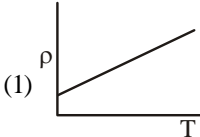
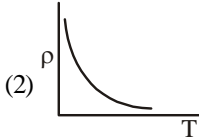
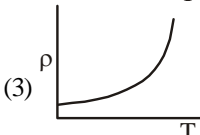
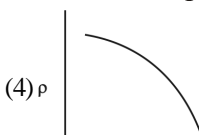


PRABAL TEST PAPER

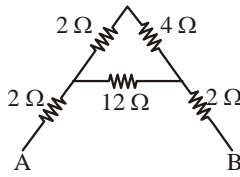
Time : 1 : 00 Hr.

Question : 50

PHYSICS

01. Rain is falling vertically with speed 30 m/s. A woman rides a bicycle with speed of 30 m/s in south to north direction. The direction in which she should hold her umbrella from vertical is
 (1) 45° - south
 (2) 180° - south
 (3) 45° - North
 (4) 18° - North
02. A block is projected over a rough surface with speed 9.8 m/s. If friction coefficient of surface-block interface is 0.5. Find distance after which block stops
 (1) 4.9 m
 (2) 9.8 m
 (3) 14.7 m
 (4) 19.6 m
03. The Earth is assumed to be a sphere of radius R. A platform is arranged at a height 4R from the surface of the earth. The escape velocity of a body from this platform is fv_e , where v_e is its escape velocity from the surface of the earth. The value of f is
 (1) $\sqrt{2}$ (2) $\frac{1}{\sqrt{2}}$ (3) $\sqrt{5}$ (4) $\frac{1}{\sqrt{5}}$
04. A simple pendulum has a time period T in vacuum. Its time period when it is completely immersed in a liquid of density one-fourth of the density of material of the bob is
 (1) $\sqrt{\frac{3}{4}} T$ (2) $\sqrt{\frac{4}{3}} T$ (3) $\sqrt{\frac{5}{3}} T$ (4) $\sqrt{\frac{3}{5}} T$
05. A wind with speed 40 m/s blows parallel to the roof of a house. The area of the roof is 500 m². Assuming that the pressure inside the house is atmospheric pressure, the force exerted by the wind on the roof and the direction of the force will be: ($\rho_{\text{air}} = 1.2 \text{ kg/m}^3$)
 (1) $4.8 \times 10^5 \text{ N}$, upwards
 (2) $2.4 \times 10^5 \text{ N}$, upwards
 (3) $2.4 \times 10^5 \text{ N}$, down wards
 (4) $4.8 \times 10^5 \text{ N}$, down wards
06. A semicircular arc of radius a is charged uniformly with charge Q. The electric field at the centre is
 (1) $\frac{Q}{2\pi^2 \epsilon_0 a^2}$ (2) $\frac{Q}{2\pi^2 \epsilon_0 a^3}$
 (3) $\frac{Q}{4\pi^2 \epsilon_0 a^2}$ (4) $\frac{Q^2}{4\pi^3 \epsilon_0 a^3}$
07. Distance between two charges of 8 μC and 12 μC is 8 cm. If distance between them is reduced to 6 cm, work done is:
 (1) 1.8 J (2) 5.8 J (3) 6.4 J (4) 3.6 J
08. A potential difference V is applied across two capacitors of capacitances C_1 and C_2 connected in series. Then the difference between potentials across C_1 and C_2 ($V_{C_1} - V_{C_2}$) will be:
 (1) $\frac{VC_2}{C_1 + C_2}$ (2) $\frac{V(C_1 + C_2)}{C_1 - C_2}$
 (3) $\frac{V(C_2 - C_1)}{C_1 + C_2}$ (4) $\frac{VC_1}{C_1 + C_2}$
09. Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for nichrome?
 (1)  (2) 
 (3)  (4) 

10. The equivalent resistance between A and B for the mesh shown in the figure is

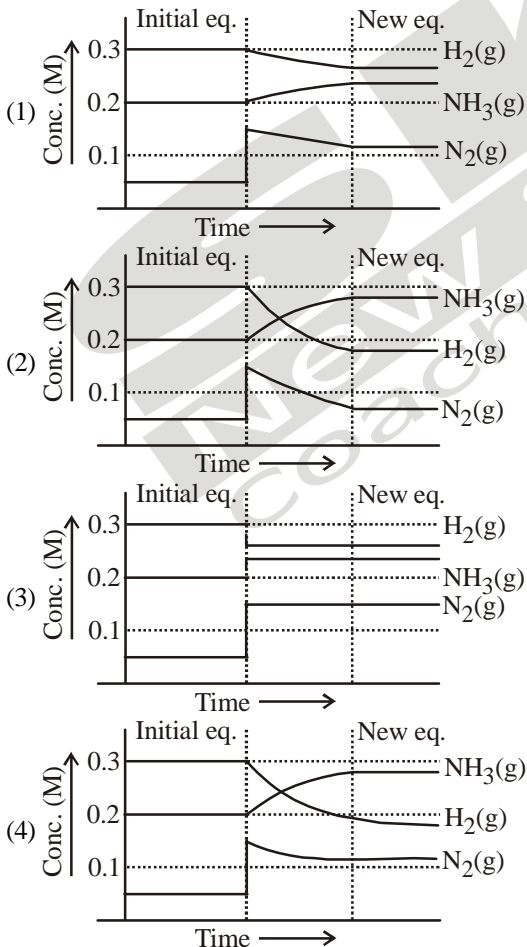


- (1) 12 Ω (2) 16 Ω (3) 8 Ω (4) 20 Ω

CHEMISTRY

11. Following reaction describes the rusting of iron
 $4\text{Fe} + 3\text{O}_2 \longrightarrow 4\text{Fe}^{3+} + 6\text{O}^{2-}$
 Which one of the following statement is incorrect?
 (1) This is an example of a redox reaction
 (2) Metallic iron is reduced to Fe^{3+}
 (3) Fe^{3+} is an oxidising agent
 (4) Metallic iron is a reducing agent

12. An equilibrium mixture at 700 K of 0.05 M $\text{N}_2(\text{g})$, 0.3 M $\text{H}_2(\text{g})$ and 0.2 M $\text{NH}_3(\text{g})$ is present in a container. Now if this equilibrium is disturbed by adding $\text{N}_2(\text{g})$ so that its concentration becomes 0.15 M just after addition then which of the following graphs represents the above situation more appropriately?



13. The most stable oxides of nitrogen will be:
 (1) $2\text{NO}_2(\text{g}) \rightleftharpoons \text{N}_2(\text{g}) + 2\text{O}_2(\text{g});$
 $K = 6.7 \times 10^{16} \text{ mol L}^{-1}$
 (2) $2\text{N}_2\text{O}_5(\text{g}) \rightleftharpoons 2\text{N}_2(\text{g}) + 5\text{O}_2(\text{g});$
 $K = 1.2 \times 10^{24} \text{ mol}^5 \text{ L}^{-5}$
 (3) $2\text{NO}(\text{g}) \rightleftharpoons \text{N}_2(\text{g}) + \text{O}_2(\text{g});$
 $K = 2.2 \times 10^{30}$
 (4) $2\text{N}_2\text{O}(\text{g}) \rightleftharpoons 2\text{N}_2(\text{g}) + \text{O}_2(\text{g});$
 $K = 3.5 \times 10^{33} \text{ mol L}^{-1}$

14. H^+ ion concentration of water does not change by adding:
 (1) CH_3COONa (2) NaNO_3
 (3) NaCN (4) Na_2CO_3

15. Conjugate base for Bronsted acids H_2O and HF are:
 (1) H_3O^+ and H_2F^+ , respectively
 (2) OH^- and H_2F^+ , respectively
 (3) H_3O^+ and F^- , respectively
 (4) OH^- and F^- , respectively

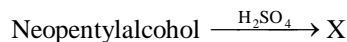
16. Formation of a solution from two components can be considered as:
 (i) Pure solvent \rightarrow separated solvent molecules, ΔH_1
 (ii) Pure solute \rightarrow separated solute molecules, ΔH_2
 (iii) separated solvent and solute molecules \rightarrow solution, ΔH_3

Solution so formed will be ideal if:

- (1) $\Delta H_{\text{soln}} = \Delta H_1 + \Delta H_2 + \Delta H_3$
 (2) $\Delta H_{\text{soln}} = \Delta H_1 + \Delta H_2 - \Delta H_3$
 (3) $\Delta H_{\text{soln}} = \Delta H_1 - \Delta H_2 - \Delta H_3$
 (4) $\Delta H_{\text{soln}} = \Delta H_3 - \Delta H_1 - \Delta H_2$
17. Which of the following aqueous solutions has osmotic pressure nearest to pure solvent?
 (1) Na_2SO_4 (2) BaCl_2
 (3) $\text{Al}_2(\text{SO}_4)_3$ (4) $\text{C}_{12}\text{H}_{22}\text{O}_{11}$

18. The conductivity of a strong electrolyte:
 (1) Increase on dilution
 (2) Decreases on dilution
 (3) Does not change with dilution
 (4) Depends upon density of electrolytes

19. In the reaction given below, X is:



- (1) 2-methylpentane (2) Neo-pentane
 (3) 2-methylpent-2-ene (4) 2-methylbut-2-ene

20. The correct order of boiling points for primary (1°), secondary (2°) and tertiary alcohol (3°) is:
 (1) $1^\circ > 2^\circ > 3^\circ$ (2) $3^\circ > 2^\circ > 1^\circ$
 (3) $2^\circ > 1^\circ > 3^\circ$ (4) $2^\circ > 3^\circ > 1^\circ$

21. Mesophyll is differentiated into palisade and spongy tissues in
 (1) Extremely xerophytic leaves
 (2) Hydrophytic leaves
 (3) Monocot leaves
 (4) Dicot leaves

22. Gametophytic generation is dominant in
 (1) Pteridophytes
 (2) Gymnosperms
 (3) Bryophytes
 (4) Angiosperms

23. Match List-I with List-II.

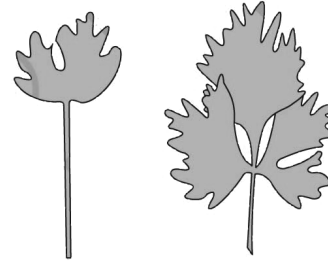
	List-I (Type of cross)		List-II (Phenotypic ratio)
(A)	Monohybrid Cross	(I)	1 : 1
(B)	Dihybrid Cross	(II)	1 : 2 : 1
(C)	Incomplete dominance	(III)	3 : 1
(D)	Test Cross	(IV)	9 : 3 : 3 : 1

Choose the correct answer from the options given below:

- (1) (A)-(III), (B)-(IV), (C)-(II), (D)-(I)
 (2) (A)-(II), (B)-(IV), (C)-(III), (D)-(I)
 (3) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)
 (4) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)
24. A certain plant homozygous for yellow seeds and red flowers was crossed with a plant homozygous for green seeds and white flowers. The F_1 plants had yellow seeds and pink flowers. The F_1 plants were selfed to get F_2 progeny. Assuming independent assortment of the two characters, how many phenotypic categories are expected for these characters in the F_2 generation?
 (1) 9 (2) 16 (3) 4 (4) 6
25. Which of the following is incorrect for glycolysis
 (1) It produces ATP
 (2) It uses ATP
 (3) End products are CO_2 and H_2O
 (4) None of the above
26. Sequence of organic acids in Krebs's cycle is
 (1) Citric acid, oxalosuccinic acid, isocitric acid
 (2) Citric acid, isocitric acid, oxalosuccinic acid
 (3) Isocitric acid, oxalosuccinic acid, citric acid
 (4) Oxalosuccinic acid, isocitric acid, citric acid

27. R.Q. can vary due to
 (1) Temperature
 (2) Respiratory substrate
 (3) Light and oxygen (4) Respiratory product

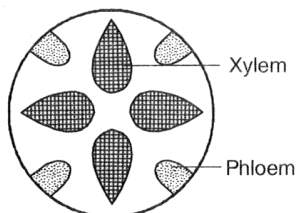
28. Identify the incorrect statement from the following options.



Juvenile Adult

- (1) It is due to the response to environment
 (2) It is due to the phases of life to form different structures
 (3) It is due to plasmolysis
 (4) It is called plasticity
29. Parthenocarpy can be achieved by
 (1) Zeatin (2) ABA
 (3) Auxins (4) Kinetin
30. Which of the following is correct if a system performs all the functions of any ecosystem and of the biosphere as a whole?
 (i) Conversion of inorganic into organic material with the help of the radiant energy of the sun by the autotrophs
 (ii) Consumption of the autotrophs by heterotrophs
 (iii) Decomposition and mineralisation of the dead matter to release them back for reuse by the autotrophs
 (iv) There is bidirectional movement of energy towards the higher trophic levels and its dissipation and loss as heat to the environment
 (1) (i) and (ii) (2) (i), (ii) and (iii)
 (3) (iii), (ii) and (iv) (4) (ii), (iii) and (iv)
31. Annual net productivity of the whole lithosphere is:
 (1) 80 billion tons (2) 170 billion tons
 (3) 55 billion tons (4) 115 billion tons
32. Of the total incident solar radiation the proportion of PAR is:
 (1) about 70% (2) about 60%
 (3) less than 50% (4) more than 80%
33. **Assertion :** Although oceans constitute 70% of earth yet they contribute 32% of net primary productivity.
Reason : In oceans light is the limiting factor.
 (1) Assertion and reason both are true and the reason is correct explanation of assertion.
 (2) Assertion and reason both are true but reason is not correct explanation of assertion.
 (3) Assertion is true but reason is wrong.
 (4) Assertion and reason both are wrong.

34. Major biomes of India includes:
 (i) Tropical rainforest (ii) Alpine region
 (iii) Deciduous forest (iv) Desert
 (v) Himalayan region
 (vi) Sea coast
 Choose the correct combination for given question:
 (1) (i), (ii), (iv) and (v) (2) (i), (ii), (iii) and (iv)
 (3) (ii), (iii), (iv) and (vi) (4) (i), (iii), (iv) and (vi)
35. The following types of vascular bundles are commonly found in



- (1) Stems (2) Root
 (3) Leaves (4) Both (1) and (2)

ZOOLOGY

36. Which statement is correct for cancer?
 (1) The common approaches for treatment of cancer are surgery, radiation therapy, immunotherapy and chemotherapy
 (2) Most cancers are treated by combination of surgery, radiotherapy and chemotherapy
 (3) Majority of anti-carcinogenic drugs have side effects like hair loss, anaemia, etc
 (4) All are correct
37. The common warning signs of drug and alcohol abuse among youth include:
 (1) Drop in academic performance and unexplained absence from school/college
 (2) Lack of interest in personal hygiene, withdrawal, isolation, depression, fatigue, aggressive and rebellious behaviour
 (3) Deteriorating relationships with family and friends, loss of interest in hobbies, change in sleeping and eating habits, fluctuations in weight, appetite etc
 (4) All are true
38. Identify the plant of this structure and also identify the drug obtained from it:



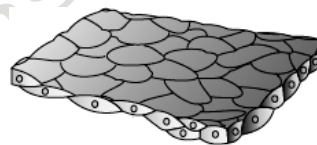
- (1) Cannabis, Smack (2) Erythroxyton, Crack
 (3) Papaver, Morphine (4) Cannabis, Charas

39. Match the following columns.

	Column-I		Column-II
A.		1.	Scoliodon
B.		2.	Pristis
C.		3.	Myxine
D.		4.	Catla
		5.	Petromyzon

- (1) A-4; B-2; C-5; D-1
 (2) A-4; B-2; C-3; D-1
 (3) A-1; B-3; C-5; D-2
 (4) A-1; B-4; C-5; D-3

40. Which of the following statement is/are correct in relation with epithelial tissue?
 I. It helps in protection and diffusion.
 II. It helps in excretion and reproduction.
 III. It helps in absorption and secretion.
 IV. It helps in locomotion.
 (1) Only IV (2) Only II
 (3) All except IV (4) All except III
41. Select the option of location in which the given epithelia is found



- (1) PCT (2) Wall of blood vessels
 (3) Lining of stomach (4) Fallopian tubes

42. Match the columns and find out the correct combination:

	Column-I		Column-II
A.	Porifera	1.	Canal system
B.	Aschelminthes	2.	Water vascular system
C.	Annelida	3.	Muscular Pharynx
D.	Arthropoda	4.	Jointed appendages
E.	Echinodermata	5.	Metamers

- (1) A-2; B-3; C-5; D-4; E-1
 (2) A-2; B-5; C-3; D-4; E-1
 (3) A-1; B-3; C-5; D-4; E-2
 (4) A-1; B-5; C-3; D-4; E-2

43. Which of the following statement(s) is/are correct regarding phylum Aschelminthes?
 A. The body is circular in cross-section hence the name roundworms.
 B. Alimentary canal is complete with a well-developed muscular pharynx.
 C. Sexes are separate (dioecious), i.e., males and females are distinct.

D. Nephridia help in osmoregulation and excretion.

- (1) A and B (2) C and D
(3) A, B and C (4) All of these

44. Fibrinogen \xrightarrow{A} Fibrin. A is
(1) Ca^{2+} (2) Thrombin
(3) Thrombokinase (4) Prothrombin

45. Match the columns and find out the correct combination:

	Column-I		Column-II
A.	Sino-atrial node	1.	Ventricles
B.	Papillary muscles	2.	Atria
C.	Ligamentum arteriosum	3.	Interatrial septum
D.	Fossa ovalis	4.	Connects aorta and pulmonary artery

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

46. A person has protruding eyes, increased basal metabolic rate and weight loss. He is suffering from:

- (1) Cretinism
(2) Diabetes
(3) Hyperthyroidism
(4) Acromegaly

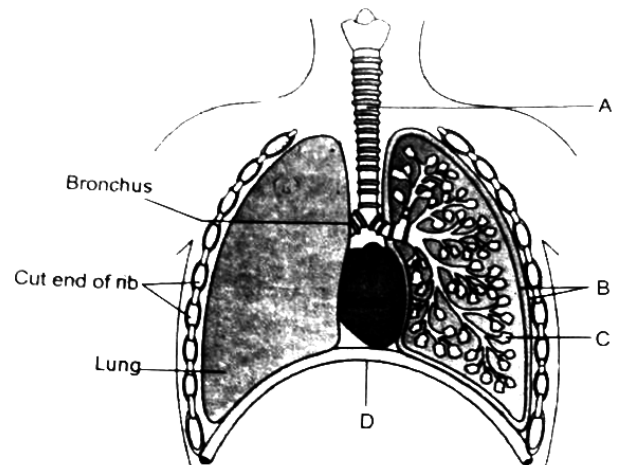
47. Select the option with correct locations of receptors of given hormones:

- (1) Steroidal Hormones–Membrane-bound; Iodothyronine Hormones–Membrane-bound
(2) Steroidal Hormones–Membrane-bound; Iodothyronine Hormones–Intracellular
(3) Steroidal Hormones–Intracellular; Iodothyronine Hormones–Intracellular
(4) Steroidal Hormones–Intracellular; Iodothyronine Hormones–Membrane-bound

48. Which one of the following is the correct statement for respiration in humans?

- (1) Workers in grinding and stone-breaking industries may suffer, from lung fibrosis
(2) About 90% of carbon dioxide (CO_2) is carried by haemoglobin as carbamino haemoglobin
(3) Cigarette smoking may lead to inflammation of bronchi
(4) Neural signals from pneumotaxic centre in pons region of brain can increase the duration of inspiration.

49. The figure shows a diagrammatic view of human respiratory system with labels A, B, C and D. Select the option which give correct identification and main function and/or characteristic:



- (1) D-Lower end of lungs - diaphragm pulls it down during inspiration
(2) A-Trachea - long tube supported by complete cartilaginous rings for conducting inspired air
(3) B-Pleural membrane - surround ribs on both sides to provide cushion against rubbing
(4) C-Alveoli - thin walled vascular bag-like structures for exchange of gases.

50. 'Black water fever' is a very serious complication of:

- (1) Plasmodium ovale
(2) Plasmodium falciparum
(3) Plasmodium malariae
(4) Plasmodium vivax

ANSWERS

01. (3)	02. (2)	03. (4)	04. (2)	05. (1)	06. (1)	07. (4)	08. (3)	09. (1)	10. (3)
11. (2)	12. (1)	13. (1)	14. (2)	15. (4)	16. (1)	17. (4)	18. (2)	19. (4)	20. (1)
21. (4)	22. (3)	23. (1)	24. (4)	25. (3)	26. (2)	27. (2)	28. (3)	29. (3)	30. (2)
31. (4)	32. (3)	33. (1)	34. (4)	35. (2)	36. (4)	37. (4)	38. (4)	39. (1)	40. (3)
41. (2)	42. (3)	43. (3)	44. (2)	45. (3)	46. (3)	47. (3)	48. (1)	49. (4)	50. (2)

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