

General Instructions :-**The question paper is divided into Four section.**

1. Section - A : Q. No. 1 contains Ten multiple choice type of questions carrying One mark each.
 - i) For each multiple choice type of question, it is mandatory to write the correct answer along with it's alphabet. e.g (a) / (b) / (c) / (d) etc. No mark/s shall be given if only the correct answer or alphabet of the correct answer is written.
 - ii) In case of MCQ, evaluation will be done for the first attempt only.
- Q. No. 2 contains Eight very short answer type of questions carrying One mark each.
2. Section - B : Q. No. 3 to Q. No. 14 are short answer type of questions carrying two marks each.
3. Section - C : Q. No. 15 to Q. No. 26 are short answer type of questions carrying three marks each.
4. Section - D : Q. No. 27 to Q. No. 31 contain Five long answer type of questions carrying Four mark each.
5. Begin the answer of each section on a new page.

Section A

Q.1. Select and write the correct answer for the following multiple choice type of questions.

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- 1) _____ is the phenotypic ratio of incomplete dominance in *Mirabilis jalapa*.
 - a) 3 : 1
 - b) 2 : 1 : 1
 - c) 1 : 2 : 1
 - d) 1 : 1
- 2) If diploid chromosome number in a flowering plant is 12, then which one of the following will have 6 chromosomes ?
 - a) synergids
 - b) Endosperm
 - c) Leaf cells
 - d) Cotyledons
- 3) Pregnancy in second trimester is maintained by _____.
 - a) Progesterone
 - b) estrogen
 - c) HCG
 - d) LH
- 4) Palaeocene epoch falls in which Era ?
 - a) cenozoic
 - b) Archaeozoic
 - c) Palaeozoic
 - d) Mesozoic
- 5) Recognition sequence of restriction enzymes are generally _____ nucleotide long.
 - a) 4 to 8
 - b) 2 to 8
 - c) 8 to 10
 - d) 14 to 16

- 6) In lac operon, the structural gene, lac - z codes for _____ enzyme.
 - a) transacetylase
 - b) β - galactosidase permease
 - c) β - galactosidase
 - d) RNA polymerase
- 7) Receptors for protein hormones are located _____.
 - a) in nucleus
 - b) on cell membrane
 - c) in cytoplasm
 - d) on Golgi complex
- 8) _____ is mixture of dead neutrophils, damaged tissue and dead microbes.
 - a) lymph
 - b) pus
 - c) clot
 - d) None of the above
- 9) _____ is used to find genotype of unknown individuals.
 - a) Back cross
 - b) Monohybrid Cross
 - c) Dihybrid Cross
 - d) Test cross
- 10) In transgenic crop substance Provitamin A is obtained in _____.
 - a) tomato
 - b) sugarcane
 - c) canola
 - d) rice

Q.2. Answer the following questions.

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- 1) Which disease is caused due to hypersecretion of GH during adulthood ?
- 2) Which openings are guarded by Eustachian valve and Thebesian valve ?
- 3) Define : Cryptorchidism.
- 4) In which organism haplo - diploid type of sex determination is seen ?
- 5) What is Foramen of monroe ?
- 6) Name the first transgenic plant.
- 7) What is Apomixis ?
- 8) Why does trachea have 'C' shaped rings of cartilage ?

Section B

Attempt any Eight of the following questions.

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Q.3. Define : Biopiracy

Biopatent

Q.4. Match the respiratory surface to the organism in which it is found.

1) Book lungs	a) Salamander
2) External gills	b) Sponges
3) Internal gills	c) Spiders
4) Plasma membrane	d) Fish

Q.5. What is synaptic fatigue ? Write name of any one neurotransmitter.

Q.6. Sketch and label : T.S of anther

Q.7. Describe Haldane's "Hot dilute soup."

Q.8. Write a note on ZIFT

Q.9. From which germinal layer Heart and Nervous system is derived ?

Q.10. A PCR machine can rise temperature up to 100° C. but after that it is not able to lower the temperature below 70°c automatically. Which step of PCR will be hampered first in this faulty machine ? Explain why ?

Q.11. Match the following.

Human stage	Cranial capacity
1) Homo erectus	a) 650 to 800 cc
2) Australopithecus	b) 900 cc
3) Homo habilis	c) 1400 cc
4) Neanderthal man	d) 450 to 600 cc

Q.12. Write any two applications of DNA fingerprinting.

Q.13. State the site of production of Gastrin and Cholecystokinin.

Q.14. Give significance of double fertilization.

Section C

Attempt any Eight of the following questions.

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Q.15. What is Monohybrid Cross ? Explain with suitable example and checker board method.

Q.16. What is Electrocardiograph. What does P-wave and T-wave represent ?

Q.17. Explain the process of translation in protein synthesis.

Q.18. Give name and function of any three motor cranial nerves.

Q.19. Sketch and label : Spermatogenesis.

Q.20. Distinguish between Inspiration and Expiration.

Q.21. How does a flower adapt itself to be pollinated by insects ?

Q.22. How 'melt in mouth' vaccines are administered ? Mention any two benefits of the same.

Q.23. Distinguish between Adenohypophysis and Neurohypophysis.

Q.24

Disorder	Recombinant Protein
1) Asthma	_____
2) _____	Relaxin
3) Haemophilia - A	_____

Q.25. Give any 3 reptilian and Avian characters of Archaeopteryx.

Q.26. Sketch and label :

Semiconservative Replication of DNA.

Section D

Attempt any Three of the following questions.

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- Q.27. Describe structure of anatropous ovule.
- Q.28. Describe different phases of menstrual cycle.
- Q.29. Give brief account of following syndromes which have chromosomal aberrations as
i) $44 + XXY$
ii) $44 + XO$
- Q.30. Enlist functions of different lobes of cerebrum.
- Q.31. Label the marked A to D in the given diagram.

