PREVIOUS IPE PAPERS

AP - MAY 2024

JR.BOTANY

Time : 3 Hours Max.Marks : 60

SECTION-A

I. Answer ALL the following VSAQ: $10 \times 2 = 20$

1. What is the basic unit of classification? Define it.
2. Name two diseases caused by Mycoplasmas.
3. Which group of plants is called amphibians of plant kingdom? Name the branch of Botany which deals with them.
4. Define placentation. What type of placentation is found in Dianthus?
5. What is the morphology of cup like structure in Cyathium? In which family it is found?
6. What is geocarpy? Name the plant which exhibits this phenomenon.
7. Starch, Cellulose, Glycogen, Chitin are polysaccharides found among the following. Choose the one appropriate and write against each.
   a) Cotton fibre_____ b) Exo skeleton of cockroach_____
   c) Liver_____ d)Peeled Potato_____
8. What is referred to as satellite chromosome?
9. Given that the average duplication time of E.coli is 20 minutes. How much time will two E.coli cells take to become 32 cells?
10. Define communities? Who classified plant communities into hydrophytes, mesophytes and xerophytes?

SECTION-B

II. Answer any SIX of the following SAQs: $6 \times 4 = 24$

11. What is meant by homosporous and heterosporous pteridophytes? Give two examples.
12. Give a brief account of Dinoflagellates.
13. Define (a) Juvenile phase (b) Reproductive phase
14. Describe the essential floral parts of plants belonging to Liliaceae.
15. Briefly give the contributions of the following scientists in formulating the cell theory:
    a) Rudolf Virchow b) Schleiden and Schwann
16. What is the difference between lenticels and stomata?
17. Though redundantly described as a resting phase, interphase does not really involve rest. Comment.
18. Write a brief account on classification of xerophytes.

SECTION-C

II. Answer any TWO of the following SAQs: $2 \times 8 = 16$

19. Define root modification. Explain how root is modified to perform different functions.
20. With a neat, labelled diagram, describe the parts of a mature angiosperm embryo sac. Mention the role of synergids.
21. Describe the T.S. of a dicot stem.

PREVIOUS IPE PAPERS

AP - MAY 2024

JR.ZOOLOGY

Time : 3 Hours | Max.Marks : 60

SECTION-A

I. Answer ALL the following VSAQ: $10 \times 2 = 20$

1. What is biogenesis?
2. What is haematocrit value?
3. Distinguish between a tendon and a ligament.
4. "Cardiac muscle is highly resistant to fatigue". Justify.
5. What is the function of radula? Give the name of the group of molluscs which do not possess a radula?
6. Name the four extra embryonic membranes.
7. What is a kinety?
8. Draw a labelled diagram of T.S of flagellum.
9. Define neoplasia. Give one example.
10. Distinguish between neuston and nekton.

SECTION-B

II. Answer any SIX of the following SAQs: $6 \times 4 = 24$

11. Explain 'Rivet Popper' hypothesis.
12. Give an account of glandular epithelium.
13. What are the chief characters of the crustaceans?
14. Compare and contrast cartilaginous and bony fishes.
15. Give an account of pseudopodia.
16. 'Prevention is better than cure'. Justify with regard to TDA abuse.
17. Draw a neat labelled diagram of the mouthparts of cockroach?
18. Describe Green House Effect.

SECTION-C

III. Answer any TWO of the following LAQs: $2 \times 8 = 16$

19. Describe the life cycle of Plasmodium vivax in man.
20. Describe the digestive system of cockroach with the help of a neat labelled diagram.
21. Describe different types of food chains that exist in an ecosystem.

PREVIOUS IPE PAPERS

AP - MAY 2024

JR.PHYSICS

Time : 3 Hours Max.Marks : 60

SECTION-A

I. Answer ALL the following VSAQs: $10 \times 2 = 20$

1. What are the fundamental forces in nature ?
2. How can systematic errors be minimised or eliminated?tities?
3. If $\vec{P} = 2\vec{i} + 4\vec{j} + 14\vec{k}$ and $\vec{Q} = 4\vec{i} + 4\vec{j} + 10\vec{k}$ find the magnitude of $\vec{P} + \vec{Q}$.
4. A horse has to exert a greater force during the start of the motion than later. Explain.
5. Mention any two examples that obey Bernoulli's theorem and justify them.
6. Define Viscosity. What are it's units and dimensions?
7. Find the increase in temperature of aluminium rod if its length is to be increased by 1%. (α for aluminium$=25 \times 10^{-6}/^0C$).
8. State Weins displacement law
9. When does a real gas behave like an ideal gas? **10.** Define mean free path.

SECTION-B

II. Answer any SIX of the following SAQs: $6 \times 4 = 24$

11. A car travels the first third of a distance with a speed of 10kmph, the second third at 20kmph and the last third at 60kmph. What is its mean speed over the entire distance?
12. Show that the trajectory of an object thrown at a certain angle with the horizontal is a parabola.
13. Mention the methods used to decrease friction.
14. Define angular velocity(ω). Derive $v=r\omega$.
15. Distinguish between centre of mass and centre of gravity.
16. What is a geostationary satellite? State its uses.
17. Describe the behavior of a wire under gradually increasing load.
18. Pendulum clocks generally go fast in winter and slow in summer. Why?

SECTION-C

III. Answer any TWO of the following LAQs: $2 \times 8 = 16$

19. (a) State and prove law of conservation of energy in case of freely falling body.
    (b) A machine gun fires 360 bullets per minute and each bullet travels with a velocity of 600 ms^{-1}. If the mass of each bullet is 5gm, find the power of the machine- gun.
20. (a)Define simple harmonic motion. Show that the motion of (point) projection of a particle performing uniform circular motion, on any diameter, is simple harmonic.
    (b) On an average a human heart is found to beat 75 times in a minute. Calculate its frequency and period.
21. State second law of thermodynamics. How is heat engine different from a refrigerator.

PREVIOUS IPE PAPERS

Q 4 AP - MAY 2024

Time : 3 Hours | JR.CHEMISTRY | Max.Marks : 60

SECTION-A

I. Answer ALL questions : $10 \times 2 = 20$

1. What is RMS speed?
2. What volume of H_2 at STP is required to reduce 0.795g of CuO to give Cu and H_2O?
3. State the Third Law of Thermodynamics.
4. The equilibrium constant for a reaction is 10. What will be the value of ΔG^o?
   $R=8.314 jK^{-1}mol^{-1}$, T=300K
5. On which factor, the equilibrium constant value changes?
6. What are characteristic colours imparted by IIA elements?
7. What happens when magnesium metal is burnt in air?
8. Greenhouse effect is caused by which gases?
9. What is PAN? What effect is caused by it?
10. Write the conformations of ethane.

SECTION-B

II. Answer any SIX of the following Questions. $6 \times 4 = 24$

11. State Fajan's rules and give suitable examples.
12. Define Dipole moment. Write its applications.
13. State and explain Graham's law of diffusion.
14. Balance the following redox reactions by ion-electron method.
    $MnO_4^-(aq) + SO_2(g) \rightarrow Mn^{2+}(aq) + HSO_4^-(aq)$ (in acidic solution)
15. Define pH. Calculate the pH of 0.001M NaOH.
16. Explain the removal of hardness of water by ion exchange method.
17. Give two methods of preparation of diborane.
18. Explain the difference in properties of diamond and graphite on the basis of their structure.

SECTION-C

III. Answer any TWO of the following Questions. $2 \times 8 = 16$

19. What are the postulates of Bohr's model of hydrogen atom? Discuss the importance of this model to explain various series of line spectra in hydrogen atom.
20. Define IE_1 and IE_2. Why is $IE_2 > IE_1$ for a given atom? Discuss the factors that effect IE of an element.
21. a) How do we get Benzene from acetylene? Give the corresponding equation.
    b) Explain halogenation, alkylation, acylation, nitration & sulphonation.