PREVIOUS IPE PAPER

AP MAY-2024

SR BOTANY

Time : 3 Hours | SECTION-A | Max.Marks : 60

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

1. What are apoplast and symplast?
2. Define the law of limiting factors proposed by Blackman.
3. What is a plasmid? What is its significance?
4. Define true breeding. Mention its significance.
5. Who proved that DNA is genetic material? What is the organism they worked on?
6. Given below is the sequence of coding strand of DNA in a transcription Unit.
   5 ' A A T G C A G C T A T T A G G – 3 '
   Write the sequence of (a) its complementary strand (b) the mRNA
7. What is down-stream processing?
8. Name the nematode that infects the roots of tobacco plants. Name the strategy adopted to prevent this infestation.
9. What is Nucleopolyhedrovirus is being used for now a days?
10. Give two examples of wheat varieties introduced in India,which are high yielding and disease resistant.

SECTION-B

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

11. Write in brief how plants synthesize amino acids.
12. Write a note on agricultural/horticultural applications of auxins.
13. How does ascent of sap occur in tall tress?
14. Explain different types of cofactors.
15. What is ICTV? How are viruses named?
16. Explain the law of Dominance using a monohybrid cross.
17. Discuss the significance of heavy isotope of nitrogen in Meselon and Stahl's experiment.
18. What are some bio-safety issues concerned with genetically modified corps?

SECTION-C

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

19. Give an account of glycolysis. Where does it occur? What are the end products? Trace the fate of these products in both aerobic and anaerobic respiration.
20. Give a brief account of the tools of recombinant DNA technology.
21. You are a Botanist working in the area of plant breeding.Describe the various steps that you will undertake to release a new variety.

PREVIOUS IPE PAPER

AP MAY-2024

SR.ZOOLOGY

Time : 3 Hours **SECTION-A** **Max.Marks : 60**

I. Answer ALL the following VSAQ: **10 × 2 = 20**

1. What are conchae?
2. Distinguish between cortical and juxta medullary nephrons.
3. What is triad system?
4. Human skull is described as dicondylic skull. Give the reason.
5. What are Islets of Langerhans?
6. What is erythropoietin? What is its function?
7. Mention the advantages of 'lactational amenorrhea method'.
8. It is true that 'MTP is not meant for population control'. Then why did the Government of India legalize MTP?
9. Mention any four fish by- products.
10. Define the terms layer and broiler.

SECTION-B

II. Answer any SIX of the following SAQs: **6 × 4 = 24**

11. How is respiratory movements regulated in man?
12. Draw a neat labelled diagram of L.S. of a tooth.
13. Give an account of synaptic transmission.
14. Write short notes on immunoglobulins.
15. Describe the Genic Balance Theory of sex determination.
16. Write a short note on the theory of mutations.
17. Explain Darwin's theory of Natural Selection with industrial melanism as an experimental proof.
18. Write briefly about different waves and intervals in an ECG.

SECTION-C

III. Answer any TWO of the following LAQs: **2 × 8 = 16**

19. Describe the structure of the heart of man with the help of neat labelled diagram.
20. Describe female reproductive system of a woman with the help of a labelled diagram.
21. What are multiple alleles? Describe multiple alleles with the help of ABO blood groups in man.

PREVIOUS IPE PAPER

AP MAY-2024

SR.PHYSICS

Time : 3 Hours **Max.Marks : 60**

SECTION-A

I. Answer all questions : **10 × 2 = 20**

1. What is dispersion ? Which colour gets relatively more dispersed ?
2. Distinguish between ammeter and voltmeter.
3. Define magnetic declination.
4. A bar magnet of length 0.1 m and with a magnetic moment of 5 Am^2 is placed in a uniform magnetic field of intensity 0.4 T, with its axis making an angle of 60º with the field. What is the torque on the magnet ?
5. What is transformer ratio ?
6. Give two uses of infrared rays.
7. What is photoelectric effect ?
8. What is the de Broglie wave length associated with an electron, accelerated through a potential difference of 100 volts?
9. Draw the circuit symbols for p-n-p and n-p-n transistors.
10. Mention the frequency range of speech signals.

SECTION-B

II. Answer any six of the following Questions. **6 × 4 = 24**

11. Define critical angle. Explain total internal reflection using a neat diagram.
12. How do you determine the resolving power of your eye?
13. Derive the equation for the couple acting on an electric dipole in a uniform electric field.
14. Explain the behaviour of dielectrics in an external field.
15. What are the basic components of a cyclotron? Mention its uses.
16. Describe the ways in which Eddy currents are used to advantage.
17. The wavelength of the first member of Lyman series is 1216 Å. Calculate the wavelength of second member of Balmer series.
18. Distinguish between Half wave rectifier and full wave rectifier

SECTION-C

III. Answer any two of the following Questions. **2 × 8 = 16**

19. (a) How are stationary waves formed in closed pipes ? Explain the various modes of vibration and obtain relations for their frequencies.
    (b) A closed organ pipe 70cm long is sounded. If the velocity of sound is 331m/s, what is the fundamental frequency of vibration of the air column?
20. State Kirchoff's law for an electrical network. Using these laws deduce the condition for balance in a Wheatstone bridge.
21. (a) Explain the principle and working of a nuclear reactor with the help of a labelled diagram.
    (b) If one microgram of $_{92}U^{235}$ is completely destroyed in an atom bomb, how much energy will be released ?

PREVIOUS IPE PAPER

AP MAY-2024

SR.CHEMISTRY

Time : 3 Hours **Max.Marks : 60**

SECTION-A

I. Answer ALL questions : **10 × 2 = 20**

1. Define Osmotic pressure.
2. What is a galvanic cell or voltaic cell? Give one example.
3. What is the role of cryolite in the metallurgy of aluminium?
4. Ammonia is good complexing agent. Explain with an example.
5. What is inert pair effect?
6. Why Zn^{2+} is diamagnetic whereas Mn^{2+} is paramagnetic?
7. What is PHBV? How is it useful to man?
8. What is vulcanisation of Rubber?
9. What are artificial sweetening agents? Give example.
10. What are antiseptics? Give example.

SECTION-B

II. Answer any SIX of the following Questions. **6 × 4 = 24**

11. Derive Bragg's equation.
12. What is relative lowering of vapuor pressure? How is it useful to determine the molar mass of a solute?
13. What is catalysis? How is catalysis classified? Give two examples for each type of catalysis.
14. Differentiate roasting and calcination with examples.
15. Mention the structure of a) XeF_2 and b) XeF_4
16. Write the characteristics properties of transition elements.
17. What are hormones? Give one example for each.
    (i) steroid hormones (ii) Poly peptide hormones and (iii) amino acid derivatives.
18. Which compound in each of the following pairs will react faster in S_N2 reaction with –OH?
    (i) CH_3Br or CH_3I (ii) $(CH_3)_3CCl$ or CH_3Cl

SECTION-C

III. Answer any two of the following Questions. **2 × 8 = 16**

19. Describe the following reactions:
    a) Carbylamine reaction b) Gattermann reaction c) HVZ reaction d) Aldol condensation
20. a) Describe the salient features of the collision theory of reaction rates of bimolecular reactions.
    b) State and explain Kohlrausch's law of independent migration of ions.
21. (a) How is Chlorine prepared in the laboratory? How does it react with the following
    (a) hot. con. NaOH (b) acidfied $FeSO_4$
    (b) How is ozone prepared from oxygen? Explain its reaction with (a) C_2H_4 (b) KI