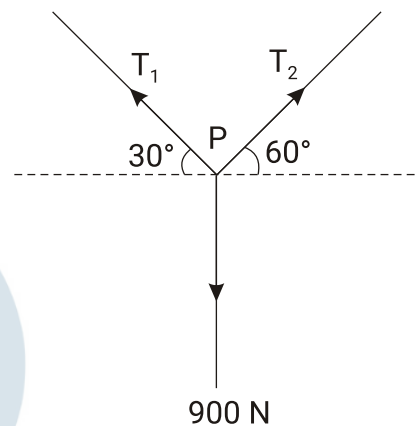
    (a) $\sqrt{3}$

    (b) 2

    (c) $\dfrac{1}{\sqrt{3}}$

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

117. In a plane electromagnetic wave travelling in free space, the electric field component oscillates sinusoidally at a frequency of 2.0×10^{10} Hz and amplitude 48 V m^{-1}. The amplitude of the oscillating magnetic field is: (Speed of light in free space $= 3 \times 10^8$ m s^{-1})

    (a) 1.6×10^{-8} T

    (b) 1.6×10^{-7} T

    (c) 1.6×10^{-6} T

    (d) 1.6×10^{-9} T

118. Impedance of the following circuit will be:
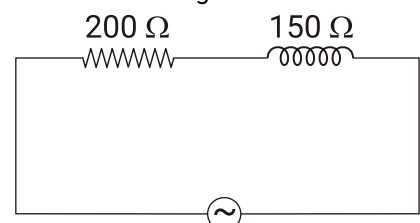
(a) $150\ \Omega$

(b) $200\ \Omega$

(c) $250\ \Omega$

(d) $340\ \Omega$

119. In the figure find V_R:

$V_R = ?$ $V_L = 176\ V$

220 V

(a) 132 V

(b) 396 V

(c) 185 V

(d) $\sqrt{200 \times 176}$ V

120. The resistance of a wire is R ohm. If it is melted and stretched to n times its original length, its new resistance will be

(a) nR

(b) $\dfrac{R}{n}$

(c) n^2R
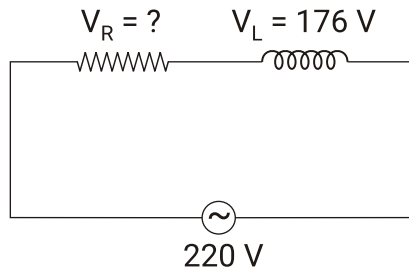
(d) $\dfrac{R}{n^2}$

121. Which of the following is true?

(a) Gravitational field intensity is a vector quantity.

(b) Range of gravitational field is infinite.

(c) Unit of gravitational intensity is $\dfrac{N}{kg}$.

(d) All of the above.

122. The force F is given in terms of time t and displacement x by the equation $f = a\, cos(\alpha x) + b\, sin(\beta t)$, Where a and b are the amplitudes. Find out the dimensions of β/α?

(a) $[M^0L^0T^0]$

(b) $[M^0L^0T^{-1}]$

(c) $[M^0L^0T^0]$

(d) $[M^0L^1T^{-1}]$

123.
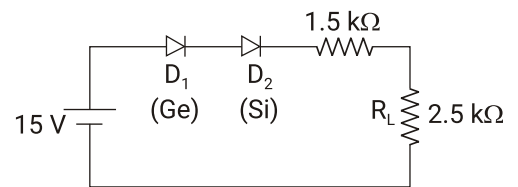
In the given circuit, the voltage across load resistance (R_L) is

(a) 14.00 V

(b) 9.00 V

(c) 8.50 V

(d) 8.75 V

124. The wavelength of an electron accelerated through a potential difference of 1 Volt is

(a) 12.27 $\overset{\circ}{A}$

(b) 1.234 $\overset{\circ}{A}$

(c) 1 micron

(d) 1 fermi

125. Beats are produced by two waves given by $y_1 = a\sin(2000\pi)t$ and $y_2 = a\sin(2008\pi)t$ at x = 0. The number of beats heard per second is

(a) Zero   (b) One

(c) Four   (d) Eight

126. A body of mass 1 kg is executing simple harmonic motion. Its displacement $y(cm)$ at t seconds is given by $y = 6\sin(100t + \pi/4)$. Its maximum kinetic energy is

(a) 6 J

(b) 18 J

(c) 24 J

(d) 36 J

127. The capacity of a parallel plate air capacitor is $10\ \mu F$. As shown in the figure this capacitor is divided into two equal parts; these parts are filled by media of dielectric constants $K_1 = 2$ and $K_2 = 4$. Capacity of this arrangement will be :
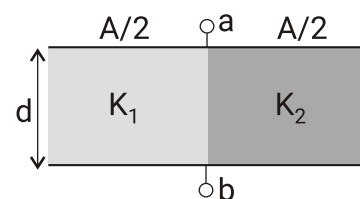
(a) $20\ \mu F$

(b) $30\ \mu F$

(c) $10\ \mu F$

(d) $40\,\mu\mathrm{F}$

128. The time period of a satellite of the earth is 24 hours. If the separation between the earth and the satellite is decreased to one-fourth of the previous value, then its new time period will become

(a) 6 hours

(b) 4 hours

(c) 3 hours

(d) 12 hours

129. A Particle at the end of a spring executes Simple Harmonic Motion with a time Period t_1, while the corresponding Time Period for another Spring is t_2. Find the time period, t of oscillation with the two springs in series?

(a) $t_1 + t_2$

(b) $(t_1^2 + t_2^2)^{\frac{1}{2}}$

(c) $\dfrac{1}{t_1} + \dfrac{1}{t_2}$

(d) $\dfrac{t_1 t_2}{(t_1 + t_2)}$

130. Match List I with List II

| List-I		List-II	
A.	Planck's constant (h)	I.	$[\mathrm{M^1 L^2 T^{-2}}]$
B.	Stopping potential (V_s)	II.	$[\mathrm{M^1 L^1 T^{-1}}]$
C.	Work function (ϕ)	III.	$[\mathrm{M^1 L^2 T^{-1}}]$
D.	Momentum (p)	IV.	$[\mathrm{M^1 L^2 T^{-3} A^{-1}}]$

Choose the correct answer from the options given below:

(a) A - III, B - IV, C - I, D - II

(b) A - I, B - III, C - IV, D - II

(c) A - II, B - IV, C - III, D - I

(d) A - III, B - I, C - II, D - IV

131. When momentum of a body increases by 200%, its KE increases by

(a) 200%   (b) 300%

(c) 400%   (d) 800%

132. The electric potential V is given as a function of distance x (metre) by $\mathrm{V} = (5x^2 - 10x - 9)$ volts. The value of the electric field at $\mathrm{x} = 1$ m is

(a) $20\,\dfrac{\mathrm{V}}{\mathrm{m}}$

(b) $6\,\dfrac{\mathrm{V}}{\mathrm{m}}$

(c) $11\,\dfrac{\mathrm{V}}{\mathrm{m}}$

(d) zero

133. Consider a block and trolley system as shown in figure. If the coefficient of kinetic friction between the trolley and the surface is 0.04, the acceleration of the system in ms^{-2} is: (Consider that the string is massless and unstretchable and the pulley is also massless and frictionless):
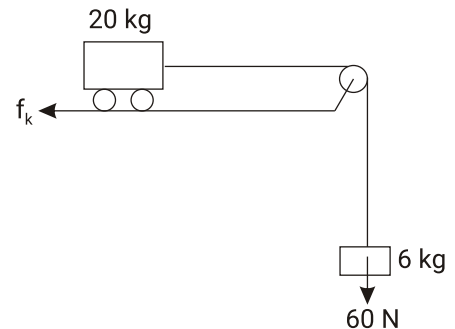
(a) 4

(b) 3

(c) 2

(d) 1.2

134. Electric field in a region is uniform and is given by $\vec{E} = a\hat{i} + b\hat{j} + c\hat{k}$. Electric flux associated with a surface of area $\vec{A} = \pi R^2 \hat{i}$ is

(a) $a\pi R^2$

(b) $3a\pi R^2$

(c) $2abR$

(d) acR

135. The equivalent resistance of the arrangement of resistances shown in adjoining figure between the points A and B is
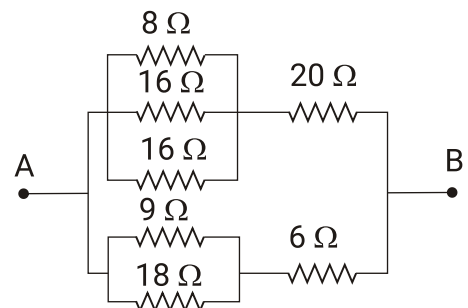
(a) 6 ohm

(b) 8 ohm

(c) 16 ohm

(d) 24 ohm

Part - D Botany

Section - I: Single Correct

This section contains a total of 45 questions.
All questions in this section are mandatory.
For every correct response you shall be awarded 4 marks.
For every incorrect response -1 marks shall be deducted.

136. Select the incorrect choice with respect to STP:

    (a) Biological treatment requires aeration

    (b) Primary treatment requires aeration

    (c) Primary and secondary treatment requires aeration

    (d) Both B and C

137. The chromosomal disorders are caused due to:

    (a) Absence of one or more chromosomes

    (b) Excess of one or more chromosomes

    (c) Abnormal arrangement of chromosomes

    (d) All of the above

138. The diseases associated with prions are:

    (a) Bovine Spongiform Encephalopathy

    (b) Mad cow disease

    (c) Creutzfeldt-Jakob disease (CJD) of man

    (d) All of the above

139. Chemiosmotic hypothesis:

    (a) Was given by Peter Mitchel

    (b) Is applicable for both mitochondrial and chloroplastic ATP synthesis

    (c) In chloroplast deals with ATP synthesis which is linked to the development of a proton gradient across the thylakoid membrane

    (d) Is related to all of the above

140. Dough kept overnight in warm weather becomes soft and spongy as a result of:

    (a) CO_2 absorption from the surrounding

    (b) Fermentation

    (c) Both (A) and (B)

    (d) O_2 release

141. The three boxes in this diagram represent the three major pathways in aerobic respiration. Arrows represent net reactants or products.
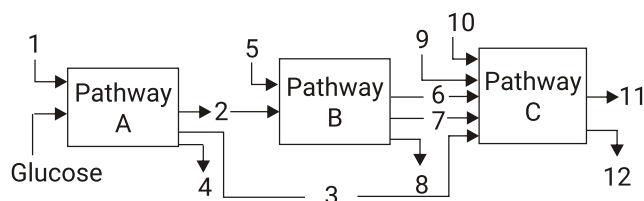
    Arrows numbered 4, 8 and 12 can all be:

    (a) H_2O

    (b) FAD^+ or $FADH_2$

    (c) NADH

    (d) ATP

142. What is the role of "Cytochrome C" in electron transport system?

    (a) Acts as a mobile carrier for transfer of electrons between complex III and IV

    (b) It is the final electron acceptor for anaerobic respiration

    (c) Acts as a mobile carrier for transfer of electrons between complex I and III

    (d) Acts as dehydrogenase enzyme

143. .... break down detritus into smaller particles:

    (a) Earthworm

    (b) Detritivores

    (c) Phytoplanktons

    (d) Both A and B are correct

144. Underground stem modified for food storage having nodes, internodes and scaly leaves and growing vertically is called:

    (a) Corm

    (b) Bulb

    (c) Rhizome

    (d) Tuber

145. For stop codon:

    (a) There are specific tRNAs with their cognate amino acids

    (b) There are specific tRNAs which do not bind to any amino acids

    (c) There are no tRNAs

    (d) There are tRNAs which may or may not bind to amino acids

146. Identify the following organism and the correct labels for I, II, III, IV:
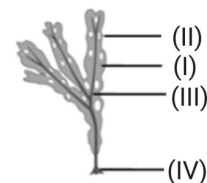
    (a) *Laminaria*; I = leaf II = air bladder III = stripe IV = hold fast

    (b) *Fucus*; I = frond II = air bladder III = midrib IV = Hold fast

    (c) *Fucus*; I = air bladder II = frond, III = midrib IV = hold fast

    (d) *Laminaria*; I = leaf III = midrib IV = petiole

147. While explaining interspecific interaction of population, (+) sign is assigned for beneficial interaction, (-) sign is assigned for detrimental interaction and (0) for neutral interaction. Which of the following interactions can be assigned (+) for one species and (-) for another species involved in the interaction?

    (a) Commensalism

    (b) Competition

    (c) Predation

    (d) Amensalism

148. Read the following statements and select the correct option:

    I. Heterospory is found in all members of pteropsida
    II. *Selaginella* is advanced among pteridophytes as it produces seeds
    III. *Pinus* has unbranched stem and has male and female cones on separate plants
    IV. Zygotic meiosis is characteristic of life cycle of *Fucus*

    (a) All are incorrect

    (b) Both II and III are correct

    (c) Only II is correct

    (d) Only IV is incorrect

149. The given pyramid best represents:
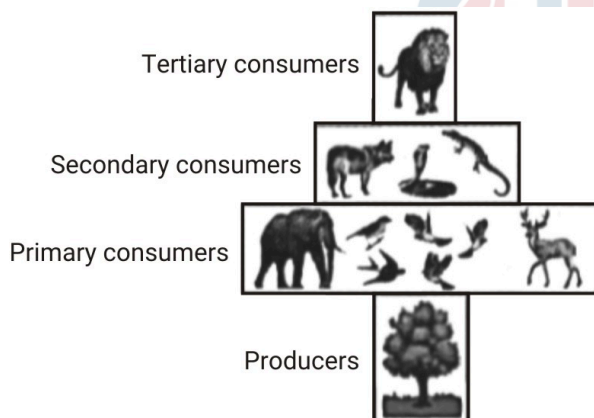
    (a) Pyramid of energy in forest ecosystem

    (b) Pyramid of biomass in forest ecosystem

    (c) Pyramid of numbers in grassland ecosystem

    (d) Pyramid of numbers in forest ecosystem

150. In the given figure of cell cycle, choose the phase from A to D in which DNA replication takes place.
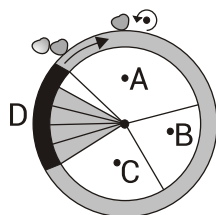
    (a) A   (b) B   (c) C   (d) D

151. Arrange the following taxa in the box in decreasing order of their common features:

Mammalia, Carnivora, *Felis*, *Chordata*, *Felidae*

    (a) Chordata → Mammalia → Carnivora → Felidae → *Felis*

    (b) *Felis* → Felidae → Carnivora → Mammalia → Chordata

    (c) *Felis* → Carnivora → Felidae → Mammalia → Chordata

    (d) Chordata → Mammalia → Felidae → Carnivora → *Felis*

152. Read the following statements (assertion-A and reason-R) and select the correct option.

    A: Wine and beer are 'soft' liquors whereas whisky, brandy, rum and vodka are 'hard' liquors.
    R: Wine and beer are processed without distillation whereas as whisky, brandy rum and vodka are processed by distillation.

    (a) Both A and R are true and R is correct explanation of A

    (b) Both A and R are true but R is not the correct explanation of A

    (c) A is true but R is false

    (d) Both A and R are false statements

153. In gymnosperms

    (a) Ovules are enclosed inside the ovary

    (b) Ovules remain exposed, both before and after fertilization

    (c) Seeds are covered by fruit

    (d) Double fertilization occurs after pollination

154. Respiratory enzymes of bacterial cell occur in

    (a) Ribosomes

    (b) Plasma membrane

    (c) Nucleoid

    (d) ER

155. Read the following statements (assertion-A and reason-R) and select the correct option.

    A: Palmately compound leaf possess a well defined rachis.
    R: Leaflet forms feather like structure.

    (a) Both A and R are true and R is correct explanation of A

    (b) Both A and R are true but R is not the correct explanation of A

    (c) A is true but R is false

    (d) Both A and R are false statements

156. Plasmodesmata are:

(a) Connections between adjacent cells

(b) Lignified cemented layers between cells

(c) Locomotary structures

(d) Membranes connecting the nucleus with plasmalemma

157. The four whorls of a flower are arranged on the:

(a) Thalamus

(b) Petiole

(c) Corolla

(d) Stamens

158. Identify the correct and incorrect statement from the following:

(i) 17500 new cells are produced per hour by a single maize root apical meristem.
(ii) With the help of length, growth of pollen tube is measured.
(iii) The growth of the leaf is measured in term of volume.
(iv) Cell in a watermelon may increase in size by upto 350000 times.

(a) (i), (ii), (iii) are correct and (iv) is incorrect

(b) (i), (ii), (iv) are correct and (iii) is incorrect

(c) (ii), (iii) are correct and (i), (iv) are incorrect

(d) (i), (iv) are correct and (ii), (iii) are incorrect

159. C_4 plants are special because:

(i) They have a special type of leaf anatomy.
(ii) They tolerate higher temperature.
(iii) They show a response to high light intensities.
(iv) They have greater productivity of biomass.
(v) They lack a process called phorespiration.

(a) (i) and (ii)

(b) (i), (iii) and (iv)

(c) (i), (ii), (iii) and (iv)

(d) All of these

160. A dikaryon is formed when:

(a) Meiosis is arrested

(b) The two haploid cells do not fuse immediately

(c) Cyptoplasm does not fuse

(d) None of the above

161. The filiform apparatus of synergids:

(a) Plays an important role in guiding the pollen tube into the synergid

(b) Helps in the opening of pollen tube

(c) Prevents pollen tube from bursting

(d) Is diploid

162. A major characteristic of the monocot root is the presence of:

(a) Scattered vascular bundles

(b) Vasculature without cambium

(c) Cambium sandwiched between phloem and xylem along the radius

(d) Open vascular bundles

163. **Statement I:** Temperature, water, light and soil are the key elements that lead to so much variation in the physical and chemical conditions of different habitats.
Statement II: Abiotic factor along with biotic components likes pathogens, parasites, predators and competitors also affect habitat of the organism.

(a) Both statements are correct

(b) Statement I is correct and II is incorrect

(c) Statement I is incorrect and II is correct

(d) Both statements are incorrect

164. In DNA double helix, a purine base always pairs through hydrogen bonds with a pyrimidine base. This leads to:

(a) The antiparallel nature

(b) The semiconservative nature

(c) Uniform width throughout DNA

(d) Uniform length in all DNA

165. Read the following statements (assertion-A and reason-R) and select the correct option.

A: Cyclic pathway of photosynthesis first appeared in some eubacterial species.
R: Oxygen started accumulating in the atmosphere after non-cyclic pathway of photosynthesis evolved.

(a) Both A and R are true and R is correct explanation of A

(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) Both A and R are false statements

166. To produce 102 pollen grains, how many meiotic divisions are required?

(a) 25   (b) 25.5

(c) 26   (d) 27

167. Read the following statements (assertion-A and reason-R) and select the correct option.

A: Anthropogenic ecosystem does not possess self-regulatory mechanism.
R: Anthropogenic ecosystem is under the control of humans.

(a) Both A and R are true and R is correct explanation of A

(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) Both A and R are false statements

168. Choose the correct option for the diagram given below:
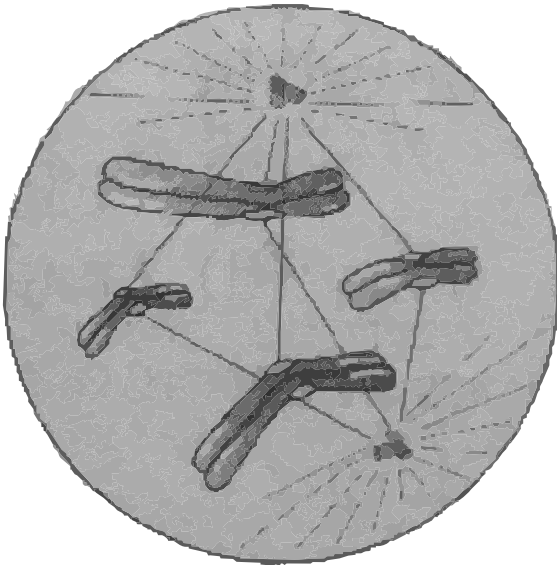
(a) Number of Chromosomes - 4, Number of Chromatids - 8, Number of Centromeres - 8, Number of Kinetochores - 8

(b) Number of Chromosomes - 4, Number of Chromatids - 4, Number of Centromeres - 4, Number of Kinetochores - 8

(c) Number of Chromosomes - 4, Number of Chromatids - 16, Number of Centromeres - 8, Number of Kinetochores - 4

(d) Number of Chromosomes - 4, Number of Chromatids - 8, Number of Centromeres - 4, Number of Kinetochores - 8

169. Read the following statements and select correct statements:
I. Lactic acid bacteria produce acids that coagulate and partially digest the milk protein during curd making
II. Curd is less nutritious than milk
III. Cheese is partially degraded concentrate of milk fat and casein
IV. Large holed swiss cheese is ripened by bacteria *Propionibacterium sharmanii*
V. Antibiotics are produced by plants.

(a) II, III, IV

(b) I, II , III

(c) II, IV

(d) I, III, IV

170. In which of the following glycolysis occurs during cellular respiration?

(a) Aerobic organisms only

(b) Anaerobic organisms only

(c) Eukaryotes only

(d) All living organisms

171. Vascular tissues of angiosperms differ from those of gymnosperms in the presence of:

(a) Sieve tubes

(b) Vessels

(c) Companion cells

(d) All of the above

172. Progeny with blood group 'O' can not be obtained in cross

(a) A × A

(b) A × B

(c) O × AB

(d) B × B

173. Read the following statements (assertion-A and reason-R) and select the correct option.

A: The two cotyledons in seed are the embryonic leaves.
R: The embryo contains radicle and plumule.

(a) Both A and R are true and R is correct explanation of A

(b) Both A and R are true but R is not the correct explanation of A

(c) A is true but R is false

(d) Both A and R are false statements

174. Which of the following is incorrect w.r.t. bryophytes?

(a) They play an important role in plant succession on bare rocks/soil

(b) They usually occur in shaded, dry and xeric areas

(c) They show gamete formation

(d) Dominant phase in life cycle is a gametophyte

175. Which of the following statements regarding the universal rules of biological nomenclature is incorrect?

(a) Biological names are generally in Latin and written in italics

(b) The first word in a biological name represents the genus while the second component denotes the species

(c) Both the words in a biological name, when handwritten, are separately underlined, or printed in italics to indicate their Latin origin

(d) The specific epithet starts with a capital letter while the generic epithet starts with a small letter. It can be illustrated with the example of *mangifera Indica*

176. Read the following statements (assertion-A and reason-R) and select the correct option.

     A: 'Linked genes' are located on the same chromosome.
     R: Closely located genes assort together while distantly located genes, due to recombination, assort independently.

     (a) Both A and R are true and R is correct explanation of A

     (b) Both A and R are true but R is not the correct explanation of A

     (c) A is true but R is false

     (d) Both A and R are false statements

177. Which of the following hormones is used in root formation on stem cuttings?

     (a) Kinetin

     (b) GA

     (c) ABA

     (d) IBA

178. Read the following statements:
     A. Variation at genetic level arises due to mutations.
     B. Technique of DNA fingerprinting was initially developed by Alec Jeffreys.

     (a) Only (B) is correct

     (b) Both (A) and (B) are correct

     (c) Only (A) is correct

     (d) Both (A) and (B) are incorrect

179. In a linear chromosome, map distance (in cM) between four gene loci are as follows:
     a − b = 10 cM
     b − c = 4 cM
     a − d = 3 cM
     a − c = 6 cM
     The expected cross-over frequency between the genes c and d is:

     (a) 9%

     (b) 3%

     (c) 5% or 7%

     (d) 3% or 9%

180. How many structures/cells in list given below are parenchymatous:
     (i) Epidermis
     (ii) Vascular rays
     (iii) Complimentary cells
     (iv) Root cap
     (v) Pith cells of sunflower stem
     (vi) Hypodermis of maize stem
     (vii) Hypodermis of sunflower stem
     (viii) Bundle sheath cells in maize stem

     (a) Five   (b) Three

     (c) Six   (d) Seven