



BIOLOGY

Class 12 - Biology

Time Allowed: 3 hours

Maximum Marks: 70

General Instructions:

The question paper is divided into **four sections**:

1. Section A

- Q. No. 1 contains **Ten multiple choice type** of questions carrying **One mark** each.
- 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 contain **Twelve short answer type** of questions carrying **Two marks** each. (Attempt any Eight).

3. Section C

- Q. No. 15 to Q. No. 26 contain **Twelve short answer type** of questions carrying **Three marks** each. (Attempt any Eight).

4. Section D

- Q. No. 27 to Q. No. 31 contain **Five long answer type** of questions carrying **Four marks** each. (Attempt any Three).

5. Figures to the right indicate full marks.

6. For each MCQ, correct answer must be written along with its alphabet. e.g., (a).... / (b) / (c)..... / (d)..... Only first attempt will be considered for evaluation.

Section A

1. **Select and write the correct answer:** **[10]**
- (a) Overproduction is the principle of _____. **[1]**
- | | |
|--------------------------------|-------------------------------|
| a) Panspermia theory | b) Modern theory of evolution |
| c) Theory of organic evolution | d) Lamarckism |
- (b) A genetically dwarf pea plant can be converted into a tall pea plant by the use of _____. **[1]**
- | | |
|---------------------|---------------|
| a) Abscissic acid | b) Auxins |
| c) Gibberellic acid | d) Cytokinins |
- (c) The biological scissors of DNA are _____. **[1]**
- | | |
|------------|----------------|
| a) ligases | b) polymerases |
|------------|----------------|

- c) endonucleases
d) .transcriptases
- (d) Normal activities of the heart are regulated by _____. [1]
a) hormones
b) brain
c) spinal cord
d) modified cardiac muscles
- (e) Damage to which endocrine gland may result in water and electrolyte imbalance? [1]
a) Adrenal gland
b) Parathyroid gland
c) Thyroid gland
d) Thymus gland
- (f) The energy enters the ecosystem through _____. [1]
a) omnivores
b) consumers
c) decomposers
d) producers
- (g) Plants absorb _____ water. [1]
a) gravitational
b) capillary
c) combined
d) hygroscopic
- (h) Pick out the appropriate association representing brood parasitism. [1]
a) Hermit crab and sea anemone
b) Buffalo and cattle egret
c) Asian koel and common Indian crow
d) Algae and fungi
- (i) The antibiotic chloromycetin is obtained from _____. [1]
a) *Streptomyces venezuelae*
b) *Aspergillus niger*
c) *Streptomyces griseus*
d) *Sclerotinia libertiana*
- (j) Erythroblastosis foetalis is caused when mother is [1]
a) Rh^{-ve}
b) Rh^{+ve}
c) with antibody 'b'
d) with antibody 'a'

2. **Answer the following:** [8]
- (a) If a carrier woman marries a colorblind man, what will be the phenotype of their progeny? Show in the form of a chart. [1]
- (b) Give examples of unconditional reflexes. [1]
- (c) If the megaspore mother cell has 26 chromosomes, what will be the total number of chromosomes in endosperm of the same plant? [1]
- (d) Sketch and label the diagram of a stoma showing kidney - shaped guard cells. [1]
- (e) What is the role of decomposers in an ecosystem? [1]
- (f) Name the hormone used for early rooting in propagation by cutting. [1]
- (g) Identify the trophoblast cells which are in contact with embryonal knob during blastulation. [1]
- (h) Write the name of the small molecule required to initiate / start the process of synthesis of new complementary strand during replication of DNA. [1]

Section B

Attempt any 8 questions

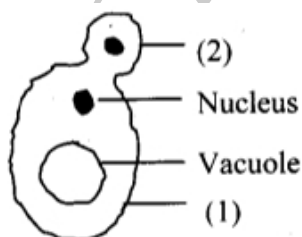
3. **Answer the following:** [2]

- (a) What is a **test cross**? Explain significance of a test cross. [1]
- (b) Mention the chromosome number having the mutated gene for β -Thalassemia. [1]
4. i. Define - Palaeontology. [2]
ii. Give any four points of significance of palaeontology.
5. Select and rewrite appropriate disorder of respiratory system with the given symptoms: [2]
[sinusitis, emphysema, silicosis and asbestosis, laryngitis]
- i. Breakdown of alveoli, shortness of breath.
ii. Inflammation of the sinuses, mucous discharge.
iii. Inflammation of larynx, vocal cord, sore throat, hoarseness of voice, mucous build up and cough.
iv. Inflammation of fibrosis, lung damage.
6. What are gibberellins? Give the applications of gibberellins. [2]
7. Mention the name of sterile animal produced by intergeneric hybridisation. [2]
8. **Answer the following:** [2]
- (a) Define pollution. [1]
(b) What is **deforestation**? [1]
9. Define the terms: [2]
i. Bio-patent
ii. Bio-piracy
10. Explain different phases of growth curve. [2]
11. What are the major sources of air pollution? [2]
12. Sketch and label anatomical structure of human eye. [2]
13. Explain the factors affecting water absorption. [2]
14. Give the flow chart of central dogma. [2]

Section C

Attempt any 8 questions

15. Enlist the characteristics of Neanderthal Man. [3]
16. **Answer the following:** [3]
(a) Label the parts (1) and (2) in budding of yeast cell. [1]



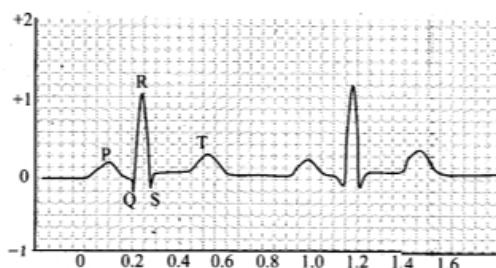
- (b) What are the significances of double fertilization? [2]
17. i. Give reason - Water acts as thermal buffer. [3]
ii. Draw a neat and proportionate diagram of root hair and label mitochondria, nucleus and vacuole.
18. Give the causative agent, mode of transmission and symptoms of typhoid. [3]
19. **Answer the following:** [3]
(a) Which are the major abiotic factors that influence habitat? [1]
(b) Describe mutualism. [2]
20. Give microbial source of the following products in industrial production: [3]

- i. Vitamin B₁₂
 ii. Chloromycetin
 iii. Pectinase
21. i. Name the hormone which is responsible for apical dominance. [3]
 ii. A farmer wants to remove broad-leaved weeds from the jowar plantation in his field. Suggest any plant hormone to remove such weeds.
 iii. Mention any two applications of cytokinin.
22. i. Define- Incomplete dominance. [3]
 ii. If a red flowered *Mirabilis jalapa* plant is crossed with a white flowered plant, what will be the phenotypic ratio in F_2 generation? Show it by a chart.
23. Explain mechanism of reflex action and give its significance. [3]
24. **Answer the following:** [3]
 (a) Arrange the following steps of DNA fingerprinting in correct sequence: [1]
 i. Gel electrophoresis
 ii. Isolation of DNA
 iii. Southern blotting
 iv. Restriction digestion
 (b) Draw a neat labelled diagram of the hairpin model of t-RNA. [2]
25. i. What is blood pressure? [3]
 ii. Give the name of the instrument which is used to measure the blood pressure.
 iii. Differentiate between an artery and a vein with reference to lumen and thickness of wall.
26. Describe the structure of human sperm. [3]

Section D

Attempt any 3 questions

27. **Answer the following:** [4]
 (a) Name the region of retina where rods and cones are absent. [1]
 (b) Give role of hormones Relaxin and Inhibin. [2]
 (c) A child has low BMR, delayed puberty and mental retardation. Identify the disease. [1]
28. Draw a neat and proportionate diagram of Graafian follicle and label oocyte and antrum. Explain its structure in brief. [4]
29. **Answer the following:** [4]
 (a) Dilip and Mohsin measured their blood pressure. Dilip's B.P. is 120/80 mmHg and Mohsin's B.P. is 160/100 mmHg. Who is suffering from hypertension? What are its causes? [2]
 (b) In human pharynx, there is a set of lymphoid organs called _____. [1]
 (c) In the electrocardiogram shown below, which wave represents ventricular diastole. [1]



30. Define r-DNA technology. Give the basic steps in r-DNA technology and give any **three** examples of the [4]

therapeutic products produced by r-DNA technology.

31. Explain the structure of male gametophyte of angiosperms with the help of a suitable diagram.

[4]

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