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ARIYALUR DISTRICT

Register Number : 0 1 0 3 0 1

HALF YEARLY EXAMINATION - 2024

STD: 10 SCIENCE Marks : 75 Time : 3.00 hrs

PART – I

Note: i) Answer all the questions. **12x1=12**

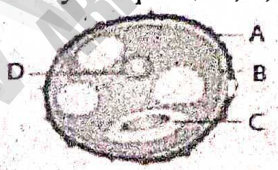
ii) Choose the most suitable answer and write the code with the corresponding answer.

1. Impulse is equals to a) rate of change of momentum b) rate of force and time c) change of momentum d) rate of change of mass
2. The value of Universal gas constant
   a) 3.81 J $mol^{-1}k^{-1}$ b) 8.03 J $mol^{-1}k^{-1}$ c) 1.38 J $mol^{-1}k^{-1}$ d) 8.31 J $mol^{-1}k^{-1}$
3. Kilowatt hour is the unit of _____
   a) resistivity b) conductivity c) electrical energy d) electrical power
4. Artificial radio activity was discovered by
   a) Bequerel b) Irene curie c) Roentgen d) Neils bohr
5. The number of components in a Binary solution a) 2 b) 3 c) 4 d) 5
6. The number of periods and groups in modern periodic table is
   a) 6, 16 b) 7, 17 c) 8, 18 d) 7, 18
7. The xylem and phloem arranged side by side on same radius is called
   a) radial b) amphivasal c) conjoint d) None of these
8. A patient with blood group O was injured in an accident and has blood loss. Which group of blood should be used by doctor for transfusion?
   a) O group b) AB group c) A or B group d) all blood group
9. The essential parts of a flower are …… a) Calyx and Corolla b) Calyx and Androecium c) Corolla and Gynoecium d) Androecium and Gynoecium
10. 9:3:3:1 ratio is due to a) Segregation b) Crossing over c) Independent assortment d) Recessiveness
11. rDNA is a a) Vector DNA b) Circular DNA c) recombinant of vector DNA and desired DNA d) Satellite DNA
12. All files are stored in the ____ a) Folder b) box c) paint d) scanner

PART - II

Note : - Answer any seven questions (Q. No : 22 is compulsory) **(7×2 =14)**

13. State Ohm's law.
14. Match the following
    a) Soddy Fajan - Natural radio activity
    b) Irene Curie - Displacement law
    c) Henry Bequerel - Mass energy equivalence
    d) Albert Einstein - Artificial radio activity
15. Define Atomicity.
16. Find the percentage of nitrogen in ammonia.
17. What is respiratory Quotient?
18. How does Leech suck blood from the host?
19. Identify the parts A,B,C,& D



20. What are Okazaki fragments?

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21. Why is Archaeopteryx considered to be a connecting link?
22. Calculate the velocity of a moving body of mass 5 kg whose linear momentum is 2.5 kg ms^{-1}.

PART - III

Note : Answer any seven questions. (Q. No : 32 is compulsory) **(7×4 =28)**

23. Give the applications of Universal law of gravitation
24. (a) Define one Ampere (b) Define electric power
25. Mention the cases in which there is no Doppler effect in sound?
26. Give the salient features of Modern Atomic theory.
27. Derive the relationship between molecular mass and vapour density.
28. Calcium Carbonate is decomposed on heating in the following reaction

$$CaCO_3 \rightarrow CaO + CO_2$$

i) How many moles of Calcium carbonate are involved in this reaction?
ii) Calculate the gram molecular mass of calcium carbonate involved in this reaction
iii) How many moles of CO_2 are there in this equation?

29. Write any four physiological effects of Auxin hormone
30. Discuss the importance of biotechnology in the fields of medicine.
31. What are the advantages of using Biogas?
32. A solution is prepared by dissolving 45 g of Sodium chloride in 180 g of Water. Calculate the mass percentage of solute.

PART – IV

Note : - 1. Answer all the questions. **(3×7 =21)**

2. Each question carries seven marks.3. Draw diagram wherever necessary.

33.(a)(i) State the Universal law of gravitation and derive its mathematical Expression.
(ii) State Rayleigh's law of scattering. (OR)
(b)(i) Explain the experiment of measuring the real and apparent expansion of a liquid with a neat diagram.
(ii) Name three animals which can hear ultrasonic vibrations.

34. a)(i) N_2+3H_2 ------- $2NH_3$ (The atomic mass of nitrogen is 14 and that of hydrogen is 1) 1 mole of nitrogen = ___ g + 3 moles of hydrogen = ___ g → 2 moles of ammonia = ____ g
(ii) Give any two examples for hetero diatomic molecule.
(iii) _____ is the longest period in the periodic table.
b) (i) Write notes on various factors affecting solubility
(ii) Classify the following substances into deliquescent, hygrosc
a) Con. Sulphuric acid b) Copper sulphate penta hydrate :a gel
d) Calcium chloride e) Gypsum salt.

35. a) i) What does CNS stand for?
ii) Why are the rings of cartilages found in trachea of Rabbit?
iii) Explain the male reproductive system of Rabbit with a lat diagram.
(OR)
b) i) Name the gaseous plant hormone. Describe its three diffe ctions in plants.
ii) Which hormone is known as stress hormone in plants?

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