Biology
NEW SYLLABUS

Full marks: 100 (75T + 25 P) **Pass Marks: 27T + 8P**

Course Contents

SECTION A (BOTANY)

Lecture hour: 75 **Full marks : 37.5**

Unit 1: Anatomy and Physiology of Organisms — LH 27

- **Plant anatomy:** Types of tissues, meristematic and permanent tissues; Internal structure of dicot and monocot root, stem and leaf; Secondary growth of dicot stem.
- **Plant physiology:**
  i. **Water relation:** Osmosis, diffusion, ascent of sap and transpiration.
  ii. **Photosynthesis:** Site of photosynthesis, mechanism and factors affecting photosynthesis.
  iii. **Respiration:** Types of respiration, mechanism and factors affecting respiration.
  iv. **Growth:** Plant growth hormones: Auxins, Gibberellin, Cytokinin.
  v. **Plant movement:** Concept of growth and turgor movement.

Unit 2: Genetics — LH 32

Elements of heredity and variation; Genetic material (DNA and RNA), Genetic code, Gene pool, Genetic expression and its regulation; Basis of Mendelian genetics, Mendel's laws of inheritance, Concept of incomplete dominance and co-dominance, Multiple gene, Linkages, Crossing over, Mutation and its types and polyploidy. Sex-linked inheritance (X-linked gene for eye colour of Drosophila and colour-blindness in man)

Unit 3: Developmental Biology — LH 10

Reproduction and development of angiosperms - Asexual reproduction, Pollination, Development of male and female gametophyte, Fertilization and development of embryo (dicot and monocot)

Unit 4: Application of Biology — LH 6

- Introduction to biotechnology, tissue culture, concept of breeding technique, Disease resistant plants, green manures.
- Genetic engineering and its application
- Fermentation technology: alcoholic and an

tibiotic fermentation.

Unit wise weightage for Botany Grade XII

Title	Teaching hours	Marks		Very short questions (1 mark)	Short questions (3 marks)	Long questions (7.5 or 8 mark)
1. Anatomy and Physiology of Organisms	27	13.5		3	1 or 1 opt	1 or 1 opt (7.5 marks)
2. Genetics	32	16		1 or 1 opt	2 or 1 opt	1 (8 marks)
3. Developmental Biology	10	5		2 or 1 opt	1	×
4. Application of Biology	8	4		1 or 1 opt	1	×
	75	37.5		7 ques×1 mark	5 ques × 3 marks	2 ques × 7.5 marks
		Total		**7 marks**	**15 marks**	**15.5 marks**

SECTION B (ZOOLOGY)

Lecture hours: 75 **Full marks : 37.5**

Unit 1: Animal tissues — LH 8

Epithelial, connective, muscular and nervous tissues.

Unit 2: Developmental Biology — LH 6

i. Development of frog: Fertilization, cleavage, morulation, blastulation, gastrulation, formation of germinal layers, coelom and tissue formation.
ii. Gametogeneisis in animal.

Unit 3: Human Biology and Health — LH 50

- **Nutrition;** digestive organs and digestion of food.
- Respiratory organs and mechanism.
- **Circulation:** Blood, heart and its action, arterial and venous systems (Major arteries and veins), Blood groups, Rh-factor, Blood pressure and lymph (definition).
- **Excretion:** Excretory organs, mechanism of urine formation, osmoregulation and homeostatic mechanism (temperature regulation, kidney and liver control system).
- **Nervous co-ordination:** Types of nervous system, structure and function of brain, Transmission of nerve impulse.
- **Endocrinology:** Structures, functions and disorders of pituitary, thyroid, parathyroid, pancreas and adrenal glands.

- **Sense organs:** Structure and function of eye and ear.
- **Reproduction:** Reproductive organs.
- **Human population:** Growth, problem and control strategies.
- **Human Diseases:**
  a. **Socially significant:** Drug abuse, alcoholism and smoking
  b. **Communicable:** Typhoid, Tuberculosis, Ascariasis and AIDS.
  c. **Non - communicable:** Cancer.
  d Concept of kalazar and hepatitis.

Unit 4: Application of Biology LH 11

- Antibiotics Vaccines (Type and application)
- Tissue and organs transplantation
- Test-tube baby
- Amniocentesis
- Introduction to poultry farming and fish farming.

Unit wise weightage for Zoology Grade XII

Title	Teaching hours	Marks		Very short questions (1 mark)	Short questions (3 marks)	Long questions (7.5 or 8 mark)
1. Animal tissues	8	4		1	1	×
2. Developmental Biology	6	3		× or 1 opt	1	×
3. Human Biology and Health	50	24.5		3 or 2 opt	2 or 1 opt	1 (8 marks) or 1 (7.5 marks) or 1 opt
4. Application of Biology	11	6		3	1	×
	75	37.5		7 ques×1 mark	5 ques × 3 marks	2 ques × 7.5 marks
		Total		**7 marks**	**15 marks**	**15.5 marks**

Note: Long question from Development Biology can be asked by reducing the marks from the unit of Human Biology and Health.

Practical

BOTANY

1. **Experiments on plant physiology**
   a. Experiment to demonstrate the process of osmosis.
   b. Experiment to demonstrate the process of ascent of sap.
   c. Experiment to demonstrate the unequal transpiration from two surfaces of dorsiventral leaf.
   d. Experiment to demonstrate the rate of transpiration by Ganong's potometer.
   e. Experiment to demonstrate that the chlorophyll is essential for photosynthesis.
   f. Experiment to demonstrate that the carbon dioxide is essential for photosynthesis.
   g. Experiment to demonstrate the process of evolution of Oxygen during photosynthesis.
   h. Experiment to demonstrate the aerobic and anaerobic respiration.
   i. Study on effect of growth hormones on germination and shoot elongation.
   j. Demonstration of plant tissue culture.
   k. Demonstration of yeast culture.
   l. Preparation of DNA model.
2. **Demonstration of Mendalian genetics using maize cob:**
   i. To demonstrate segregation of characters in a monohybrid cross.
   ii. To demonstrate independent assortment of characters in a dihyrid cross.
3. **Study the permanent slides of different types of simple, permanent and complex plant tissues.**
4. **Demonstration of vegetative propagation.**
5. **Study the permanent slides of:**
   (i) T.S of anther, (ii) L.S of ovule of dicot plant, (iii) Structure of embryo.
6. **Preparation of temporary slide of following plant materials:**
   (i) T.S of dicot root, stem and leaf, (ii) T.S. of monocot root, stem and leaf.

ZOOLOGY

1. **Experiments of biochemistry**
   a. Experiment to demonstrate the action of saliva on starch.
   b. Experiment to detect the presence of starch in a given solution.

c. Experiment to detect the presence of sugar in urine.
d. Experiment to detect the presence of protein in a given solution (hen's albumen).
e. Study the effect of temperature, ethyl alcohol, and pH on enzymatic action of saliva.
f. Measurement of human blood-pressure with sphygmomanometer.

2. **Study the permanent slides of different types of animal tissues:** Squamous, columnar, cuboidal, areolar, adipose, hyaline and bone.
3. **Study the permanent slides of following histological organs of mammal:** Skin, stomach, intestine, liver, pancreas, kidney, lung, testis and ovary
4. **Study of embryological permanent slides of frog:** Cleavage, blastula and gastrula.
5. **Study the bones of rabbit (articulate and disarticulate) or models of human bones.**
6. **Dissection of a mammal so as to expose its:**
   i. General anatomy;
   ii. Alimentary canal;
   iii. Arterial and venous systems;
   iv. Brain
   v. Reproductive organs

MODEL QUESTION PAPER

Time : 3 hrs. **Full marks: 75**
Pass marks: 27

Section A (Botany)

1. **Answer any seven questions in very short** **[7×1=7]**
   a. Write the function of xylem?
   b. Name the components of a nucleotide?
   c. Give one example of polygenic inheritance.
   d. Define genetic code.
   e. What is polyploidy?
   f. Mention two importance of vegetative propagation.
   g. Give two examples of entomophilus plants.
   h. Define genetic engineering.
   i. Define tissue culture.
   j. What is the main source of green manures?
2. **Answer any five questions in brief.** **[5×3=15]**
   a. Give the well-labelled diagram of monocot embryo Description is not required.
   b. What are the differences between dicot stem and monocot stem?
   b. Explain the types of transpiration in plants.
   c. Differentiate between phenotype and genotype.
   d. What did you understand by Mendel's 9:3:3:1 ratio?
   e. Differentiate between self and cross fertilization.
   f. Show with the diagrams the development of dicot embryo no description..
   g. Mention the applications of genetic engineering.
3. What is secondary growth? Discuss the activity of cambium in secondary growth of dicot stem. [7.5]

   OR

   Describe the light dependent steps of photosynthesis.
4. "DNA is the hereditary material", explain it with an experiment. [8]

Section B (Zoology)

1. **Answer any seven questions in very short** **[7×1=7]**
   a. In which kind of animal tissue you find the mast cells?
   b. Name the two sexes linked diseases in human.
   c. Define gametogenesis.
   d. Name any two enzymes which are responsible for protein digestion.
   e. Define the term 'deamination'.
   f. Which part of human brain is the centre of intelligence?
   g. Name the causative agent of typhoid fever.
   h. What does ISD cause?
   i. What is the role of surrogate mother in test tube baby?
   j. Differentiate heterograft and autograft.
2. **Answer any five questions in brief.** **[5×3=15]**
   a. Describe the structure of aerolar fissure.
   b. If a red-eyed male Drosophila is mated with a white-eyed female, what will be the pheno type of male and female in F1 progeny?
   c. How is the notochord formed in the embryo of frog?
   d. What is vitamin? Mention functions of fat - soluble vitamins.
   e. Draw a labeled sketch of internal structure of human kidney.
   f. What will be the problems of over human population? Suggest some measures to control over population.
   g. Define amniocentesis. Mention its negative & positive effects?
3. Explain the structure and function of human brain. [8]

   OR

   Explain the respiratory organs of human being.
4. What are communicable diseases? Discuss the causative agents, symptoms, effects and control measures of any one communicable disease you have studied. [7.5]

CHAPTER BASED QUESTIONS

SECTION A (BOTANY)

UNIT 1: ANATOMY AND PHYSIOLOGY OF ORGANISMS

A. Anatomy of Organisms

Very Short Answer Questions [1 mark]

1. 2077 Set R Q.No. 1a Define anatomy. [1]
2. 2076 GIE Set A Q.No. 1a Give the two names of complex permanent tissue. [1]
3. 2076 Set B Q.No. 1f Define tissue. [1]
4. 2076 Set C Q.No. 1a What is apical meristem? [1]
5. 2075 GIE Q.No. 1a Give any two names of xylem elements. [1]
6. 2075 Set A Q.No. 1b Mention the function of sclerenchyma. [1]
7. 2075 Set A Q.No. 1h What is function of lenticel? [1]
8. 2075 Set B Q.No. 1a Define meristematic tissue. [1]
9. 2074 Supp Q.No. 1a Define phloem. [1]
10. 2074 Set A Q.No. 1a What is sclereids? [1]
11. 2074 Set B Q.No. 1a What is the function of xylem? [1]
12. 2073 Supp Q.No. 1a Mention the two names of permanent tissue. [1]
13. 2073 Supp Q.No. 1b Define the role of cambium. [1]
14. 2073 Set C Q.No. 1a What is permanent tissue? [1]
15. 2073 Set D Q.No. 1a Define meristematic tissue. [1]
16. 2072 Supp. Q.No. 1a Mention two elements of xylem. [1]
17. 2072 Set C Q.No. 1a What is apical meristem? [1]
18. 2072 Set D Q.No. 1a What is the role of sclerenchymatous tissue? [1]
19. 2072 Set E Q.No. 1a What is the function of phloem? [1]
20. 2071 Supp. Q.No. 1b Function of collenchyma? [1]
21. 2071 Supp. Q.No. 1f What is callus? [1]
22. 2071 (Set C) Q.No. 1 a Mention two elements of phloem. [1]
23. 2071 (Set D) Q.No. 1 a Define chlorenchyma. [1]
24. 2071 (Set D) Q.No. 1 c Define secondary growth. [1]
25. 2070 Supp. Q.No. 1 a What does it mean by meristematic tissue? [1]
26. 2070 Set C Q.No. 1 a What do you mean by chlorenchyma? [1]
27. 2070 Set D Q.No. 1 a What is sclereids? [1]
28. 2069 Q.No. 1a Define permanent tissue. [1]
29. 2069 Q.No. 1b Mention the role of cuticle? [1]
30. 2068 Q.No. 1a Define sclerenchyma [1]
31. 2067 Q.No. 1a What is sclerenchyma? [1]
32. 2066 Q.No. 1 a What are annual rings? [1]
33. 2065 Q.No. 1 a Name thin walled cells with chloroplast. [1]
34. 2065 Q.No. 1 d Define cambium. [1]
35. 2064 Q.No. 1a Name two elements of xylem bundle. [1]
36. 2064 Q.No. 1b What is semipermeable membrane? [1]
37. 2062 Q.No. 1a Name two complex permanent tissues. [1]
38. 2062 Q.No. 1c What is the role of chlorenchyma? [1]
39. 2062 Q.No. 1e Write full form of T.S. and L.S. [1]
40. 2061 Q.No. 1a Name two elements of phloem bundle. [1]
41. 2061 Q.No. 1c What is the function of cortex? [1]
42. 2060 Q.No. 1h What do you mean by apical meristem? [1]
43. 2059 Q.No. 1a Name any one plant with exarch xylem. [1]
44. 2058 Q.No. 1a Give one example of stem with conjoint and collateral vascular bundle. [1]
45. 2057 Q.No. 1a Give one example with scattered vascular bundle in the stem. [1]

Answer in brief [3 marks]

46. 2077 Set K Q.No. 2a Structure and function of collenchyma. [3]
47. 2077 Set R Q.No. 2a Differentiate between the xylem and phloem tissues. [3]
48. 2076 GIE Set A Q.No. 2a Structure and function of hydathode. [3]
49. 2076 GIE Set B Q.No. 2a Structure and function of cholorenchymatous tissue. [3]
50. 2076 Set B Q.No. 2b Describe the tunica and corpus theory. [3]
51. 2076 Set C Q.No. 2a Structure and function of sclerenchyma. [3]
52. 2076 Set C Q.No. 2b Collateral vascular bundle. [3]
53. 2075 GIE Q.No. 2a Structure and function of chlorenchyma. [3]
54. 2075 Set A Q.No. 2d Complex permanent tissues. [3]
55. 2075 Set A Q.No. 2g Structural and functional aspects of stomata. [3]
56. 2075 Set B Q.No. 2a Structure and function of stomata. [3]
57. 2074 Supp Q.No. 2a Structure and function of sclerenchyma. [3]
58. 2074 Set A Q.No. 2a Structure and function of parenchyma. [3]
59. 2074 Set B Q.No. 2a Structure and function of collenchyma. [3]
60. 2073 Set C Q.No. 2a Structure and function of conjoint vascular bundle. [3]
61. 2072 Supp. Q.No. 2a Structure and function of aerenchyma. [3]
62. 2072 Set C Q.No. 2a Structure and function of stomata. [3]
63. 2072 Set D Q.No. 2a Structure and function of conjoint vascular bundle. [3]
64. 2072 Set E Q.No. 2a Write short notes on sclerenchyma tissue. [3]
65. 2071 Supp. Q.No. 2a Describe complex tissue and its function. [3]
66. 2071 Set C Q.No. 2 a Structure and function of collenchyma. [3]
67. 2071 (Set D) Q.No. 2 a Structure and function of phloem tissue. [3]
68. 2070 Set C Q.No. 2 a Structure and function of parenchyma [3]
69. 2070 Set D Q.No. 2 a Differentiate between spongy and palisade parenchyma. [3]
70. 2069 Q.No. 2b Structure and function of sclerenchymatous tissue. [3]

1. 2068 Q.No. 2a Structure and function of collenchymatous tissue. [3]
2. 2067 Q.No. 2a Describe in detail about the types and functions of parenchymatous tissue. [3]
3. 2065 Q.No.2 a Differentiate between xylem and phloem tissues. [3]
4. 2064 Q.No.2a Differentiate between the collenchyma and sclerenchyma. [3]
5. 2062 Q.No.2d What are the roles of meristem? [3]
6. 2062 Q.No.2h How xylem differs from phloem? Discuss. [3]
7. 2061 Q.No.2c What is simple permanent tissue of plants? [3]
8. 2060 Q.No. 1i What cell controls the opening and closing of stomata? [3]
9. 2059 Q.No.2a Give the meaning of secondary growth with one example. [3]
10. 2058 Q.No.2j Write about the permanent tissues of plant. [3]

Long Answer Questions

81. 2076 Set B Q.No. 3 Describe the anatomical structure of dicot root and compare it with monocot root. [7.5]
82. 2075 GIE Q.No. 3 Define tissue and describe in detail about structure and function of complex permanent tissues with suitable diagrams. [7.5]
83. 2075 Set B Q.No. 3 Define permanent tissue and discuss the structure and function of simple permanent tissues in detail. [7.5]
84. 2074 Set A Q.No. 3 Define Secondary growth and discuss how meristems are responsible for increase in thickness of dicot stem. [7.5]
85. 2074 Set B Q.No. 3 Define secondary growth and describe the process involved in dicot stem with figure. [7.5]
86. 2073 Supp Q.No. 3 OR Describe the T.S. of monocot and dicot leaf with necessary diagrams. [7.5]
87. 2073 Set C Q.No. 3 Describe and compare the anatomical structure of dicot and monocot stem with neat and clean diagrams. [7.5]
88. 2073 Set D Q.No. 3 Describe and compare anatomical structure of dicot and monocot root with neat and clean diagrams. [7.5]
89. 2072 Set C Q.No. 3 Describe the T.S. of dicot stem with well labelled diagrams and compare it with monocot stem also. [7.5]
90. 2072 Set D Q.No. 3 What is secondary growth? Describe the process involved in dicot stem with necessary diagrams. [7.5]
91. 2072 Set E Q.No. 3 What is secondary growth? Describe the process of secondary growth in dicot stem.. [7.5]
92. 2071 Supp. Q.No. 3or Explain with well labelled figure of T.S. of monocot stem and discuss why secondary growth does not take place in monocot plants. [7.5]
93. 2071 (Set C) Q.No. 3 OR Describe the T.S. of monocot and dicot leaf with necessary diagram. [7.5]
94. 2071 (Set D) Q.No. 3 Draw a well labeled diagram of T.S. of monocot stem and point out its differences with dicot stem. [7.5]
95. 2070 Supp. Q.No. 3 Describe the T.S. of monocot stem with well labeled diagram and point out its differences with that of dioct stem. [7.5]
96. 2070 Set C Q.No. 3 Describe the T.S. of monocot stem with well labelled diagram and point out its differences with that of dicot stem. [7.5]
97. 2070 Set D Q.No. 3 or Describe the T.S. of monocot stem with well labelled diagram and point out its differences with that of dicot stem. [7.5]
98. 2069 Q.No. 3 Define secondary growth and describe its processes involved in dicot stem with necessary figures. [7.5]
99. 2068 Q.No. 3 Draw a well labeled diagram of T.S. of dicot stem and point out its differences with monocot stem. [7.5]
100. 2067 Q.No. 3a Draw a well labelled diagram of T.S. of dicot root and point out its differences with that of monocot root. [7.5]
101. 2066 Q.No. 3 Describe the internal structure of the monocot stem with the help of a well labelled diagram. [7.5]
102. 2065 Q.No. 4 Draw a neat, well labelled diagram of T.S. of dicot stem and point out its differences with that of monocot stem. [8]
103. 2064 Q.No. 3 What is secondary growth? Describe the process of secondary growth in dicot stem. [7.5]
104. 2063 Q.No. 3 OR What is secondary growth? How the meristems are responsible for secondary growth? Discuss. [7.5]
105. 2062 Q.No. 3 Describe and compare the anatomical structures of dicot and monocot roots. [7.5]
106. 2061 Q.No. 3 Discuss the anatomical structure of dicot stem. [7.5]
107. 2060 Q.No. 3 Discuss the anatomical structure of dicot root. Point out the nature of its vascular bundle. [7.5]
108. 2059 Q.No. 3 Discuss anatomical features of a typical dicot stem and point out any four important differences with the monocot type. [5+2]
109. 2057 Q.No. 3 What do you mean by permanent plant tissues? Discuss the structure and functions of simple permanent tissues. [1+3+3]

B. Physiology of Organisms

Very Short Answer Questions [1 mark]

1. 2077 Set J Q.No. 1a Define cross pollination. [1]
2. 2077 Set K Q.No. 1a Define guttation. [1]
3. 2077 Set R Q.No. 1c Define photo phosphorylation. [1]
4. 2076 GIE Set A Q.No. 1b Define epidermis. [1]
5. 2076 GIE Set A Q.No. 1c What is geotropism? [1]
6. 2076 GIE Set B Q.No. 1b Define thigmotropism. [1]
7. 2076 GIE Set B Q.No. 1c What does it mean by hydathode? [1]
8. 2076 Set B Q.No. 1a What is the major product of C_3 cycle? [1]
9. 2076 Set B Q.No. 1j Define turgor pressure. [1]
10. 2076 Set C Q.No. 1b Define plasmolysis. [1]
11. 2076 Set C Q.No. 1c Where does auxin synthesize? [1]
12. 2075 GIE Q.No. 1b Define diffusion. [1]
13. 2075 GIE Q.No. 1c What is geotropism? [1]
14. 2075 Set A Q.No. 1a Define transcription. [1]
15. 2075 Set A Q.No. 1c What is imbibition? [1]
16. 2075 Set B Q.No. 1b What is imbibition? [1]

17. 2075 Set B Q.No. 1c Mention the two names of plant hormone. [1]
18. 2074 Supp Q.No. 1b What is phosphorylation? [1]
19. 2074 Supp Q.No. 1c Mention about auxin. [1]
20. 2074 Set A Q.No. 1b Define ATP? [1]
21. 2074 Set A Q.No. 1c What dose it mean by photoperiodism? [1]
22. 2074 Set B Q.No. 1b Define glycolysis. [1]
23. 2074 Set B Q.No. 1c What do you mean by phototropism? [1]
24. 2073 Supp Q.No. 1c What do you mean by phototropism? [1]
25. 2073 Supp Q.No. 2a Structure and function of Hydathode. [3]
26. 2073 Set C Q.No. 1b Define transpiration. [1]
27. 2073 Set C Q.No. 1c What is the role of hormone? [1]
28. 2073 Set D Q.No. 1b What is turgidity? [1]
29. 2073 Set D Q.No. 1c Give two names of plant hormone. [1]
30. 2072 Supp. Q.No. 1b Define aerobic respiration. [1]
31. 2072 Supp. Q.No. 1c What do you mean by chemotropism? [1]
32. 2072 Set C Q.No. 1b Define phototropism. [1]
33. 2072 Set C Q.No. 1c What does it mean by deplasmolysis? [1]
34. 2072 Set D Q.No. 1b Define geotropism. [1]
35. 2072 Set D Q.No. 1c What does it mean by plasmolysis? [1]
36. 2072 Set E Q.No. 1b What is ascent of sap? [1]
37. 2071 Supp. Q.No. 1d What is osmosis? [1]
38. 2071 Supp. Q.No. 1a What is light reaction? [1]
39. 2071 (Set C) Q.No. 1 b Define transpiration. [1]
40. 2071 (Set C) Q.No. 1 c What do you mean by hydrotropism? [1]
41. 2071 (Set D) Q.No. 1 b What is diffusion? [1]
42. 2070 Supp. Q.No. 1 b Define turgidity. [1]
43. 2070 Supp. Q.No. 1 c Mention two plant hormones. [1]
44. 2070 Set C Q.No. 1 b Define osmotic pressure. [1]
45. 2070 Set C Q.No. 1 c What is hormone? [1]
46. 2070 Set D Q.No. 1 b Define ascent of sap. [1]
47. 2070 Set D Q.No. 1 c Mention two plant hormones. [1]
48. 2069 Q.No. 1c What does it mean by plasmolysis? [1]
49. 2068 Q.No. 1b What is osmosis? [1]
50. 2068 Q.No. 1c What is the function of hydathode? [1]
51. 2067 Q.No. 1b Define the term diffusion? [1]
52. 2067 Q.No. 1c What is phototropism? [1]
53. 2066 Q.No. 1 b Define phototropism. [1]
54. 2066 Q.No. 1 e Write full form of NADP. [1]
55. 2065 Q.No. 1 b What happens when a turgid cell is placed in hypertonic solution? [1]
56. 2065 Q.No. 1 c What are different types of photosynthetic pigments? [1]
57. 2064 Q.No. 1c Write full form of ATP. [1]
58. 2064 Q.No. 1d What is parthenocarpic fruit? [1]
59. 2062 Q.No. 1b What is the role of ethylene? [1]
60. 2062 Q.No. 1o What is the role of guard cell? [1]
61. 2061 Q.No. 1 b What is apical dominance? [1]
62. 2061 Q.No. 1o What is the role of hydathode? [1]
63. 2060 Q.No. 1i What is photophosphorylation? [1]
64. 2060 Q.No. 1j Where do auxins are synthesized? [1]
65. 2060 Q.No.2i How does transpiration differ from guttation? [1]
66. 2058 Q.No. 1c Name the plant hormone affecting seed germination. [1]
67. 2058 Q.No. 1h Mention the function of lateral meristem. [1]
68. 2057 Q.No. 1c Which plant hormone promotes leaf and fruit fall? [1]

Answer all in brief [3 marks]

69. 2077 Set J Q.No. 2a Describe the physiological effects of auxin on plants. [3]
70. 2076 GIE Set A Q.No. 2b Internal factors of photosynthesis. [3]
71. 2076 GIE Set B Q.No. 2b Importance of auxins. [3]
72. 2076 Set B Q.No. 2a Significances of respiration. [3]
73. 2075 GIE Q.No. 2b Factors affecting respiration. [3]
74. 2075 Set A Q.No. 2e Stomatal transpiration. [3]
75. 2075 Set B Q.No. 2b Kinds of transpiration. [3]
76. 2074 Supp Q.No. 2b Anaerobic respiration. [3]
77. 2074 Set A Q.No. 2b Factors affecting transpiration. [3]
78. 2074 Set B Q.No. 2b Stomata and its functions. [3]
79. 2073 Supp Q.No. 2b Characteristics of C_3 plants with examples. [3]
80. 2073 Set C Q.No. 2b Significance of photosynthesis. [3]
81. 2073 Set D Q.No. 2a Structure and function of stomata. [3]
82. 2073 Set D Q.No. 2b External factors of transpiration. [3]
83. 2072 Supp. Q.No. 2b Differentiate between osmosis and diffusion. [3]
84. 2072 Set C Q.No. 2b Light reaction. [3]
85. 2072 Set D Q.No. 2b Anaerobic respiration. [3]
86. 2072 Set E Q.No. 2b Discuss the physiological significance of auxins. [3]
87. 2071 Supp. Q.No. 2b What is the function of Gibberellin in plant? [3]
88. 2071 (Set C) Q.No. 2 b Characteristics of C_4 plants with examples. [3]
89. 2071 (Set D) Q.No. 2 b Describe the use of cytokinins. [3]
90. 2071 (Set D) Q.No. 2 c Differentiate between DNA and RNA. [3]
91. 2070 Supp. Q.No. 2 a Structure of stomata and its mechanism. [3]
92. 2070 Supp. Q.No. 2 b Steps of dark reaction. [3]
93. 2070 Supp. Q.No. 2 c An artificial respiration. [3]
94. 2070 Set D Q.No. 2 b Process of glycolysis. [3]
95. 2069 Q.No. 2c External factors affecting the photosynthesis. [3]
96. 2068 Q.No. 2b Describe the anaerobic respiration. [3]
97. 2067 Q.No. 2b Describe the uses of cytokinin. [3]
98. 2066 Q.No. 1 d Highlight the importance of osmosis. [3]
99. 2065 Q.No.2 b Cyclic phosphorylation. [3]
100. 2064 Q.No.2b What are the differences between transpiration and guttation. [3]

101. 2064 Q.No.2d Draw a L.S. of well labelled diagram of typical ovule. (No description). [3]
102. 2064 Q.No.2h Differentiate between active absorption and passive absorption. [3]
103. 2062 Q.No.2c Elaborate about glycolysis. [3]
104. 2062 Q.No.2f Discuss an experiment to demonstrate the root pressure. [3]
105. 2062 Q.No.2i Differentiate between transpiration and guttation. [3]
106. 2062 Q.No.2h Explain the process of grafting with its importance. [3]
107. 2061 Q.No.2b How pyruvic acid is formed in glycolysis? [3]
108. 2060 Q.No.2g Describe how auxins are related with bending of shoots towards light. [3]
109. 2059 Q.No.2b Mention the physiological effects of gibberellins in plant growth. [3]
110. 2058 Q.No.2a Describe biological role of gibberallic acid in plants. [3]
111. 2058 Q.No.2d Describe an experiment showing Oxygen is evolved during photosynthesis. [3]
112. 2058 Q.No.2i Explain the significance of carboxylation in Calvin cycle. [3]
113. 2057 Q.No.2b What are the physiological effects of cytokinins on plants? [3]
114. 2057 Q.No.2a Discuss the role of light in photosynthesis. [3]
115. 2053 Q.No.2c Name any three plant hormones. [3]

Mark (√) the correct choice [1 mark]

116. 2056 Q.No. 1c Rooting hormones are-
(i) Auxins (ii) Gibberllins (iii) Kinetins (iv) Ethylene [1]
117. 2055 Q.No. 1b Falling of leaves from plants is due to:
(i) Excess of auxins in the leaf
(ii) High concentration of ABA in the leaf
(iii) Due to cytokinins
(iv) Due to gibberellin [1]
118. 2054 Q.No. 1a Growth inhibiting hormone in plant is:
☐ Abscisic acid ☐ Auxin
☐ Cytokinin ☐ Ethane [1]

Differentiate between the following pair of words [2 marks]

119. 2056 Q.No. 4f Auxins and gibberlins. [2]
120. 2055 Q.No. 4 a Auxins and cytokinins [2]

Short Answer Questions [2 marks]

121. 2053 Q.No. 3c What is plant growth inhibitor? Why is it necessary in plants? [2]
122. 2052 Q.No. 3e Name any four growth hormones found in plant. [2]

Long Answer Question

123. 2076 GIE Set A Q.No. 3OR What is transpiration? Describe the experiment to demonstrate the unequal transpiration. [7.5]
124. 2076 Set B Q.No. 3 OR Describe an experiment to demonstrate light is necessary for the process of photosynthesis with clean diagram. [7.5]
125. 2076 Set C Q.No. 3 Describe the various factors that influences the photosynthesis in plants. [7.5]
126. 2076 Set C Q.No. 3 OR Describe the various factors that affects the process of respiration in plants. [7.5]
127. 2075 GIE Q.No. 3OR Define respiration and describe the various steps involved in Kreb's cycle. [7.5]
128. 2075 Set A Q.No. 3 OR Describe various steps of light reaction of photosynthesis. [7.5]
129. 2075 Set B Q.No. 3 OR Describe the experiment to demonstrate that light is necessary for the process of photosynthesis. [7.5]
130. 2074 Set A Q.No. 3OR What is photosynthesis? Discuss the experiment to demonstrate that CO_2 is necessary for photosynthesis. [7.5]
131. 2074 Set B Q.No. 3OR What is transpiration? Discuss the process of transpiration by bell jar method. [7.5]
132. 2073 Supp Q.No. 3 Describe an experiment to show the O_2 is evolved during photosynthesis with clear diagrams. [7.5]
133. 2073 Set C Q.No. 3 OR What is respiration? Describe the various steps involved in Kreb's cycle.
134. 2073 Set D Q.No. 3 OR What is ascent of sap? Discuss the various theories involved in this phenomenon. [7.5]
135. 2072 Supp. Q.No. 3 What is transpiration? Describe an experiment to show the unequal rate of transpiration with clear diagrams. [7.5]
136. 2072 Set C Q.No. 3 or Define respiration and explain the experiment to demonstrate the aerobic respiration with well labelled diagrams. [7.5]
137. 2072 Set D Q.No. 3 or Define photosynthesis and describe the experiment to demonstrate that CO_2 is necessary for photosynthesis (Moll's apparatus). [7.5]
138. 2072 Set E Q.No. 3 or Describe in brief about the various factors that influence the photosynthesis in plants. [7.5]
139. 2071 Supp. Q.No. 3 What is photosynthesis? Describe an experiment to show the process by Moll's apparatus method.[7.5]
140. 2071 (Set C) Q.No. 3 Define photosynthesis and describe any experiment regarding the photosynthesis studied by you. [7.5]
141. 2071 (Set D) Q.No. 3 OR Define transpiration, and describe an experiment to show the rate of transpiration by Ganong's photometer. [7.5]
142. 2070 Supp. Q.No. 3 OR Define respiration. Describe in detail the experiment to demonstrate the aerobic respiration with clean diagrams. [7.5]
143. 2070 Set C Q.No. 3 or Define respiration. Describe in detail the experiment to demonstrate the anaerobic respiration with clean diagram. [7.5]
144. 2070 Set D Q.No. 3 What is transpiration? Discuss the experiment in detail to demonstrate the unequal transpiration with clean diagram. [3]
145. 2069 Q.No. 3OR Describe the experiment (Moll's apparatus) in detail showing the necessity of carbon dioxide during photosynthesis. [7.5]

146. 2068 Q.No. 3 OR What is transpiration? Describe an experiment to show the rate of transpiration by Ganong's potometer. [7.5]
147. 2067 Q.No. 3a OR What is transpiration? Describe an experiment to show the unequal transpiration. [7.5]
148. 2066 Q.No. 3 OR Define aerobic respiration and highlight major steps of this process. [7.5]
149. 2065 Q.No. 4 OR Give an experiment to show that CO_2 is essential for photosynthesis. [8]
150. 2064 Q.No. 3 OR Describe briefly the various influencing factors of photosynthesis. [7.5]
151. 2063 Q.No. 3 Give an account of the structure of stomata and its working mechanism during transpiration. [7.5]
152. 2062 Q.No. 3 OR What is respiration? Discuss the mechanism of anaerobic respiration. [7.5]
153. 2061 Q.No. 3 OR What is transpiration? Describe an experiment to show an unequal transpiration. [7.5]
154. 2060 Q.No. 3 OR Discuss cohesion-tension theory for the uptake of water. [7.5]
155. 2059 Q.No. 3 OR Describe the light dependent steps of photosynthesis. How are they linked to the dark reaction? Discuss. [5+2]
156. 2057 Q.No. 3 OR What are the types of transpiration? Explain the factors affecting the rate of transpiration. [1.5+5.5]

UNIT 2: GENETICS

Very Short Answer Questions [1 marks]

1. 2077 Set J Q.No. 1b Name two plants in which vegetative propagation takes place by modified root. [1]
2. 2077 Set K Q.No. 1b What is criss-cross inheritance? [1]
3. 2076 GIE Set A Q.No. 1d What does it mean by heterozygous? [1]
4. 2076 GIE Set A Q.No. 1e State about dominance. [1]
5. 2076 GIE Set B Q.No. 1d What is heterozygous? [1]
6. 2076 GIE Set B Q.No. 1e Define dominance. [1]
7. 2076 Set B Q.No. 1b What do you mean by master strand? [1]
8. 2076 Set B Q.No. 1c Write the name of purine bases. [1]
9. 2076 Set C Q.No. 1d Mention about dominant allele. [1]
10. 2076 Set C Q.No. 1e Define heredity. [1]
11. 2075 GIE Q.No. 1e Illustrate about recessive. [1]
12. 2075 Set A Q.No. 1d What do you mean by genotype? [1]
13. 2075 Set A Q.No. 1i What do you understand by multiple allelism? [1]
14. 2075 Set A Q.No. 1j Give significance of linkage. [1]
15. 2075 Set B Q.No. 1d What do you mean by gene pool? [1]
16. 2075 Set B Q.No. 1e Elaborate offspring. [1]
17. 2074 Supp Q.No. 1d What do you mean by genetic material? [1]
18. 2074 Supp Q.No. 1e Elaborate backcross. [1]
19. 2074 Set A Q.No. 1d State about synapsis. [1]
20. 2074 Set A Q.No. 1e What do you mean by gene pool? [1]
21. 2074 Set B Q.No. 1d What does it mean by heredity? [1]
22. 2074 Set B Q.No. 1e What is genotype? [1]
23. 2073 Supp Q.No. 1d What does it mean by allele? [1]
24. 2073 Supp Q.No. 1e Illustrate about DNA. [1]
25. 2073 Set C Q.No. 1d What does it mean by monohybrid cross? [1]
26. 2073 Set C Q.No. 1e Write the full form of t RNA and m RNA. [1]
27. 2073 Set D Q.No. 1d What does it mean by gene? [1]
28. 2073 Set D Q.No. 1e Elaborate test cross. [1]
29. 2072 Supp. Q.No. 1d What does it mean by heterozygote? [1]
30. 2072 Supp. Q.No. 1e Illustrate about F_1 generation. [1]
31. 2072 Set C Q.No. 1d What is genetic material? [1]
32. 2072 Set C Q.No. 1e Define offspring. [1]
33. 2072 Set D Q.No. 1d What is homozygous? [1]
34. 2072 Set D Q.No. 1e Define recessiveness. [1]
35. 2072 Set E Q.No. 1c Differentiate dominance and epistasis. [1]
36. 2072 Set E Q.No. 1j State law of independent assortment. [1]
37. 2072 Set E Q.No. 1d Define gene mutation. [1]
38. 2071 Supp. Q.No. 1c Define phenotype? [1]
39. 2071 Supp. Q.No. 1e Define trait. [1]
40. 2071 (Set C) Q.No. 1 d What does it mean by trait? [1]
41. 2071 (Set C) Q.No. 1 e Illustrate about RNA. [1]
42. 2071 (Set D) Q.No. 1 d What does it mean by muton? [1]
43. 2071 (Set D) Q.No. 1 e Define homozygous. [1]
44. 2070 Supp. Q.No. 1 d What is genetic material? [1]
45. 2070 Supp. Q.No. 1 e What do you mean by dominance? [1]
46. 2070 Supp. Q.No. 1 j What does it mean by genetic engineering? [1]
47. 2070 Set C Q.No. 1 d What does it mean by homozyous? [1]
48. 2070 Set C Q.No. 1 e Elaborate the offspring. [1]
49. 2070 Set D Q.No. 1 d What does it mean by homozygous? [1]
50. 2070 Set D Q.No. 1 e What do you mean by recessive? [1]
51. 2069 Q.No. 1d Define polyploidy. [1]
52. 2069 Q.No. 1e What do you mean by test cross? [1]
53. 2068 Q.No. 1d Define inheritance. [1]
54. 2068 Q.No. 1e What is variation? [1]
55. 2067 Q.No. 1d What is heredity? [1]
56. 2067 Q.No. 1e What is homozygous? [1]
57. 2066 Q.No. 1 c What is a heterozygous organism? [1]
58. 2065 Q.No. 1 e What is a backcross? [1]
59. 2065 Q.No. 1 f Write chemical differences between DNA and RNA. [1]
60. 2065 Q.No. 1 g Define polyploidy [1]
61. 2063 Q.No. 1n What do you understand by the term allele? [1]
62. 2063 Q.No. 1c What do you mean by the term anemophily? [1]
63. 2063 Q.No. 1o Define gene-pool. [1]
64. 2062 Q.No. 1d What does it mean by monohybrid cross? [1]
65. 2061 Q.No. 1d What does it mean by genotype? [1]
66. 2061 Q.No. 1e Write full form of t RNA and m RNA. [1]
67. 2060 Q.No. 1g What is polyploidy? [1]
68. 2060 Q.No. 1m What is a regulator gene? [1]
69. 2059 Q.No. 1c Give one example of co-dominance.

70. 2059 Q.No. 1d Mention the nitrogen bases present in pyrimidine. [1]
71. 2058 Q.No. 1d Write two examples of polyploidy. [1]
72. 2058 Q.No. 1e What is punnett square? [1]
73. 2058 Q.No. 1i Define linkage. [1]
74. 2058 Q.No. 1m Give the significance of polygenic trait. [1]
75. 2057 Q.No. 1e Define allele. [1]
76. 2057 Q.No. 1g Give one example of polygenic inheritance. [1]
77. 2057 Q.No. 1n Define genetic code. [1]
78. 2053 Q.No. 3e Why is the phenotypic ratio 3 : 6 : 3 : 1 : 2 : 1 obtained? [1]
79. 2052 Q.No.2d List the characters of identification of genetic disorder. [1]

Answer all in brief [3 marks]

80. 2077 Set J Q.No. 2b Describe the double helical structure of Watson and Crick model of DNA. [3]
81. 2077 Set K Q.No. 2b Explain the Mendel's law of dominance with chart. [3]
82. 2077 Set R Q.No. 2b Describe the types of RNA. [3]
83. 2076 GIE Set A Q.No. 2c Reasons of choosing Drosophila for research. [3]
84. 2076 GIE Set A Q.No. 2d Characteristics of genetic code. [3]
85. 2076 GIE Set A Q.No. 2e Semi-conservative method of DNA replication. [3]
86. 2076 GIE Set B Q.No. 2c Structure and function of RNA. [3]
87. 2076 GIE Set B Q.No. 2d Semi-conservative method of DNA replication. [3]
88. 2076 GIE Set B Q.No. 2e Differentiate between incomplete and codominance. [3]
89. 2076 GIE Set B Q.No. 2f Development of female gametophyte. [3]
90. 2076 Set B Q.No. 2c Structure of RNA. [3]
91. 2076 Set B Q.No. 2d Mechanism of crossing over. [3]
92. 2076 Set B Q.No. 2g Describe the co-dominance with suitable example. [3]
93. 2076 Set C Q.No. 2c Difference between homozygous and heterozygous. [3]
94. 2076 Set C Q.No. 2d Structure of RNA. [3]
95. 2076 Set C Q.No. 2e Process of translation. [3]
96. 2075 GIE Q.No. 2c Significance of crossing over. [3]
97. 2075 GIE Q.No. 2d Characteristic features of genetic code. [3]
98. 2075 GIE Q.No. 2e Chromosomal aberration. [3]
99. 2075 Set A Q.No. 2a Differentiate between RNA and DNA. [3]
100. 2075 Set A Q.No. 2c Law of independent assortment. [3]
101. 2075 Set A Q.No. 2f Describe the properties of genetic code. [3]
102. 2075 Set B Q.No. 2c Law of dominance. [3]
103. 2075 Set B Q.No. 2d Semi conservative method of DNA replication. [3]
104. 2075 Set B Q.No. 2e Incomplete dominance. [3]
105. 2074 Supp Q.No. 2c Monohybrid cross with chart. [3]
106. 2074 Supp Q.No. 2d Chromosomal aberration. [3]
107. 2074 Supp Q.No. 2e Structure of RNA and its types. [3]
108. 2074 Set A Q.No. 2c Dihybird cross with chart. [3]
109. 2074 Set A Q.No. 2d Gene mutation. [3]
110. 2074 Set A Q.No. 2e Nucleoside and nucleotide. [3]
111. 2074 Set B Q.No. 2c Reasons of choosing pea plants in Mendel experiment. [3]
112. 2074 Set B Q.No. 2d Significance of polyploidy. [3]
113. 2074 Set B Q.No. 2e Structure of DNA. [3]
114. 2073 Supp Q.No. 2c Cause of selecting Drosophila in experiments. [3]
115. 2073 Supp Q.No. 2d Significance of mutation. [3]
116. 2073 Supp Q.No. 2e Differentiate between incomplete and codominance. [3]
117. 2073 Set C Q.No. 2c Mechanism of crossing over. [3]
118. 2073 Set C Q.No. 2d Codominance [3]
119. 2073 Set C Q.No. 2e Characteristic of genetic code. [3]
120. 2073 Set C Q.No. 2g Advantages of polyploidy. [3]
121. 2073 Set D Q.No. 2c Law of segregation. [3]
122. 2073 Set D Q.No. 2d Characteristics of genetic code. [3]
123. 2073 Set D Q.No. 2e Incomplete dominance with examples. [3]
124. 2072 Supp. Q.No. 2c Law of segregation. [3]
125. 2072 Supp. Q.No. 2d Significance of polyploidy with examples. [3]
126. 2072 Supp. Q.No. 2e Criss-cross inheritance with its importance. [3]
127. 2072 Set C Q.No. 2c Process of crossing over [3]
128. 2072 Set C Q.No. 2d Reason of pea plant selection for Mendel's experiments. [3]
129. 2072 Set C Q.No. 2e Law of dominance. [3]
130. 2072 Set D Q.No. 2c Law of segregation. [3]
131. 2072 Set D Q.No. 2d Importance of polyploidy. [3]
132. 2072 Set D Q.No. 2e Chromosomal aberration. [3]
133. 2072 Set E Q.No. 2c Differentiate genotypes and phenotypes. [3]
134. 2072 Set E Q.No. 2d Describe about the process of crossing over. [3]
135. 2072 Set E Q.No. 2e Explain sex-linked inheritance of colour blindness in man. [3]
136. 2071 Supp. Q.No. 2c Explain the chromosomal mutation. [3]
137. 2071 Supp. Q.No. 2d Discuss the crossing over. [3]
138. 2071 Supp. Q.No. 2e Describe the law of dominance. [3]
139. 2071 (Set C) Q.No. 2 c Law of independent assortment. [3]
140. 2071 Set C Q.No. 2d Significance of polyploidy with examples. [3]
141. 2071 (Set C) Q.No. 2 e Difference between incomplete and codominace. [3]
142. 2071 (Set D) Q.No. 2 d Describe the law of dominance. [3]

143. 2071 (Set D) Q.No. 2 e Describe in detail about chromosomal mutations. [3]
144. 2070 Supp. Q.No. 2 c Types of DNA and its function. [3]
145. 2070 Supp. Q.No. 2 d Law of dominance with examples. [3]
146. 2070 Supp. Q.No. 2 e Semiconservative method of DNA replication [3]
147. 2070 Set C Q.No. 2 c Structure and function of RNA. [3]
148. 2070 Set C Q.No. 2 d Law of segregation. [3]
149. 2070 Set C Q.No. 2 e Semi-conservative method of DNA replication. [3]
150. 2070 Set D Q.No. 2 c Types of RNA and its functions. [3]
151. 2070 Set D Q.No. 2 d Reasons for the selection of pea plant on the Mendal's experiment. [3]
152. 2070 Set D Q.No. 2 e Semi-conservative method of DNA replication. [3]
153. 2069 Q.No. 2d Characteristics of genetic code. [3]
154. 2069 Q.No. 2e Process of crossing over. [3]
155. 2069 Q.No. 2f Mendel's dihybrid cross. [3]
156. 2068 Q.No. 2c Describe the structure of DNA. [3]
157. 2068 Q.No. 2d Discuss the incomplete dominance with examples. [3]
158. 2068 Q.No. 2e Describe the types of mutations. [3]
159. 2067 Q.No. 2c Describe the structure of DNA. [3]
160. 2067 Q.No. 2d Describe in detail about the incomplete dominance with examples. [3]
161. 2067 Q.No. 2e Describe the types of mutation. [3]
162. 2066 Q.No. 1a Explain the Mendel's law of segregation. [3]
163. 2066 Q.No. 1 b Describe the significance of polyploidy. [3]
164. 2065 Q.No.2 c Incomplete linkage in maize. [3]
165. 2064 Q.No.2c Show the dihybrid cross on Punnett Square Method. [3]
166. 2063 Q.No.2i Discuss the relationship between variation and heredity. [3]
167. 2063 Q.No.2j What are the causes and roles of mutation? [3]
168. 2062 Q.No.2a Elaborate about the incomplete dominance. [3]
169. 2061 Q.No.2a Describe semi-conservative mode of replication of DNA. [3]
170. 2061 Q.No.2e Discuss about sex-linked inheritance in Drosophila. [3]
171. 2061 Q.No.2f Elaborate about the dominance. [3]
172. 2060 Q.No.2h How is the wheat variety developed? [3]
173. 2059 Q.No.2d Differentiate between genotype and phenotype. [3]
174. 2059 Q.No.2e Write a short account of crossing over. [3]
175. 2058 Q.No.2e Why is a man unable to pass on a sex-linked gene to his son? [3]
176. 2058 Q.No.2h Write the semi-conservative mode of replication of DNA. [3]
177. 2057 Q.No.2c What do you understand by Mendel's 9:3:3:1 ratio? [3]
178. 2057 Q.No.2d Define mutation. What is the result of mutation? [3]
179. 2054 Q.No. 3a Prove 9 : 3 : 3 : 1 phenotypic ratio of dihybrid cross. [3]
180. 2054 Q.No. 3e Define mutation theory. [3]
181. 2053 Q.No. 3e Why is the phenotypic ratio 3 : 6 : 3 : 1 : 2 : 1 obtained? [3]
182. 2053 Q.No.2f What is dihybrid cross? [3]
183. 2052 Q.No.2b What is the basis of mendelian genetics? Explain the law of segregation of characters. [3]

Mark (√) the correct choice [1 mark]

184. 2056 Q.No. 1d The probability of appearance of tall characters on pea plants in F_2 generation of a Mendelian experiment is- (i) 100% (ii) 50% (iii) 75% (iv) 25% [1]
185. 2055 Q.No. 1d Agents that cause mutations are called: (i) Mutagens (ii) Mutants (iii) Chromosomes (iv) Genes [1]
186. 2053 Q.No. 1a Genetic make up of an individual is called ... [1]
- ☐ Phenotype
- ☐ Genotype
- ☐ Recessive
- ☐ None

187. 2053 Q.No. 1e The mutation theory was proposed by .... [1]
- ☐ Devries
- ☐ Charles Darwin
- ☐ Lamark
- ☐ A.R. Wallace

188. 2052 Q.No. 1ii An organism having similar genes is called: a. Genotype b. Dihybrid c. Homozygous d. Linkage [1]
189. 2052 Q.No. 1iii The theory of mutation was given by: a. Darwin b. Cuvier c. Devries d. Lamarck [1]

Differentiate between the following terms [3 marks]

190. 2056 Q.No. 4d Phenotype and genotype. [3]
191. 2055 Q.No. 4c Dominant and recessive characters [3]
192. 2053 Q.No. 4a Euploidy and Aneuploidy. [3]
193. 2053 Q.No. 4b Dominance and Recessive [3]
194. 2052 Q.No. 4a Heterozygous and Homozygous [3]
195. 2052 Q.No. 4b Phenotype and genotype [3]

Long Questions

196. 2077 Set J Q.No. 3 OR Describe semi-conservative method of DNA replication. [7]
197. 2077 Set K Q.No. 3 OR Describe the Griffith's Bacterial transformation experiment to show that DNA is a genetic material. [7]
198. 2077 Set R Q.No. 3 OR What is mutation? Describe its types and their role in evolution. [7]
199. 2076 GIE Set A Q.No. 4 What is crossing over? Describe its mechanism and significance with necessary diagrams. [8]
200. 2076 GIE Set B Q.No. 4 Describe in detail about Mendal's law of independent assortment up to F_2 generation. [8]
201. 2076 Set B Q.No. 4 What is DNA? Describe the process of semi conservative method of DNA replication with good diagrams. [8]
202. 2076 Set C Q.No. 4 Define genetic material and describe the process involved in semi-conservative method of DNA replication with neat and clean diagram. [8]

203. 2075 GIE Q.No. 4 Define crossing over and describe its mechanism and significance with necessary diagrams. [8]
204. 2075 Set A Q.No. 4 What is sex-linked inheritance? Explain it with reference to eye colour of *Drosophilla*. (Fruit fly). [8]
205. 2075 Set B Q.No. 4 Describe in detail about Mendel's law of independent assortment up to F_2 generation. [8]
206. 2074 Supp Q.No. 4 What is DNA and describe the process of DNA replication found in semi-conservative method with neat and clean diagrams. [8]
207. 2074 Set A Q.No. 4 Define sex linked inheritance and describe the process found in fruit fly. [8]
208. 2074 Set B Q.No. 4 What is sex linked inheritance? Discuss it with special reference to eye colour of fruit fly. [8]
209. 2073 Supp Q.No. 4 Define crossing over and describe its mechanism with necessary diagrams along with its significance. [8]
210. 2073 Set C Q.No. 4 What is genetic material? Describe the structure and function of DNA. [8]
211. 2073 Set D Q.No. 4 Define genetic material and describe the process of semi-conservation mode of replication of DNA with neat and clean diagrams. [8]
212. 2072 Supp. Q.No. 4 Define crossing over and describe its mechanism with necessary diagrams along with its significance. [8]
213. 2072 Set C Q.No. 4 Define sex-linked inheritance and discuss it with special reference to eye colour of Drosophila melanogaster (fruit fly). [8]
214. 2072 Set D Q.No. 4 Define DNA and describe the process involved in the semi-conservative mode of replication of DNA with necessary neat and clean diagrams. [8]
215. 2072 Set E Q.No. 4 What are genetic materials? Discuss the double helical structure of Watson and Crick's model of DNA with necessary diagrams. [8]
216. 2071 Supp. Q.No. 4 What is dihybrid cross? Mention diagrammatic account of dihybrid cross of Mendel's experiment and discuss. [8]
217. 2071 (Set C) Q.No. 4 Define crossing over and describe its mechanism with necessary diagrams along with its significance. [8]
218. 2071 (Set D) Q.No. 4 Describe the process of crossing over and its significances. [8]
219. 2070 Supp. Q.No. 4 What is Mutation? Describe its various types and its significance. [8]
220. 2070 Set C Q.No. 4 Describe the sex linked inheritance with special examples to the eye colour of Drosophila melanogaster (fruit fly). [8]
221. 2070 Set D Q.No. 4 Describe the sex linked inheritance with special reference to the eye colour of Drosophila melanogaster (fruit fly). [8]
222. 2069 Q.No. 4 What is mutation? Describe its various types and its significance. [8]
223. 2068 Q.No. 4 What is criss-cross inheritance? Discuss about the sex-linked inheritance with special reference to the eye colour of Drosophila. [8]
224. 2067 Q.No. 4 Describe the six linked inheritance with the reference of Drosophila (fruit fly) [8]
225. 2066 Q.No. 4 What do you mean by linkage? Describe its types with examples. [8]
226. 2065 Q.No. 3 Explain the mechanism of DNA replication and mention its significance. [7.5]
227. 2064 Q.No. 5 Describe in detail about the process of semi-conservative method of DNA replication. [7]
228. 2063 Q.No. 4 Discuss the mechanism of DNA replication and state its functions. [7]
229. 2062 Q.No. 5 What is criss-cross inheritance? Discuss about the sex-linked inheritance with special reference to the eye colour of Drosophila. [7]
230. 2061 Q.No. 5 Describe the double helical structure of Watson & Crick's model of DNA. [7]
231. 2060 Q.No. 5 What is mutation? Explain gene mutation in brief. [7]
232. 2059 Q.No. 5 What are genetic materials? Describe the structure and function of DNA. [1+4+2]
233. 2058 Q.No. 4 Describe the Mendel's Law of inheritance. [10]
234. 2057 Q.No. 5 Discuss the mechanism of DNA replication. [7]
235. 2053 Q.No. 6 Discuss the Law of Independent Assortment. [10]

UNIT 3: DEVELOPMENTAL BIOLOGY

Answer all in very short [1 mark]

1. 2077 Set K Q.No. 1c Define hybridization. [1]
2. 2076 GIE Set A Q.No. 1f What do you mean by grafting? [1]
3. 2076 GIE Set A Q.No. 1g Mention about angiosperm. [1]
4. 2076 GIE Set A Q.No. 1h Define anemophily. [1]
5. 2076 GIE Set B Q.No. 1g What is exine? [1]
6. 2076 GIE Set B Q.No. 1h Illustrate about anemophily. [1]
7. 2076 Set B Q.No. 1d What do you mean by scion and stock? [1]
8. 2076 Set B Q.No. 1h Define megasporogenesis. [1]
9. 2076 Set B Q.No. 1i What do you mean by chiropterophily? [1]
10. 2076 Set C Q.No. 1f What does it mean by scion? [1]
11. 2076 Set C Q.No. 1g What is microspores? [1]
12. 2076 Set C Q.No. 1h State about cleistogamy. [1]
13. 2075 GIE Q.No. 1d What do you mean by genotype? [1]
14. 2075 GIE Q.No. 1f Mention about vegetative propagation. [1]
15. 2075 GIE Q.No. 1g What is pollen tube? [1]
16. 2075 GIE Q.No. 1h Define autogamy. [1]
17. 2075 Set A Q.No. 1e What is the advantage of cross pollination? [1]
18. 2075 Set B Q.No. 1g What does it mean by microsporogenesis? [1]
19. 2075 Set B Q.No. 1h Define anemophily. [1]
20. 2074 Supp Q.No. 1g State about angiosperm. [1]
21. 2074 Supp Q.No. 1h Define hydrophilly. [1]
22. 2074 Supp Q.No. 1i What is hybridization? [1]
23. 2074 Set A Q.No. 1f What is tuber? [1]
24. 2074 Set A Q.No. 1g Mention about pollen grains. [1]
25. 2074 Set A Q.No. 1h Define fertilization. [1]
26. 2074 Set B Q.No. 1f State about cutting. [1]

27. 2074 Set B Q.No. 1g Mention about gymnosperm. [1]
28. 2074 Set B Q.No. 1h Elaborate entomophilly. [1]
29. 2073 Supp Q.No. 1f Define grafting. [1]
30. 2073 Supp Q.No. 1g Elaborate megasporogenesis. [1]
31. 2073 Supp Q.No. 1h What is pollination? [1]
32. 2073 Set C Q.No. 1f Define the role of rhizome. [1]
33. 2073 Set C Q.No. 1g State about microgametogenesis. [1]
34. 2073 Set C Q.No. 1h What is pollen tube? [1]
35. 2073 Set D Q.No. 1f Define vegetative propagation. [1]
36. 2073 Set D Q.No. 1g Mention about anther. [1]
37. 2073 Set D Q.No. 1h State about double fertilization. [1]
38. 2072 Supp. Q.No. 1f Define gootee. [1]
39. 2072 Supp. Q.No. 1g Elaborate gametogenesis. [1]
40. 2072 Supp. Q.No. 1h What is double fertilization? [1]
41. 2072 Set C Q.No. 1g What is pollen tube? [1]
42. 2072 Set C Q.No. 1h Illustrate about entomophily. [1]
43. 2072 Set D Q.No. 1g What is entine? [1]
44. 2072 Set D Q.No. 1h Illustrate about megagametogenesis. [1]
45. 2072 Set E Q.No. 1e Define embryo sac. [1]
46. 2072 Set E Q.No. 1f Write any two advantages of vegetative propagation. [1]
47. 2071 Supp. Q.No. 1g Define megasporogenesis? [1]
48. 2071 Supp. Q.No. 1h What is cross pollination? [1]
49. 2071 (Set C) Q.No. 1 f Define vegetative propagation. [1]
50. 2071 (Set C) Q.No. 1 g Elaborate microsporogenesis. [1]
51. 2071 (Set C) Q.No. 1 h What is fertilization? [1]
52. 2071 (Set D) Q.No. 1 g Define megasporogenesis. [1]
53. 2071 (Set D) Q.No. 1 h What is self pollination? [1]
54. 2070 Supp. Q.No. 1 g Elaborate about angiosperm. [1]
55. 2070 Supp. Q.No. 1 h Define the benefit of pollination. [1]
56. 2070 Set C Q.No. 1 f Define asexual reproduction. [1]
57. 2070 Set C Q.No. 1 g Mention about male gametophyte. [1]
58. 2070 Set C Q.No. 1 h Point out fertilization. [1]
59. 2070 Set D Q.No. 1 f Define sexual reproduction. [1]
60. 2070 Set D Q.No. 1 g Elaborate about female gametophyte. [1]
61. 2070 Set D Q.No. 1 h Point out about anemophily. [1]
62. 2069 Q.No. 1f What do you understand by the asexual reproduction? [1]
63. 2069 Q.No. 1g What is exine? [1]
64. 2069 Q.No. 1h Write the meaning of anemophily. [1]
65. 2068 Q.No. 1f What does it mean by vegetative reproduction? [1]
66. 2068 Q.No. 1g Define megasporogenesis? [1]
67. 2068 Q.No. 1h What is entomophilly? [1]
68. 2067 Q.No. 1f What is vegetative reproduction? [1]
69. 2067 Q.No. 1g Define microsporogenesis? [1]
70. 2067 Q.No. 1h What is self pollination? [1]
71. 2066 Q.No. 1 f Where are the microspore mother cells found in an angiospermic plant. [1]
72. 2064 Q.No. 1f What is vegetative reproduction? [1]
73. 2063 Q.No. 1a Define vegetative reproduction. [1]

Very Short Answer Questions [2 marks]

74. 2062 Q.No. 1f What do you mean by fertilization? [2]
75. 2061 Q.No. 1f What is the role of fragrance in pollination? [2]
76. 2057 Q.No. 1d Give two examples of entomophilus plants. [2]
77. 2054 Q.No.2e What is double fertilization? Give example. [2]
78. 2052 Q.No. 3a How does endosperm in Angiosperms become triploid? [2]

Describe in brief [3 marks]

79. 2077 Set K Q.No. 2c Mention the importances of vegetative propagation with examples. [3]
80. 2076 GIE Set A Q.No. 2f Development of embryo. [3]
81. 2076 Set B Q.No. 2f Process of male gametogenesis. [3]
82. 2076 Set C Q.No. 2f Development of monocot embryo. [3]
83. 2075 GIE Q.No. 2f Double fertilization. [3]
84. 2075 Set A Q.No. 2b The development of monocot embryo. [3]
85. 2074 Supp Q.No. 2f Megagametogenesis. [3]
86. 2074 Set A Q.No. 2f Microgametogenesis. [3]
87. 2074 Set B Q.No. 2g Double fertilization. [3]
88. 2073 Supp Q.No. 2f Development of dicot embryo. [3]
89. 2073 Set C Q.No. 2f Process of fertilization. [3]
90. 2073 Set D Q.No. 2f Monocot embryo. [3]
91. 2072 Supp. Q.No. 2f Anemophilous pollination and its concerned plant's characteristics. [3]
92. 2072 Set C Q.No. 2f Process of microsporogenesis. [3]
93. 2072 Set D Q.No. 2f Development of male gametophyte. [3]
94. 2072 Set E Q.No. 2f What is anemophily? Describe the features of anemophilous flowers. [3]
95. 2071 Supp. Q.No. 2f Elaborate the development of dicot embryo. [3]
96. 2071 (Set C) Q.No. 2f Development of monocot embryo. [3]
97. 2071 (Set D) Q.No. 2 f Describe the development of dicot embryo. [3]
98. 2070 Set C Q.No. 2 f Development of male gametophyte. [3]
99. 2070 Set D Q.No. 2 f Development of female gametophyte. [3]
100. 2069 Q.No. 2a Advantages of vegetative propagation. [3]
101. 2068 Q.No. 2f Elaborate the double fertilization. [3]
102. 2067 Q.No. 2f Discuss the process of double fertilization with necessary figures. [3]

Differentiate between the following [3 marks]

103. 2057 Q.No.2e Differentiate between self and cross fertilization? [3]
104. 2053 Q.No. 4e Autogamy and Allogamy [3]

Long Answer Questions

105. 2077 Set J Q.No. 3 What is transpiration? Give an account of the structure of stomata and its working mechanism during transpiration. [7]
106. 2077 Set K Q.No. 3 Describe the anatomy of monocot stem with its salient features and compare it with dicot stem. [7]

107. 2077 Set R Q.No. 3 Describe the internal structure of dicot stem with its salient features and compare it with monocot stem. [7]
108. 2076 GIE Set A Q.No. 3 Describe and compare the anatomical structure of dicot and monocot leaf with neat and clean diagrams. [7.5]
109. 2076 GIE Set B Q.No. 3 Describe the T.S. of dicot root with well labelled diagrams and compare it with monocot root also. [7.5]
110. 2076 GIE Set B Q.No. 3 OR Define transpiration and explain the experiment to demonstrate the unequal transpiration with well labelled diagrams. [7.5]
111. 2075 Set A Q.No. 3 Define secondary growth. Explain the process of secondary growth in dicot stem with necessary diagrams. [7.5]
112. 2074 Supp Q.No. 3 Describe the process of secondary growth in dicot stem with necessary diagrams. [7.5]
113. 2074 Supp Q.No. 3 OR Define transpiration and discuss the process of unequal transpiration in dicot leaf. [7.5]
114. 2072 Supp. Q.No. 3 OR Describe T.S. of monocot and dicot leaf with necessary diagrams. [7.5]
115. 2059 Q.No. 6 Define pollination and discuss different agencies of plant pollination. [1+5]

UNIT 4: APPLICATION OF BIOLOGY

Answer all in very short [1 mark]

1. 2077 Set J Q.No. 1c What is farmyard manure? [1]
2. 2077 Set R Q.No. 1b What is callus? [1]
3. 2076 GIE Set A Q.No. 1i Elaborate green manure. [1]
4. 2076 GIE Set A Q.No. 1j What is genetic engineering? [1]
5. 2076 GIE Set B Q.No. 1f Mention about grafting. [1]
6. 2076 GIE Set B Q.No. 1i Define fermentation technology. [1]
7. 2076 GIE Set B Q.No. 1j Elaborate about green manuring. [1]
8. 2076 Set B Q.No. 1e Define biofertilizer. [1]
9. 2076 Set B Q.No. 1g What is callus culture? [1]
10. 2076 Set C Q.No. 1i Illustrate about callus culture. [1]
11. 2076 Set C Q.No. 1j Define biotechnology. [1]
12. 2075 GIE Q.No. 1i Illustrate about tissue culture. [1]
13. 2075 GIE Q.No. 1j What does it mean by farmyard manure? [1]
14. 2075 Set A Q.No. 1f Give two scientific names of plant that are used as green manure. [1]
15. 2075 Set A Q.No. 1g Define tissue culture. [1]
16. 2075 Set B Q.No. 1f What is grafting? [1]
17. 2075 Set B Q.No. 1i Mention about green manure. [1]
18. 2075 Set B Q.No. 1j Illustrate about vaccine. [1]
19. 2074 Supp Q.No. 1f What does it mean by layering? [1]
20. 2074 Supp Q.No. 1j Illustrate the importance of yeast. [1]
21. 2074 Set A Q.No. 1i Illustrate GMO. [1]
22. 2074 Set A Q.No. 1j State about genetic engineering. [1]
23. 2074 Set B Q.No. 1i Define biofertilizer. [1]
24. 2074 Set B Q.No. 1j What is the role of yeast? [1]
25. 2073 Supp Q.No. 1i What do you mean by shoot culture? [1]
26. 2073 Supp Q.No. 1j Mention about green manure. [1]
27. 2073 Set C Q.No. 1i What do you mean by biotechnology? [1]
28. 2073 Set C Q.No. 1j Mention about biofertilizer. [1]
29. 2073 Set D Q.No. 1i What is callus culture? [1]
30. 2073 Set D Q.No. 1j What do you mean by fermentation? [1]
31. 2072 Supp. Q.No. 1i What do you mean by embryo culture? [1]
32. 2072 Supp. Q.No. 1j Mention about farmyard manure. [1]
33. 2072 Set C Q.No. 1f Mention about gootee. [1]
34. 2072 Set C Q.No. 1i Define tissue culture. [1]
35. 2072 Set C Q.No. 1j Elaborate about bio-fertilizer. [1]
36. 2072 Set D Q.No. 1f Write about cutting. [1]
37. 2072 Set D Q.No. 1i Define biotechnology. [1]
38. 2072 Set D Q.No. 1j Elaborate about farmyard manure. [1]
39. 2072 Set E Q.No. 1g What is the difference between stock and scion? [1]
40. 2072 Set E Q.No. 1h Define fermentation. [1]
41. 2072 Set E Q.No. 1i What do you mean by biofertilizer? [1]
42. 2071 Supp. Q.No. 1i Define the function of green manure? [1]
43. 2071 Supp. Q.No. 1 j What is the role of insecticides? [1]
44. 2071 (Set C) Q.No. 1i What do you mean by callus culture? [1]
45. 2071 (Set C) Q.No. 1 j Mention about bio-fertilizer. [1]
46. 2071 (Set D) Q.No. 1 f What is grafting? [1]
47. 2071 (Set D) Q.No. 1 i What is tissue culture? [1]
48. 2071 (Set D) Q.No. 1 j Define vaccines. [1]
49. 2070 Supp. Q.No. 1 i Point out the concept of disease resistant plants. [1]
50. 2070 Supp. Q.No. 1 f Elaborate the benefit of vegetative propagation. [1]
51. 2070 Set C Q.No. 1 i Elaborate the concept of disease resistant plant. [1]
52. 2070 Set C Q.No. 1 j What do you mean by genetic engineering? [1]
53. 2070 Set D Q.No. 1 i Significance of green manure. [1]
54. 2070 Set D Q.No. 1 j Mention about genetic engineering. [1]
55. 2069 Q.No. 1i Mention the fields of biotechnology. [1]
56. 2069 Q.No. 1j State the meaning of tissue culture. [1]
57. 2068 Q.No. 1i Define biotechnology? [1]
58. 2068 Q.No. 1j What is vaccine? [1]
59. 2067 Q.No. 1i Define tissue culture ? [1]
60. 2067 Q.No. 1j What is antibiotics? [1]
61. 2066 Q.No. 1 g Define a callus. [1]
62. 2064 Q.No. 1e What is hybridization? [1]
63. 2064 Q.No. 1g What is biofertilizer? [1]
64. 2064 Q.No. 1o What is herbal therapy? [1]
65. 2063 Q.No. 1f What is callus? [1]
66. 2063 Q.No. 1h Define inbreeding. [1]
67. 2063 Q.No. 1j What is grafting? [1]
68. 2063 Q.No. 1k Define fermentation. [1]
69. 2062 Q.No. 1g What is farmyard manure? [1]

70. 2062 Q.No. 1n How alcohol is formed? [1]
71. 2061 Q.No. 1j What are vaccines? [1]
72. 2061 Q.No. 1g What is the role of root nodules? [1]
73. 2060 Q.No. 1k Which is callus? [1]
74. 2060 Q.No. 1n Define fermentation. [1]
75. 2059 Q.No. 1j Name any two plants which are of manure value. [1]
76. 2059 Q.No. 1c Give two applications of genetic engineering. [1]
77. 2058 Q.No. 1k Name two types of fermentation processes. [1]
78. 2058 Q.No. 1l Define genetic engineering. [1]
79. 2057 Q.No. 1j Give any two plant names which are used as green manures. [1]
80. 2057 Q.No. 1o Which organisms cause fermentation for alcohol? [1]

Answer all in brief. [3 marks]

81. 2077 Set J Q.No. 2c Describe the application of fermentation technology in industries. [3]
82. 2077 Set R Q.No. 2c Describe the application of genetic engineering in agriculture. [3]
83. 2076 GIE Set A Q.No. 2g Significance of fermentation technology. [3]
84. 2076 GIE Set B Q.No. 2g Application of biotechnology in medical sciences. [3]
85. 2076 Set B Q.No. 2e Application of plant tissue culture. [3]
86. 2076 Set C Q.No. 2g Possible danger of genetic engineering. [3]
87. 2075 GIE Q.No. 2g Application of biotechnology. [3]
88. 2075 Set B Q.No. 2f Significance of fermentation technology. [3]
89. 2075 Set B Q.No. 2g Application of genetic engineering in agriculture. [3]
90. 2074 Supp Q.No. 2g Possible danger of genetic engineering. [3]
91. 2074 Set A Q.No. 2g Application of plant tissue culture. [3]
92. 2074 Set B Q.No. 2f Importance of genetic engineering in medicine. [3]
93. 2073 Supp Q.No. 2g Application of genetic engineering in agriculture. [3]
94. 2073 Set D Q.No. 2g Application of genetic engineering in agriculture. [3]
95. 2072 Supp. Q.No. 2g Genetic engineering and its possible danger. [3]
96. 2072 Set C Q.No. 2g Possible dangers of genetic engineering. [3]
97. 2072 Set D Q.No. 2g Application of biotechnology in agricultural sciences. [3]
98. 2072 Set E Q.No. 2g Discuss the importance of biotechnology. [3]
99. 2071 Supp. Q.No. 2f Discuss the biofertilizer and its application. [3]
100. 2071 (Set C) Q.No. 2 g Application of genetic engineering in medicine. [3]
101. 2071 Set D Q.No. 2g Elaborate the fermentation technology and its application. [3]
102. 2070 Supp. Q.No. 2 f Process of fertilization. [3]
103. 2070 Supp. Q.No. 2 g Benefit of fermentation technology. [3]
104. 2070 Set C Q.No. 2 g Tissue culture and its application. [3]
105. 2070 Set D Q.No. 2 g Fermentation technology and its significances. [3]
106. 2069 Q.No. 2g Genetic engineering and its application. [3]
107. 2068 Q.No. 2g Discuss the green manure and its application. [3]
108. 2067 Q.No. 2g Discuss green manure and its application in agriculture. [3]
109. 2066 Q.No. 1c Write the advantages of vegetative reproduction. [3]
110. 2066 Q.No. 1e Discuss the industrial application of fermentation technology. [3]
111. 2065 Q.No.2d Application of micropropagation in agriculture. [3]
112. 2065 Q.No.2 e Advantages of green manure over chemical fertilizers. [3]
113. 2064 Q.No.2e Mention briefly about the importance of plant tissue culture in agriculture. [3]
114. 2063 Q.No.2d Write down the applications of biotechnology. [3]
115. 2062 Q.No.2b Explain about the green manure with examples. [3]
116. 2061 Q.No.2d Discuss the significance of biotechnology. [3]
117. 2061 Q.No.2g Write down the prospects of genetic engineering. [3]
118. 2060 Q.No.2a What are the objectives of plants breeding? Explain. [3]
119. 2060 Q.No.2b What is the importance of manures in agriculture? [3]
120. 2060 Q.No.2d Discuss in brief the methods of plant tissue culture. [3]
121. 2059 Q.No.2i State the advantages and disadvantages of outbreeding. [3]
122. 2059 Q.No.2j Explain the principles of fermentation technology. [3]
123. 2057 Q.No.2j What are the advantages of green manures over chemical fertilizers? [3]
124. 2055 Q.No. 6 Discuss the basic concept of genetic engineering. Explain its practical applications. [3]
125. 2052 Q.No. 7 OR Discuss briefly about the alcoholic fermentation. [3]

Write short notes on the following [4 marks]

126. 2056 Q.No.2f Genetic engineering [4]

Discuss the following [4 marks]

127. 2056 Q.No.2b Monoclonal antibody [4]
128. 2055 Q.No.2b The advantages of out-breeding [4]

Attempt the following questions [2 marks]

129. 2054 Q.No. 3b What is green manuring? Give example. [2]

Differentiate between the following pair of words [2 marks]

130. 2055 Q.No. 4f Inbreeding and outbreeding [2]

SECTION B (ZOOLOGY)

UNIT 1: ANIMAL TISSUES

Very Short Answer Questions [1 mark]

1. 2077 Set K Q.No. 1a Name sensory cranial nerves. [1]
2. 2076 GIE Set A Q.No. 1a Name tissue that undergoes cell division throughout life. [1]
3. 2076 GIE Set B Q.No. 1a What is secretary tissue? [1]
4. 2076 Set C Q.No. 1a Name main component of matrix. [1]
5. 2075 GIE Q.No. 1g Mention the functions of the lymph. [1]
6. 2075 Set A Q.No. 1a What is the plastic epithelium? [1]
7. 2075 Set B Q.No. 1b Mention the total amount of blood in an average person. [1]
8. 2073 Supp Q.No. 1a Which epithelium lines the blood vessel? [1]
9. 2073 Set C Q.No. 1a Which protein is present in white fiber? [1]
10. 2073 Set D Q.No. 1a Write the functions of heparin and histamine. [1]
11. 2072 Supp. Q.No. 1a Why are bones brittle in old age? [1]
12. 2072 Set C Q.No. 1a What is matrix? [1]
13. 2072 Set D Q.No. 1f Squamous epithelium is called pavement tissue. Why? [1]
14. 2072 Set E Q.No. 1a Write down the role of mast cell. [1]
15. 2071 Supp. Q.No. 1a Mention the basic function of epithelial tissue. [1]
16. 2071 (Set C) Q.No. 1 a Name the tissue whose cells divide throughout the life. [1]
17. 2071 (Set D) Q.No. 1a Where does the mast cells are located? [1]
18. 2070 Supp. Q.No. 1 a Name the tissue that connect bones with bone and muscle. [1]
19. 2070 Set C Q.No. 1 a Name the tissue that connects muscles with the bone. [1]
20. 2070 Set D Q.No. 1 a What is ligament ? [1]
21. 2069 Q.No. 1a What is periosteum? [1]
22. 2067 Q.No. 1h What is keratoplasty? [1]
23. 2066 Q.No. 1 a What is mast cell? [1]
24. 2065 Q.No. 1 a Define a ligament. [1]
25. 2062 Q.No. 1l What is Osteocyte? [1]
26. 2062 Q.No. 1m Which cell is the longest cell of the body? [1]
27. 2060 Q.No. 1a Which is the hardest tissue in the body? [1]
28. 2059 Q.No. 1b Mention the human body parts where you find unstriated muscles. [1]

Answer all in brief [3 marks]

29. 2077 Set K Q.No. 2a Differentiate between ligament and tendon. [3]
30. 2076 GIE Set B Q.No. 2a Describe the structure of calcified cartilage. [3]
31. 2076 Set B Q.No. 2a Cardiac muscle. [3]
32. 2076 Set C Q.No. 2a Write short note on lymph. [3]
33. 2075 GIE Q.No. 2a Write a short note on Haversian canal. [3]
34. 2075 Set A Q.No. 2a The structure and functions of columnar epithelial tissue. [3]
35. 2075 Set B Q.No. 2a Give an account of areolar tissue. [3]
36. 2074 Supp Q.No. 2b Write short note on WBC. [3]
37. 2074 Set A Q.No. 2b Explain the types and functions of connective tissue. [3]
38. 2074 Set B Q.No. 2a Differentiate between striated and unstriated muscles. [3]
39. 2073 Supp Q.No. 2a Describe Haversian Canal System. [3]
40. 2073 Set C Q.No. 2a Differentiate between cartilage and bone. [3]
41. 2073 Set D Q.No. 2a Describe Haversian Canal System. [3]
42. 2072 Set C Q.No. 2a Describe Adipose tissue. [3]
43. 2071 Supp. Q.No. 2a How striated muscle differ's from unstriated muscle. [3]
44. 2071 Set D Q.No. 2a Describe the structure of areolar tissue. [3]
45. 2071 Set C Q.No. 2a Mention the types and functions of connective tissue. [3]
46. 2070 Supp. Q.No. 2a Functions of connective tissue. [3]
47. 2069 Q.No. 2e Functions of epithelial tissue. [3]
48. 2068 Q.No. 2a The structure of bone. [3]
49. 2067 Q.No. 2a Differentiate between simple and compound epithelium. [3]
50. 2066 Q.No. 2 a Describe the Adipose tissue. [3]
51. 2065 Q.No.2 a Internal structure of bone [3]
52. 2060 Q.No.2j How is oxygen transported in the blood and released in the tissue? [3]

Long Answer Questions

53. 2067 Q.No. 4 Give an account of structure and functions of a nephron in human being. [8]

UNIT 2: DEVELOPMENTAL BIOLOGY

Very Short Answer Questions [2 marks]

1. 2077 Set K Q.No. 1c What do you understand by carrying capacity? [1]
2. 2077 Set R Q.No. 1b What is the function of sympathetic nervous system? [1]
3. 2076 GIE Set A Q.No. 1b What does the second polar body in the frog denote? [1]
4. 2076 GIE Set B Q.No. 1b Define gastrulation. [1]
5. 2076 Set B Q.No. 1g What is a fingerling? [1]
6. 2076 Set B Q.No. 1h What are pullets? [1]
7. 2076 Set C Q.No. 1b What is organogenesis? [1]
8. 2076 Set C Q.No. 1j What are pullets? [1]
9. 2075 Set A Q.No. 1b Mention the role of acrosome during fertilization. [1]
10. 2074 Supp Q.No. 1a What is the function of acrosome? [1]
11. 2074 Supp Q.No. 1b Define holoblastic cleavage. [1]
12. 2074 Set A Q.No. 1i Differentiate between spermatogenesis and oogenesis. [1]
13. 2074 Set B Q.No. 1h Which stage of egg is laid by frog? [1]

14. 2073 Supp Q.No. 1b Define spermatogenesis. [1]
15. 2073 Set C Q.No. 1b Mention the role of acrosome. [1]
16. 2073 Set D Q.No. 1b Define gametogenesis. [1]
17. 2072 Supp. Q.No. 1b Define cleavage. [1]
18. 2072 Set C Q.No. 1b Define gastrulation. [1]
19. 2071 Supp. Q.No. 1b What is yolkplug? [1]
20. 2071 (Set C) Q.No. 1 b Differentiate between animal pole and vegetal pole of Frog's egg. [1]
21. 2071 (Set D) Q.No. 1 b Define spermiogenesis. [1]
22. 2070 Supp. Q.No. 1 b Define epiboly. [1]
23. 2070 Set C Q.No. 1 b What is cleavage? [1]
24. 2070 Set D Q.No. 1 g What is sperm lysin? [1]
25. 2068 Q.No. 1b What is spermiogenesis? [1]
26. 2065 Q.No. 1 d What is the function of acrosome found is sperm cell? [1]
27. 2065 Q.No. 1 e Define the term blastulation. [1]
28. 2064 Q.No. 1i What is cleavage? [1]
29. 2063 Q.No. 1d What is holoblastic cleavage? [1]
30. 2061 Q.No. 1m Define cleavage. [1]
31. 2059 Q.No. 1e Give reason why micromere cells in frog's embryo are fast dividing. [1]

Answer all in very short [3 marks]

32. 2077 Set J Q.No. 2a Discuss the process of fertilization in frog. [3]
33. 2076 GIE Set A Q.No. 2b Discuss the process of fertilization in frog. [3]
34. 2076 GIE Set B Q.No. 2b Write about blastula. [3]
35. 2076 Set B Q.No. 2b The process of neurulation. [3]
36. 2076 Set C Q.No. 2b Write down the fate of mesoderm. [3]
37. 2075 GIE Q.No. 2b How coelom is formed during development of frog? [3]
38. 2075 Set A Q.No. 2b The formation of coelom in the embryo of frog. [3]
39. 2075 Set B Q.No. 2b How is gastrula formed during the development of frog? [3]
40. 2074 Supp Q.No. 2a What is spermatogenesis? Elaborate it. [3]
41. 2074 Set A Q.No. 2a Describe the formation of nervecord in the embryology of frog. [3]
42. 2074 Set B Q.No. 2d What is gastrulation? Discuss the process of gastrulation during the development of frog with diagrams. [3]
43. 2073 Supp Q.No. 2b Explain about the formation of notochord in the embryo of frog. [3]
44. 2073 Set C Q.No. 2b Discuss Gastrulation in Frog. [3]
45. 2073 Set D Q.No. 2b Explain briefly about the coelom formation in frog. [3]
46. 2072 Supp. Q.No. 2g Describe the formation of notochord in the embryo of frog. [3]
47. 2072 Set C Q.No. 2b Discuss the formation of coelom in the embryo of frog. [3]
48. 2072 Set D Q.No. 2f The coelom formation in frog. [3]
49. 2072 Set E Q.No. 2g The neurulation process in frog's embryo. [3]
50. 2071 Supp. Q.No. 1b The cleavage in the fertilized egg of frog. [3]
51. 2071 (Set D) Q.No. 2 b How is the notochord formed in embryo of frog? [3]
52. 2071 (Set C) Q.No. 2 b Explain the process of neurulation. [3]
53. 2070 Supp. Q.No. 2 b Morula and blastula stage of frog. [3]
54. 2070 Set C Q.No. 2 e Give an account of the formation of coelom in the embryo of frog. [3]
55. 2070 Set D Q.No. 2 g Blastula formation of frog. [3]
56. 2069 Q.No. 2a Formation of nervecord. [3]
57. 2068 Q.No. 2b About the coelom formation in frog. [3]
58. 2067 Q.No. 2b Discuss the fate of ectoderm. [3]
59. 2059 Q.No.2c Describe the structure of frog's gastrula. [3]
60. 2052 Q.No.2f List the process of segmentation of the egg of frog. [3]

Mark (√) the correct choice [1 mark]

61. 2052 Q.No. 1i Cleavage in frog is:
    a. Holoblastic and unequal
    b. Holoblastic and equal
    c. Centrolecithal
    d. None of them [1]

Long Questions

62. 2066 Q.No. 3 Describe the formation of coelome during the development of frog. [7.5]
63. 2065 Q.No. 3 Describe the changes taking place during gastrulation in frog. [7.5]
64. 2064 Q.No. 6 What are germinal layers? How they are formed in the embryo of frog? [6]
65. 2063 Q.No. 6 Describe embryonic development of frog up to formation of blastula stage. [6]
66. 2062 Q.No. 6 How does fertilization take place in frog? Describe its development up to the formation of gastrula. [6]
67. 2061 Q.No. 6 What is coelome? Describe its formation in the development of frog. [6]
68. 2060 Q.No. 6 Describe the development of frog upto the formation of 3 germinal layers. [6]
69. 2058 Q.No. 6 What is coelom? How is it formed in the development of frog? [1+3+2]
70. 2057 Q.No. 6 What are germinal layers? How they are formed in frog's embryo? [1+5]

UNIT 3: HUMAN BIOLOGY AND HEALTH

A. Anatomy and Physiology

Very Short Answer Questions [1 mark]

1. 2077 Set J Q.No. 1a Write one important character of cardiac muscle. [1]
2. 2077 Set J Q.No. 1b What is collip's hormone? [1]
3. 2077 Set R Q.No. 1a When is the first heart sound produced? [1]

3. 2076 GIE Set A Q.No. 1c Mention the role of ear ossicles. [1]
4. 2076 GIE Set A Q.No. 1d Who is the father of Endocrinology? [1]
5. 2076 GIE Set A Q.No. 1e What is portal system? [1]
6. 2076 GIE Set A Q.No. 1f What are the photo receptor cells present in human eye? [1]
7. 2076 GIE Set A Q.No. 1g What causes emphysema in human beings? [1]
8. 2076 GIE Set B Q.No. 1c What materials are responsible for making bones hard and strong? [1]
9. 2076 Set B Q.No. 1d Define nerve impulse. [1]
10. 2076 Set B Q.No. 1a Name the place where actual exchange of gases takes place inside the lung. [1]
11. 2076 Set B Q.No. 1b What is double circulation? [1]
12. 2076 Set B Q.No. 1c Which hormone controls osmoregulation? [1]
13. 2076 Set C Q.No. 1c What is meant by dead space? [1]
14. 2076 Set C Q.No. 1d Why is ultra filtration called so? [1]
15. 2076 Set C Q.No. 1e In which part of oviduct fertilization occurs? [1]
16. 2075 GIE Q.No. 1a Name the muscles involved in breathing. [1]
17. 2075 GIE Q.No. 1b Why the ventricles have thicker wall than that of auricle? [1]
18. 2075 GIE Q.No. 1d Name the fluid present inside the internal ear. [1]
19. 2075 GIE Q.No. 1e What is the term for one contraction phase and one relaxation phase of heart? [1]
20. 2075 GIE Q.No. 1f Name the part of retina where sharp image is formed. [1]
21. 2075 Set A Q.No. 1c Define natural pace-maker. [1]
22. 2075 Set A Q.No. 1d Mention the function of pons-varolii. [1]
23. 2075 Set A Q.No. 1f What is antigen? [1]
24. 2075 Set B Q.No. 1a Name the covering of lungs. [1]
25. 2075 Set B Q.No. 1c What do you mean by auditory meatus? [1]
26. 2075 Set B Q.No. 1d What is PEM? [1]
27. 2075 Set B Q.No. 1e Which structure is called pace maker of the heart? [1]
28. 2075 Set B Q.No. 1f Which pigment enables us to see in the dark? [1]
29. 2075 Set B Q.No. 1g Mention the importance of Rh factor. [1]
30. 2074 Supp Q.No. 1c Define vital capacity. [1]
31. 2074 Supp Q.No. 1d Name the HCl secreting cells of stomach. [1]
32. 2074 Supp Q.No. 1e Name two neurotransmitter. [1]
33. 2074 Supp Q.No. 1f Which minerals are required for development of bone and teeth? [1]
34. 2074 Supp Q.No. 1g Which hormone is called birth hormone? [1]
35. 2074 Supp Q.No. 1j Define Rh-factor. [1]
36. 2074 Set A Q.No. 1a Which pigment is responsible for night vision? [1]
37. 2074 Set B Q.No. 1d What is barr-body? [1]
38. 2074 Set A Q.No. 1h What are neurotransmitters? Give an example. [1]
39. 2074 Set A Q.No. 1j Define ultrafiltration. [1]
40. 2074 Set B Q.No. 1a Differentiate between chyme and chyle. [1]
41. 2074 Set B Q.No. 1b What is Hamburger shift? [1]
42. 2074 Set B Q.No. 1c Define Rh-factor? [1]
43. 2074 Set B Q.No. 1e Give the name of one mixed and motor nerves. [1]
44. 2074 Set B Q.No. 1f Write the possible blood groups of children when parents blood group are A and AB. [1]
45. 2074 Set B Q.No. 1g What causes the characteristic smell of urine? [1]
46. 2074 Set B Q.No. 1i Define the term deamination. [1]
47. 2074 Set B Q.No. 1j Give the Dental formula of an adult man. [1]
48. 2073 Supp Q.No. 1c What are two diseases caused by the deficiency of vitamin A? [1]
49. 2073 Supp Q.No. 1d What is the most toxic excretory product produced in the body? [1]
50. 2073 Supp Q.No. 1f What is chloride shift? [1]
51. 2073 Supp Q.No. 1g Where is the location of bicuspid valve? [1]
52. 2073 Set C Q.No. 1c What do you understand by yellow spot? [1]
53. 2073 Set C Q.No. 1d State Ionic Theory. [1]
54. 2073 Set C Q.No. 1e Write the meaning of arteriosclerosis. [1]
55. 2073 Set C Q.No. 1f Which hormone is called emergency hormone and why? [1]
56. 2073 Set D Q.No. 1c Name two enzymes responsible for protein digestion. [1]
57. 2073 Set D Q.No. 1d What is deamination? [1]
58. 2073 Set D Q.No. 1f What are the essential enzymes to digest oil? [1]
59. 2073 Set D Q.No. 1g Where lies the organ of corti? [1]
60. 2072 Supp. Q.No. 1d When does menopause occur? [1]
61. 2072 Supp. Q.No. 1e What is safe period? [1]
62. 2072 Supp. Q.No. 1h Name the endocrine part of pancreas. [1]
63. 2072 Set C Q.No. 1c What do you mean by dead space? [1]
64. 2072 Set C Q.No. 1d Write the full form of FSH and LH. [1]
65. 2072 Set D Q.No. 1a Why blind spot of retina cannot form image? [1]
66. 2072 Set D Q.No. 1c Write down the function of somatostatin. [1]
67. 2072 Set D Q.No. 1d Name sensory cranial nerves. [1]
68. 2072 Set D Q.No. 1i Mention the role of acrosome during fertilization. [1]
69. 2072 Set E Q.No. 1b Name the minerals needed for proper growth of teeth and bone. [1]
70. 2072 Set E Q.No. 1c What are Haemopoitic organs? [1]
71. 2072 Set E Q.No. 1d What do you mean by deamination? [1]
72. 2072 Set E Q.No. 1e What is the role of eustachian tube? [1]
73.

74. 2072 Set E Q.No. 1j What is gluconeogenesis? [1]
75. 2071 Supp. Q.No. 1c Define reabsorption. [1]
76. 2071 Supp. Q.No. 1d What do you mean by synapse? [1]
77. 2071 (Set C) Q.No. 1 c Define the term peristalsis. [1]
78. 2071 (Set C) Q.No. 1 d What is chloride shift? [1]
79. 2071 (Set C) Q.No. 1 e Name the fluid in which the membranous labyrinth floats. [1]
80. 2071 (Set C) Q.No. 1 f Which pigment enables us to see in dark? [1]
81. 2071 (Set D) Q.No. 1 c Mention any two enzymes for protein digestion. [1]
82. 2071 (Set D) Q.No. 1 d Define the term deamination. [1]
83. 2071 (Set D) Q.No. 1 h Name three auditory ossicles. [1]
84. 2070 Supp. Q.No. 1 e What is homeostasis? [1]
85. 2070 Supp. Q.No. 1 f Define synaptic vessicle. [1]
86. 2070 Supp. Q.No. 1 h Define interferon. [1]
87. 2070 Set C Q.No. 1 i What are narcotics? [1]
88. 2070 Set C Q.No. 1 c Which mineral is required for the growth of bone and teeth? [1]
89. 2070 Set C Q.No. 1 e Differentiate between hormones of enzymes. [1]
90. 2070 Set D Q.No. 1 b Name the pigments found in bile. [1]
91. 2070 Set D Q.No. 1 c What is the location of Adam's apple? [1]
92. 2070 Set D Q.No. 1 d Which hormone is useful for retaining salt in body? [1]
93. 2070 Set D Q.No. 1 e Name two neurotransmitters. [1]
94. 2070 Set D Q.No. 1 f Which system of body is affected by Tuberculosis? [1]
95. 2070 Set D Q.No. 1 h Why is ultra filtration called so? [1]
96. 2070 Set D Q.No. 1 i What is glycogenolysis? [1]
97. 2069 Q.No. 1b Name the main steps of nutrition. [1]
98. 2069 Q.No. 1c What do you mean by myogenic heart? [1]
99. 2069 Q.No. 1d Which part of the retina has only cones? [1]
100. 2069 Q.No. 1f Name the endocrine part of pancreas. [1]
101. 2069 Q.No. 1g Write the effects of increased secretion of sex corticoids in women. [1]
102. 2069 Q.No. 1h What is antibody? [1]
103. 2069 Q.No. 1j Define the term sexing. [1]
104. 2068 Q.No. 1a In what form is oxygen transported to tissues? [1]
105. 2068 Q.No. 1c Define the carrying capacity of the environment. [1]
106. 2068 Q.No. 1d What is most toxic excretory product produced in the body? [1]
107. 2068 Q.No. 1e Name the harmone secreted by corpus luteum. [1]
108. 2068 Q.No. 1f What are narcotics? [1]
109. 2068 Q.No. 1g What do you understand by Rh-factor? [1]
110. 2067 Q.No. 1a Mention the location and important feature of cardiac muscle. [1]
111. 2067 Q.No. 1b What is Hamburger's phenomenon? [1]
112. 2067 Q.No. 1c Why blood group A person can not donate blood to Blood group B person? [1]
113. 2067 Q.No. 1d Name the pigment needed for vision in dim light. [1]
114. 2067 Q.No. 1e Mention the functions of human ear. [1]
115. 2066 Q.No. 1 b Which pigment is responsible for night vision? [1]
116. 2066 Q.No. 1 c What do you understand by stroke volume? [1]
117. 2066 Q.No. 1 d Mention the role of hemoglobin. [1]
118. 2066 Q.No. 1 e What is chloride shift? [1]
119. 2065 Q.No. 1 b What are the vitamins produced in human colon with the help of bacteria? [1]
120. 2065 Q.No. 1 c Mention the function of hypothalamus. [1]
121. 2064 Q.No. 1h What is the function of lung? [1]
122. 2064 Q.No. 1j What is malnutrition? [1]
123. 2064 Q.No. 1k Mention the role of molars. [1]
124. 2064 Q.No. 1l What do you mean by capillaries? [1]
125. 2064 Q.No. 1m What is middle ear? [1]
126. 2063 Q.No. 1b Mention the role of acrosome. [1]
127. 2063 Q.No. 1e Name the enzyme which curdles milk. [1]
128. 2063 Q.No. 1g What do you mean by Rh factor? [1]
129. 2063 Q.No. 1i What are neurotransmitters? [1]
130. 2062 Q.No. 1h What is the function of liver? [1]
131. 2062 Q.No. 1i What is ventricle? [1]
132. 2062 Q.No. 1j What is pulmonary respiration? [1]
133. 2062 Q.No. 1m What is the role of veins? [1]
134. 2061 Q.No. 1h What is the function of kidney? [1]
135. 2061 Q.No. 1j What is the role of arteries? [1]
136. 2061 Q.No. 1k Mention the types of respirations. [1]
137. 2061 Q.No. 1n Define permanent teeth. [1]
138. 2060 Q.No. 1c Define the term 'deamination'. [1]
139. 2060 Q.No. 1d Which pigment gives colour to urine? [1]
140. 2060 Q.No. 1e What do you mean by uterus? [1]
141. 2060 Q.No. 1f Which pigment enable us to see in the dark? [1]
142. 2059 Q.No. 1g Name the thoracic muscles involving in inspiration process of man. [1]
143. 2059 Q.No. 1h Mention the hormone when abnormally secreted results simple goiter. [1]
144. 2059 Q.No. 1i Write the dental formula of adult man. [1]
145. 2059 Q.No. 1j Define ultrafiltration. [1]
146. 2059 Q.No. 1k Name the photoreceptor cells in the human eye. [1]
147. 2058 Q.No. 1b Define 'atrial systole'. [1]
148. 2058 Q.No. 1g What is grey matter? [1]
149. 2058 Q.No. 1n Give the role of ACT hormone. [1]
150. 2058 Q.No. 1o Name two proteolytic enzymes present in the intestinal juice. [1]
151. 2057 Q.No. 1b Where do you find "Adam's apple"? [1]
152. 2057 Q.No. 1f What is the structure of lens in human eye? [1]
153. 2057 Q.No. 1h Which artery supplies the blood to the shoulder? [1]
154. 2057 Q.No. 1i Mention the function of bile. [1]

155. 2057 Q.No. 1k Which hormone results the growth of human body? [1]
156. 2057 Q.No. 1m Which part of human brain is the centre of intelligence? [1]

Mark (√) the correct choice [1 mark]

157. 2056 Q.No. 1a Nitrogen is the constituent of- (i) Carbohydrate (ii) Lipid (iii) Protein (iv) Organic acid [1]
158. 2054 Q.No. 1c Both exocrine and endocrine secretion is found in the gland:
☐ Parathyroid ☐ Thymus
☐ Pancreas ☐ Adrenal [1]
159. 2052 Q.No. 1iv Pancreas is: a. Exocrine b. Endocrine c. Gonads d. None of them [1]

Answer in very Brief [3 marks]

160. 2077 Set J Q.No. 2b Describe artificial pace maker and its importance. [3]
161. 2077 Set R Q.No. 2a Differentiate between compact bone and spongy bone. [3]
162. 2076 GIE Set A Q.No. 2a Write short note on formed elements. [3]
163. 2076 Set B Q.No. 2c The role of vitamins. [3]
164. 2076 Set B Q.No. 2d The role of bile in the fat digestion. [3]
165. 2076 Set B Q.No. 2e Distinguish between endocrine and exocrine glands. [3]
166. 2076 Set C Q.No. 2c Discuss CO_2 transport. [3]
167. 2076 Set C Q.No. 2d Explain working of Heart. [3]
168. 2076 Set C Q.No. 2e Differentiate between sympathetic and para sympathetic nervous system. [3]
169. 2075 GIE Q.No. 2c Significance of ovarian cycle? [3]
170. 2075 GIE Q.No. 2d Write about neuro transmitters used by sympathetic and parasympathetic nervous system. [3]
171. 2075 GIE Q.No. 2e How the foods are digested in human intestine? [3]
172. 2075 Set A Q.No. 2c The function of pituitary gland. [3]
173. 2075 Set A Q.No. 2d The phenomenon of chloride shift. [3]
174. 2075 Set A Q.No. 2e Draw a well labelled diagram of a neuron (No description is required). [3]
175. 2075 Set B Q.No. 2c How carbohydrate is digested in human digestive tract? [3]
176. 2075 Set B Q.No. 2d The role of graafian follicle. [3]
177. 2075 Set B Q.No. 2e How impulse transmitted through a nerve fibre? [3]
178. 2074 Supp Q.No. 2c Define portal vein. Describe hepatic portal system with its significance. [3]
179. 2074 Supp Q.No. 2d What is micturition? Describe its process. [3]
180. 2074 Supp Q.No. 2e Enlist about ear ossicles and their roles. [3]
181. 2074 Set A Q.No. 2e Explain the protein digestion in human alimentary canal. [3]
182. 2074 Set A Q.No. 2f Draw a well labelled diagram of human ear. Discuss the physiology of hearing. [3]
183. 2074 Set A Q.No. 2g Describe the structure and functions of thyroid gland in brief. [3]
184. 2074 Set B Q.No. 2b Discuss about the hormones secreted by thyroid gland. [3]
185. 2074 Set B Q.No. 2g Write down the differences between sympathetic and parasympathetic nervous system. [3]
186. 2073 Supp Q.No. 2c Give a brief account of the action of different proteolytic enzymes. [3]
187. 2073 Supp Q.No. 2d Explain the functions of medulla oblongata. [3]
188. 2073 Set C Q.No. 2c Write short note on Natural Pacemaker. [3]
189. 2073 Set C Q.No. 2d Explain ovarian cycle. [3]
190. 2073 Set D Q.No. 2c Draw a neatly labelled diagram of a neuron. [3]
191. 2073 Set D Q.No. 2d Differentiate between Hyperthyroidism and Hypothyroidism. [3]
192. 2072 Supp. Q.No. 2a Describe Haversian Canal System. [3]
193. 2072 Supp. Q.No. 2b Discuss the action of proteolytic enzymes. [3]
194. 2072 Supp. Q.No. 2e Draw a neat and labelled diagram of section of eye (No. description is required) [3]
195. 2072 Set C Q.No. 2d Describe the structure and function of cochlea. [3]
196. 2072 Set C Q.No. 2e Mention the functions of fat soluble vitamins. [3]
197. 2072 Set C Q.No. 2f Draw a neatly labelled sketch of a nephron. (No description required) [3]
198. 2072 Set D Q.No. 2a Mechanism of hearing. [3]
199. 2072 Set D Q.No. 2c The sources and functions of vitamin A. [3]
200. 2072 Set D Q.No. 2d The pancreas as Heterocrine gland. [3]
201. 2072 Set D Q.No. 2e Differentiate between sympathetic and parasympathetic nervous system. [3]
202. 2072 Set E Q.No. 2a Role of fats in body. [3]
203. 2072 Set E Q.No. 2b Types of neurons. [3]
204. 2072 Set E Q.No. 2e The pancreas as compound gland. [3]
205. 2072 Set E Q.No. 2f The menstrual cycle. [3]
206. 2071 Supp. Q.No. 1c Role of diaphragm in respiration. [3]
207. 2071 Supp. Q.No. 1d What are islets of Langerhan's, name the cells involved with them and give their functions. [3]
208. 2071 Supp. Q.No. 1e Ear ossicles and their roles. [3]
209. 2071 Supp. Q.No. 1f About the leydig cells. [3]
210. 2071 (Set C) Q.No. 2 c Write the effects of hypothyroidism. [3]
211. 2071 (Set C) Q.No. 2 e Describe kidney as a homeostatic organ. [3]
212. 2071 (Set D) Q.No. 2 c What is vitamin? Mention the functions of fat soluble vitamins. [3]
213. 2071 (Set D) Q.No. 2 d Draw a well labelled diagram of internal structure of kidney. [3]

214. 2070 Supp. Q.No. 2 c An artificial respiration. [3]
215. 2070 Supp. Q.No. 2 d Antagonistic effects of insulin and glucagon. [3]
216. 2070 Supp. Q.No. 2 e The role of iris in image formation. [3]
217. 2070 Supp. Q.No.2 f About menopause. [3]
218. 2070 Set C Q.No. 2 d Draw a neatly labelled sketch of human ear (No description is required). [3]
219. 2070 Set C Q.No. 2 a Describe the structure of a neuron. [3]
220. 2070 Set D Q.No. 2 a Working mechanism of human eye. [3]
221. 2070 Set D Q.No. 2 c Differentiate between inspiration and expiration. [3]
222. 2070 Set D Q.No. 2 e Natural pacemaker. [3]
223. 2069 Q.No. 2b Importance of vitamins. [3]
224. 2069 Q.No. 2c The role of graafian follicle. [3]
225. 2069 Q.No. 2d Exchange of gases in the lung. [3]
226. 2068 Q.No. 2c Action of different proteolytic enzymes. [3]
227. 2068 Q.No. 2d Give an account of adrenal cortex. [3]
228. 2068 Q.No. 2g Differentiate between sympathetic and parasympathetic nerves. [3]
229. 2067 Q.No. 2d Describe the function of liver. [3]
230. 2067 Q.No. 2g Describe the role of pituitary gland in Endocrinology. [3]
231. 2066 Q.No.2 c List the hormones required for proper functioning of male and female reproductive organs. [3]
232. 2066 Q.No.2 d Draw a neatly labelled diagram of a nephron. (No description is required.) [3]
233. 2065 Q.No. 2 b Structure and function of cochlea. [3]
234. 2065 Q.No. 2 c Symptoms and causes of anemia [3]
235. 2064 Q.No. 2f Describe briefly about the importance of microelements. [3]
236. 2064 Q.No.2g Sketch the well labelled diagram of L.S. of human kidney. [3]
237. 2063 Q.No.2a What are vitamins? Why they are essential? [3]
238. 2063 Q.No.2b Write a note on an artificial pacemaker. [3]
239. 2063 Q.No.2e Describe structure and function of adrenal gland. [3]
240. 2062 Q.No.2f Show the internal structure of human heart (diagrammatically). [3]
241. 2061 Q.No.2i Draw a labeled V.S. of human eyes. [3]
242. 2061 Q.No.2j What is the function of endocrine glands? [3]
243. 2060 Q.No.2e Draw a labeled L.S. of human kidney. [3]
244. 2060 Q.No.2f What are heart sounds? How are they produced? [3]
245. 2059 Q.No.2f Discuss the histological structure of human pancreas. [3]
246. 2059 Q.No.2g Draw a labelled sketch of internal ear of man. [3]
247. 2059 Q.No.2h Name the hormones produced by adrenal gland and state their functions. [3]
248. 2058 Q.No.2b Explain the phenomenon of reflex action. [3]
249. 2058 Q.No.2c List the functions of human kidney. [3]
250. 2058 Q.No.2f Distinguish between antigen and antibody. [3]
251. 2057 Q.No.2f How human heart beating starts? [3]
252. 2057 Q.No.2h What is the structure of adrenal gland? Name the hormones it produces. [3]
253. 2054 Q.No.2b Mention the function of pituitaries. [3]
254. 2053 Q.No. 3a Justify pancreas as exocrine and endocrine gland. [3]
255. 2053 Q.No. 3b Mention the function of male sex hormone. [3]
256. 2052 Q.No. 3c What is endocrine gland? Give the list of major endocrine glands. [3]

Differentiate between following [3 marks]

257. 2056 Q.No. 3f Thyroxine hormone triggers the rate of metamorphosis. [4] [3]
258. 2054 Q.No. 4d Thyroid gland and Thymus gland

Discuss the following [4 marks]

259. 2056 Q.No. 3f Thyroxine hormone triggers the rate of metamorphosis. [4]
260. 2055 Q.No.2a Structure of the Thyroid gland. [4]

Explain the following, each one in a short paragraph [4 marks]

261. 2055 Q.No. 3a Pituitary gland is referred to as "Master Gland". Why? [4]

Long Answer Questions

262. 2077 Set J Q.No. 3 Describe pituitary gland and various hormones produced by it with their functions. [7]
263. 2077 Set K Q.No. 3 Discuss the physiology of respiration in human beings. [7]
264. 2076 GIE Set A Q.No. 3 Describe the alimentary canal of human with well labeled diagram. [7.5]
265. 2076 GIE Set A Q.No. 4 Discuss the physiology of urine formation in human beings with composition of urine. [8]
266. 2076 Set B Q.No. 3 Describe the structure and functions of different parts of human brain. [7.5]
267. 2076 Set B Q.No. 3 OR Give an account of the process of urine formation in human being. [7.5]
268. 2076 Set C Q.No. 3 Describe the structure and function of uriniferous tubule with labeled diagram. [7.5]
269. 2076 Set C Q.No. 3 OR Describe the structure of female reproductive organs with menstrual cycle in human being. [7.5]
270. 2075 GIE Q.No. 3 Describe the structure and functions of pituitary gland. [7.5]
271. 2075 GIE Q.No. 3OR Give an account of the process of urine formation in human being. [7.5]
272. 2075 Set A Q.No. 3 Define homeostasis. Explain the mechanism of urine formation in human body. [7.5]
273. 2075 Set A Q.No. 3 OR Give a detailed account of male reproductive organ of man. [7.5]
274. 2075 Set B Q.No. 3 Describe the structure and functions of an adrenal gland. [7.5]
275. 2075 Set B Q.No. 3 OR Describe the structure of a nephron giving its working mechanism. [7.5]
276. 2074 Supp Q.No. 3 Give an account on human alimentary canal. [7.5]

277. 2074 Supp Q.No. 4 Describe the physiology of respiration. [8]
278. 2074 Set A Q.No. 3 Define aerobic respiration. Explain the mechanism of respiration in human being. [7.5]
279. 2074 Set A Q.No. 3OR What is myogenic heart? Describe the internal structure of human heart with labelled diagram. [7.5]
280. 2074 Set B Q.No. 3 Describe the origin and conduction of heart beat with necessary diagram. [7.5]
281. 2074 Set B Q.No. 3OR Describe the structure of human eye with well labelled diagram. [7.5]
282. 2073 Supp Q.No. 3 Give an account of the structure and function of human ear. [7.5]
283. 2073 Supp Q.No. 3OR Describe female reproductive system in human being. [7.5]
284. 2073 Set C Q.No. 3 What is aerobic respiration? Describe pulmonary respiration in human with suitable diagram. [7.5]
285. 2073 Set C Q.No. 4 Describe the structure and function of human brain with well labelled diagram. [8]
286. 2073 Set D Q.No. 3 Describe the structure of human eye.[7.5]
287. 2073 Set D Q.No. 3 OR Describe female reproductive system in human. [7.5]
288. 2072 Supp. Q.No. 3 Explain the structure of human ear. [7.5]
289. 2072 Supp. Q.No. 3 OR Describe the structure and function of human heart. [7.5]
290. 2072 Set C Q.No. 3 Give a detailed account of male reproductive organs of man. [7.5]
291. 2072 Set C Q.No. 3 or What are myogenic hearts? Explain origin and conduction of heart beat in human being. [7.5]
292. 2072 Set D Q.No. 3 Describe the alimentary canal of Human with labelled diagram. [7.5]
293. 2072 Set D Q.No. 4 Discuss the transmission of nerve impulse with well labelled diagram. [8]
294. 2072 Set E Q.No. 3 Describe the structure and function of Human Heart with labelled diagram. [7.5]
295. 2072 Set E Q.No. 3 or Describe the physiology of digestion in Human being. [7.5]
296. 2071 Supp. Q.No. 3 Describe the process of food digestion in human beings. [7.5]
297. 2071 Supp. Q.No. 4 or Give the account of the structure and working mechanism of human heart. [8]
298. 2071 Set C Q.No. 3 OR Describe female reproductive system of human being. [7.5]
299. 2071 Set C Q.No. 4 Given the structure and working mechanism of human heart. [8]
300. 2071 Set D Q.No. 3 Describe the structure and functions of brain. [7.5]
301. 2071 Set D Q.No. 3 OR Discuss about the male reproductive organs of human being. [7.5]
302. 2070 Supp. Q.No. 3 Discuss about the structure and working of human heart. [7.5]
303. 2070 Supp. Q.No. 4 Give an account of digestive system of man. [8]
304. 2070 Set C Q.No. 3 Describe the respiratory organs of man[7.5]
305. 2070 Set C Q.No. 3 or Give an account of Alimentary canal of man. [7.5
306. 2070 Set D Q.No. 3 Describe the respiration in human beings with suitable diagrams. [7.5]
307. 2070 Set D Q.No. 4 Discuss the physiology of digestion in human beings. [8]
308. 2069 Q.No. 3 Describe the structure and functions of human brain. [7.5]
309. 2069 Q.No. 4 Give an account of the process of Urine formation in human being. [8]
310. 2068 Q.No. 3 Explain the course of blood circulation in the human heart with the help of neat and well labeled diagram. [7.5]
311. 2068 Q.No. 4 Give an account of the retina in human eye, and mention its working mechanism. [8]
312. 2067 Q.No. 3a Describe the pulmonary respiration and mechanism of breathing in human being. [7.5]
313. 2066 Q.No. 4 Give an account of the structure and function of human brain. [8]
314. 2065 Q.No. 4 Describe the digestive organs of man with the help of well labelled diagram. [8]
315. 2064 Q.No. 4 Explain the course of blood circulation in the human heart with well labelled diagram. [10]
316. 2063 Q.No. 4 Discuss the processes of urine formation in a nephron. [8]
317. 2063 Q.No. 4 OR Give an account of the structure and functions of human ear. [10]
318. 2062 Q.No. 4 Describe the human alimentary canal and process of digestion with neat diagram. [10]
319. 2061 Q.No. 4 What is respiration? Describe the respiratory system of human being. [10]
320. 2060 Q.No. 4 Write an account of the structure and working of human heart. [10]
321. 2059 Q.No. 4 Discuss the internal structure of human lung and mention its working mechanism. [5+2]
322. 2058 Q.No. 3 Describe the fertilization process in human beings. [7]
323. 2058 Q.No. 3 OR Write the basic features of digestive system in mammals. Draw a well labeled diagram of alimentary canal of man. [5+2]
324. 2058 Q.No. 5 Draw a well-labeled sketch of structure of human heart. [7]
325. 2057 Q.No. 4 Write an account of the structure of mammalian kidney. How it acts as homeostatic organ? [5+5]

B. Human Population

Very Short Answer Questions [1 mark]

1. 2077 Set K Q.No. 1b What does it mean by window period in AIDS? [1]
2. 2076 GIE Set B Q.No. 1d Which part of the brain functions as endocrine gland? [1]
3. 2076 GIE Set B Q.No. 1e What are psychedelic drugs? [1]
4. 2073 Set D Q.No. 1e How would you define psychotropic drugs? [1]
5. 2072 Set E Q.No. 1f Give full form of IUD. [1]
6. 2070 Set C Q.No. 1 d Define population. [1]
7. 2069 Q.No. 1e What do you understand by the term census?[1]

8. 2060 Q.No. 1c What do you mean by natality rate? [1]
9. 2058 Q.No. 1j What is demography? [1]

Answer all in brief [3 marks]

10. 2077 Set R Q.No. 2b Illustrate mechanism of hearing. [3]
11. 2076 GIE Set A Q.No. 2c Illustrate the mechanism of breathing in man. [3]
12. 2076 GIE Set B Q.No. 2c What disease is caused by the deficiency of iron? [3]
13. 2076 GIE Set B Q.No. 2f Write about Hepatities 'B'. [3]
14. 2076 Set B Q.No. 2g Population growth curves. [3]
15. 2075 GIE Q.No. 2f The problems of population explosion. [3]
16. 2075 Set B Q.No. 2f Various problems of over population. [3]
17. 2074 Set A Q.No. 2c Enlist the control measures of human population growth. [3]
18. 2074 Set B Q.No. 2c What is Malthus theory of human population? Discuss the consequences of overpopulation. [3]
19. 2073 Supp Q.No. 2g Describe the measures of family planning. [3]
20. 2072 Supp. Q.No. 2d Write down the causes of population growth. [3]
21. 2073 Set C Q.No. 2f Discuss methods of control of over population. [3]
22. 2071 Supp. Q.No. 1g Malthus theory of population growth. [3]
23. 2071 (Set D) Q.No. 2 e Discuss on problems of over human population. [3]
24. 2070 Supp. Q.No. 2 g The various factors controlling population growth. [3]
25. 2070 Set C Q.No. 2 c Discuss the control measures of over population. [3]
26. 2069 Q.No. 2g The trends of human population growth. [3]
27. 2067 Q.No. 2c Write short note on control measures of human population growth. [3]
28. 2066 Q.No.2 b Write the consequences of overpopulation. [3]
29. 2065 Q.No.2 e Meaning of carrying capacity and causes of population growth. [3]
30. 2064 Q.No.2i Differentiate between J-shaped and S-shaped curves. [3]
31. 2062 Q.No.2g What are the disadvantages of over population? [3]
32. 2061 Q.No.2g Discuss about the over population of human beings. [3]
33. 2057 Q.No.2g Discuss the consequences of over human population. [3]

Long Questions

34. 2077 Set J Q.No. 3 OR Describe the causative agent, mode of transmission, symptoms, control and preventive measures of AIDS. [7]
35. 2077 Set K Q.No. 3 OR Describe causative agents symptoms, mode of transmission and control of typhoid. [7]
36. 2077 Set R Q.No. 3 Describe the structure and function of human heart with its working mechanism. [7]
37. 2077 Set R Q.No. 3 OR Describe the various aspects of cancer with its control and preventive measures. [7]
38. 2076 GIE Set A Q.No. 3 OR Discuss the causative agent, mode of transmission, symptoms and control measures of AIDS in Nepal. [7.5]
39. 2076 GIE Set B Q.No. 3 Describe Alimentary Canal of man. [7.5]
40. 2076 GIE Set B Q.No. 3 OR Discuss the origin and conduction of heart beat. [7.5]
41. 2071 (Set C) Q.No. 3 Discuss about the human population growth, problems of over population and control strategies. [7.5]
42. 2060 Q.No. 4 OR Discuss the human population growth, problems of over population and control strategies. [7.5]

C. Disease

Very Short Answer Questions [1 mark]

1. 2076 GIE Set B Q.No. 1j How would you define pollution? [1]
2. 2076 Set B Q.No. 1i Why do drug addicts suffer from AIDS? [1]
3. 2076 Set B Q.No. 1j Hepatitis is more dangerous than AIDS, why? [1]
4. 2076 Set C Q.No. 1f Write full form of ELISA. [1]
5. 2076 Set C Q.No. 1g Why and when was TB declared as world emergency? [1]
6. 2075 GIE Q.No. 1c What is pellagra? [1]
7. 2075 GIE Q.No. 1i Give the meaning of "window period" in AIDS. [1]
8. 2075 Set A Q.No. 1e Define the term drug abuse. [1]
9. 2075 Set A Q.No. 1j Write the full form of LSD and COPD. [1]
10. 2074 Set A Q.No. 1f Which disease is caused due to deficiency of vitamin C? [1]
11. 2074 Set A Q.No. 1g Define passive smoking. [1]
12. 2073 Supp Q.No. 1e How would you define narcotics? [1]
13. 2073 Set C Q.No. 1g What is carcinogen? Give two examples. [1]
14. 2073 Set C Q.No. 1h What is vaccine? [1]
15. 2073 Set D Q.No. 1i What is pathogen? [1]
16. 2072 Supp. Q.No. 1c Give the causative agent of Typhoid fever. [1]
17. 2072 Supp. Q.No. 1f What are psychedelic drugs? [1]
18. 2072 Supp. Q.No. 1g Define immunosuppressant. [1]
19. 2072 Set C Q.No. 1f Mention the incubation period of Hepatitis 'B'. [1]
20. 2072 Set C Q.No. 1h How would you define drug? [1]
21. 2072 Set C Q.No. 1i Name a drug that gives boundless energy. [1]
22. 2072 Set D Q.No. 1b Which drugs are obtained from hemp plant? [1]
23. 2072 Set D Q.No. 1g Name carcinogen present in tobacco. [1]
24. 2072 Set E Q.No. 1g What is metastasis? [1]
25. 2071 Supp. Q.No. 1e Why a drunk person should not drive? [1]
26. 2071 (Set D) Q.No. 1 e Name the causative agent of typhoid. [1]
27. 2071 (Set D) Q.No. 1 i Give the cause of myopia. [1]
28. 2070 Supp. Q.No. 1 c Give the mode of transmission of hepatitis B. [1]

2070 Set C Q.No. 1 g Define malignant tumor. [1]
2070 Set C Q.No. 1 h What is the incubation period of hepatitis 'A'? [1]
2066 Q.No. 1h Name two diseases caused by deficiency of vitamin A. [1]
2067 Q.No. 1i What is Toxoid? Give example. [1]
2067 Q.No. 1j Why in Hepatitis dangerous than AIDS. [1]
2064 Q.No. 1h What is the full form of AIDS? [1]
2062 Q.No. 1i What are the causative agents of tuberculosis? [1]
2061 Q.No. 1i What are the causative agents of typhoid? [1]
2058 Q.No. 1f What are psychotropic drugs? [1]

Answer in Brief [3 marks]

2076 Set C Q.No. 2g Write down the mode of the transmission of Hepatitis B. [3]
2074 Set A Q.No. 2d Discuss the reasons of drug abuse and control measures to prevent it. [3]
2074 Set B Q.No. 2f Define addiction. Discuss the different types of drugs and their effects. [3]
2073 Set C Q.No. 2e Write on control and prevention of smoking. [3]
2073 Set D Q.No. 2f Write a note on hepatitis. [3]
2072 Supp. Q.No. 2f Give a brief account of 'Kala-Azar'. [3]
2072 Set E Q.No. 2c The short and long term effects of use of tobacco. [3]
2071 (Set C) Q.No. 2 d Discuss different diseases caused by malnutrition. [3]
2071 (Set C) Q.No. 2 f Give the symptoms and control methods of tuberculosis. [3]
2071 (Set D) Q.No. 2 g Write notes on hepatitis B. [3]
2070 Set C Q.No. 2 g Mention the health hazards of tobacco smoke. [3]
2070 Set D Q.No. 2 b Ill effects of alcohol on health. [3]
2066 Q.No.2 e Write a note on smoking. [3]
2064 Q.No.2j Elaborate about the control of smoking. [3]
2063 Q.No.2c Differentiate between benign and malignant tumour. [3]
2062 Q.No.2j Elaborate about the causes of typhoid. [3]
2060 Q.No.2c "AIDS is very common among drug addicts." Discuss. [3]
2058 Q.No.2g Explain the major causes of cancer. [3]

Long Answer Questions

2076 GIE Set B Q.No. 4 What is socially significant disease? Discuss about alcoholism. [8]
2076 Set B Q.No. 4 What is addiction? Discuss the symptoms, effects and control measures of alcohol addiction in detail. [8]
2076 Set C Q.No. 4 Describe the causative agent, mode of transmission, symptoms, control and prevention of Typhoid. [8]
2075 GIE Q.No. 4 Explain sources and biological effects of different categories of drugs. [8]
2075 Set A Q.No. 4 Define AIDS? Mention its causative organism, mode of transmission, symptoms, diagnosis treatment and preventive measures. [8]
2075 Set B Q.No. 4 Explain the sources and effects of different types of drugs on health. [8]
2074 Supp Q.No. 3 OR What is cancer? Discuss the cause and treatment of cancer. [7.5]
2074 Set A Q.No. 4 What are communicable diseases? Discuss the causative agent, mode of transmission, incubation period, symptoms, diagnosis, control and preventive measures of tuberculosis. [8]
2074 Set B Q.No. 4 Discuss the different stages, causative agents, symptoms, treatment and types of cancer. [8]
2073 Supp Q.No. 4 Give a detailed account of any bacterial disease you have studied. [8]
2073 Set C Q.No. 3 OR Discuss the causative agent, mode of transmission, symptoms, control and prevention of Ascariasis in the context of Nepal. [7.5]
2073 Set D Q.No. 4 Discuss causative agent, symptoms, method of diagnosis, mode of infection and preventive and control measures of Tuberculosis. [8]
2072 Supp. Q.No. 4 What is cancer? Discuss its causes, types, symptoms, control measures, diagonosis and treatment. [8]
2072 Set C Q.No. 4 Discuss the causative agent, mode of transmission, symptoms, diagnosis and control measures of Tuberculosis. [8]
2072 Set D Q.No. 3 OR Describe Tuberculosis as world emergency with causative agent, mode of transmission, symptoms and control measures. [7.5]
2072 Set E Q.No. 4 Describe the causative agent, epidemiology, symptoms and control of Tuberculosis. [8]
2071 Supp. Q.No. 4 What is AIDS? Write what you know about the AIDS. [8]
2071 (Set D) Q.No. 4 What are communicable diseases? Describe the causative agents, symptoms, effects and control measures of any one communicable disease you have studied. [8]
2070 Supp. Q.No. 4 OR Describe the causes and symptoms of the following diseases: Typhoid, Tuberculosis, Cancer and AIDS. [8]
2070 Set C Q.No. 4 Discuss causative agent, incubation period, affected organs, mode of transmission, symptoms, prevention and control measures of AIDS. [8]
2070 Set D Q.No. 3 Or Write, what you know about the AIDS? [7.5]
2069 Q.No. 4OR Write an essay on socially significant diseases. [8]
2068 Q.No. 4 or What is cancer? Discuss its types, causes, symptoms, control measure, diagnosis and treatment. [8]
2067 Q.No. 3a Or Describe the causative agent, mode of transmission and control measure of typhoid. [4]

80. 2066 Q.No. 4 OR What is DOTS? Discuss the causative agent, symptoms, effect and control measures of tuberculosis. [8]
81. 2065 Q.No. 4 OR What is AIDS? Mention its causative organism, mode of transmission, symptoms, diagnosis, treatment and preventive measures. [8]
82. 2064 Q.No. 4 OR What are communicable diseases? Elaborate about the causative agents, symptoms, effects and controlling measures of tuberculosis. [10]
83. 2062 Q.No. 4 OR What is cancer? Discuss the causes and treatment of cancer and also mention one major cancer in man and woman each. [10]
84. 2061 Q.No. 4 OR Define AIDS, and elaborate about its origin, causative agents, mode of transmission and controlling measures. [10]
85. 2059 Q.No. 4 OR What is addiction? Discuss the symptoms, effects and control measures of alcohol addition. [10]
86. 2058 Q.No. 4 OR What is 'DOTS'? Describe causal organism, symptoms, transmission and preventive measures of tuberculosis. [1+1+2+2+4]
87. 2057 Q.No. 4 OR What are communicable diseases? Discuss the causative agents, symptoms, effects and control measures of any one communicable disease you have studied. [2+1+2+2+3]

UNIT 4: APPLICATION OF BIOLOGY

Very Short Answer Questions [1 mark]

1. 2077 Set J Q.No. 1c Why is fish farming suitable for Nepal? [1]
2. 2077 Set R Q.No. 1c How is psychedelic drug different from psychotropic drug? [1]
3. 2076 GIE Set A Q.No. 1h What and when was the first antibiotic invented? [1]
4. 2076 GIE Set A Q.No. 1i Keratoplasty is highly successful. Why? [1]
5. 2076 GIE Set A Q.No. 1j Mention the benefit of animal husbandry. [1]
6. 2076 GIE Set B Q.No. 1f What is immunity? [1]
7. 2076 GIE Set B Q.No. 1g Why is amniocentesis normally banned these days? [1]
8. 2076 GIE Set B Q.No. 1h What is fingerling? [1]
9. 2076 GIE Set B Q.No. 1i Who discovered first antibiotic? [1]
10. 2076 Set B Q.No. 1e What is vaccine? Name their types. [1]
11. 2076 Set B Q.No. 1f Give limitations of organ transplantation. [1]
12. 2076 Set C Q.No. 1h What do you mean by allograft? [1]
13. 2076 Set C Q.No. 1i Who invented the first Antibiotics? [1]
14. 2075 GIE Q.No. 1h Differentiate between vaccine and injection. [1]
15. 2075 GIE Q.No. 1j Define the term 'rejection'. [1]
16. 2075 Set A Q.No. 1g What is a Down's syndrome? [1]
17. 2075 Set A Q.No. 1h What do you mean by exotic fish? [1]
18. 2075 Set A Q.No. 1i Differentiate between autograft and isograft. [1]
19. 2075 Set B Q.No. 1h What is prophylaxis? [1]
20. 2075 Set B Q.No. 1i Give any two applications of vaccines. [1]
21. 2075 Set B Q.No. 1j What are immunosuppressants? [1]
22. 2074 Supp Q.No. 1h What is IVF technology? [1]
23. 2074 Supp Q.No. 1i What is meant by broad spectrum antibiotics? [1]
24. 2074 Set A Q.No. 1b Mention two main properties of antibiotics. [1]
25. 2074 Set A Q.No. 1c What is erythroblastosis fetails? [1]
26. 2074 Set A Q.No. 1d How is ammnicentesis misused? [1]
27. 2074 Set A Q.No. 1e Name any two indigenous fish of Nepal. [1]
28. 2073 Supp Q.No. 1h Give the meaning of surrogacy. [1]
29. 2073 Supp Q.No. 1i What do you mean by Antibiotics? [1]
30. 2073 Supp Q.No. 1j Name two commercially produced fish varieties. [1]
31. 2073 Set C Q.No. 1i What is xenograft? Mention its use. [1]
32. 2073 Set C Q.No. 1j What do you mean by poultry farming? [1]
33. 2073 Set D Q.No. 1h What do you mean by IVF Technology? [1]
34. 2073 Set D Q.No. 1j What are two popular varieties of fishes in Nepal? [1]
35. 2072 Supp. Q.No. 1i What is test tube baby? [1]
36. 2072 Supp. Q.No. 1j Define about the significance of poultry farming. [1]
37. 2072 Set C Q.No. 1e What is antibiotics? [1]
38. 2072 Set C Q.No. 1g Why is amniocentesis banned? [1]
39. 2072 Set C Q.No. 1j Define significance of poultry farming. [1]
40. 2072 Set D Q.No. 1e Which analysis is carried out to find the sex of unborn baby? [1]
41. 2072 Set D Q.No. 1h What is xenograft? [1]
42. 2072 Set D Q.No. 1j Why is surrogacy banned in some countries? [1]
43. 2072 Set E Q.No. 1h How is test tube baby different from normal baby? [1]
44. 2072 Set E Q.No. 1i Name two indigenous fishes found in Nepal. [1]
45. 2071 Supp. Q.No. 1f Give the reason to develop test-tube baby technique. [1]
46. 2071 Supp. Q.No. 1g Name the first antibiotic. [1]
47. 2071 Supp. Q.No. 1h Define second generation vaccines. [1]
48. 2071 Supp. Q.No. 1i Define xenograft with example. [1]
49. 2071 Supp. Q.No. 1j Give two advantages of amniocentesis technique. [1]
50. 2071 (Set C) Q.No. 1 g Who extracted penicillin for the first time? [1]
51. 2071 (Set C) Q.No. 1 h Define the term immunity. [1]
52. 2071 (Set C) Q.No. 1 i What do you mean by extensive fish farming? [1]
53. 2071 (Set C) Q.No. 1 j What are pullets? [1]

64. 2071 (Set D) Q.No. 1 f Differentiate between autograft and heterograft. [1]
65. 2071 (Set D) Q.No. 1 g What is the role of Surrogate mother? [1]
66. 2071 (Set D) Q.No. 1 j What is integrated fish farming? [1]
67. 2070 Supp. Q.No. 1 d At what stage an embryo is implanted in the uterus to apply the test-tube baby technique. [1]
68. 2070 Supp. Q.No. 1 g Who discovered the first antibiotic? [1]
69. 2070 Supp. Q.No. 1 i Define allograft with example. [1]
70. 2070 Supp. Q.No. 1 j Name first test-tube baby with date. [1]
71. 2070 Set C Q.No. 1 f What is antigen? [1]
72. 2070 Set C Q.No. 1 j What do you mean by vaccination? [1]
73. 2070 Set D Q.No. 1 j What do you mean by vaccination? [1]
74. 2069 Q.No. 1i Define immunity. [1]
75. 2068 Q.No. 1i What is called brooding? [1]
76. 2068 Q.No. 1j What do you mean by surrogate mother? [1]
77. 2067 Q.No. 1f Who invented penicillin and when? [1]
78. 2067 Q.No. 1g What do you understand by poultry farming? [1]
79. 2067 Q.No. 2e Give brief account of antibiotics. [1]
70. 2067 Q.No. 2f Discuss the significance of Amniocentesis in brief. [1]
71. 2066 Q.No. 1 f At what period amniocentasis is done? [1]
72. 2066 Q.No. 1 g What is the role of immunosuppresant in organ transplantation? [1]
73. 2065 Q.No. 1 f What is ELISA test? [1]
74. 2065 Q.No. 1 g Write the meaning of surrogate mother. [1]
75. 2062 Q.No. 1k What is antigen? [1]
76. 2059 Q.No. 1m Give the meaning of amniocentesis. [1]
77. 2059 Q.No. 1n Mention any two chief properties of antibiotics. [1]
78. 2057 Q.No. 1l Mention any two chief uses of antibiotics. [1]

Answer all in brief. [3 marks]

79. 2077 Set J Q.No. 2c Why is poultry farming important for Nepalese society? [3]
80. 2077 Set K Q.No. 2b Discuss the artificial respiration and its importance. [3]
81. 2077 Set K Q.No. 2c IVF technology in boon for human being. Justify. [3]
82. 2077 Set R Q.No. 2c Discuss the scope of fish farming in Nepal. [3]
83. 2076 GIE Set A Q.No. 2d Write down the ill effects of alcohol on health. [3]
84. 2076 GIE Set A Q.No. 2e Mention the consequences of over population. [3]
85. 2076 GIE Set A Q.No. 2f Write short note on surrogacy. [3]
86. 2076 GIE Set A Q.No. 2g Give brief account on vaccines. [3]
87. 2076 GIE Set B Q.No. 2d List the types of fish ponds. [3]
88. 2076 GIE Set B Q.No. 2e Give a brief account of merits and demerits of pesticides. [3]
89. 2076 GIE Set B Q.No. 2g Give a brief account of organ transplantation. [3]
90. 2076 Set B Q.No. 2f The role of mother in a test tube baby. [3]
91. 2076 Set C Q.No. 2f Discuss significance of surrogacy. [3]
92. 2075 GIE Q.No. 2g The advantages of poultry farming. [3]
93. 2075 Set A Q.No. 2f Vaccine and their types. [3]
94. 2075 Set A Q.No. 2g Poultry farming in Nepal. [3]
95. 2075 Set B Q.No. 2g Advantages of fish farming. [3]
96. 2074 Supp Q.No. 2f Write note on poultry farming. [3]
97. 2074 Supp Q.No. 2g What is vaccination? Describe their types. [3]
98. 2074 Set B Q.No. 2e Define organ transplantation and discuss its different types. [3]
99. 2073 Supp Q.No. 2e Discuss the scope of fish farming in Nepal. [3]
100. 2073 Supp Q.No. 2f Write a short note on vaccines. [3]
101. 2073 Set C Q.No. 2g Explain advantages of fish farming in Nepal. [3]
102. 2073 Set D Q.No. 2e Give a short note on poultry farming in Nepal. [3]
103. 2073 Set D Q.No. 2g Discuss the merits and demerits of amniocentesis. [3]
104. 2072 Supp. Q.No. 2c Mention the scope of fish farming. [3]
105. 2072 Set C Q.No. 2c Explain the role of surrogate mother. [3]
106. 2072 Set C Q.No. 2g Discuss the advantages of fish farming. [3]
107. 2072 Set D Q.No. 2g The advantages of pisciculture in Nepal. [3]
108. 2072 Set E Q.No. 2d Note on vaccine. [3]
109. 2071 (Set D) Q.No. 2 f Define amniocentesis, mention its merits and demerits too. [3]
110. 2071 (Set C) Q.No. 2 g Discuss the advantages and drawbacks of test tube baby. [3]
111. 2070 Set C Q.No. 2 b Write a note on poultry farming. [3]
112. 2070 Set C Q.No. 2 f Discuss the benefit of organ transplantation. [3]
113. 2070 Set D Q.No. 2 d The importance of poultry farming in Nepal. [3]
114. 2070 Set D Q.No. 2 f Advantages of organ transplantation. [3]
115. 2069 Q.No. 2f Advantage and disadvantage of amniocentesis. [3]
116. 2068 Q.No. 2e What are vaccines? Describe their types. [3]
117. 2068 Q.No. 2f About the scope of fish farming in Nepal. [3]
118. 2065 Q.No.2 d Amniocentesis. [3]
119. 2062 Q.No.2e Write a note on amniocentesis. [3]
120. 2061 Q.No.2h What is the benefit of organ transplantation? [3]
121. 2057 Q.No.2f Write a note on organ transplantation. [3]

YEARWISE QUESTIONS

2077 (Set J)

Time: 1:30 hrs. **Full Marks (Condense): 30**

Group 'A'
Botany

Attempt all questions.

1. **Answer in short on any two.** [2×1=2]
   a. Define cross pollination.
   b. Name two plants in which vegetative propagation takes place by modified root.
   c. What is farmyard manure?
2. **Describe in brief on any two.** [2×3=6]
   a. Describe the physiological effects of auxin on plants.
   b. Describe the double helical structure of Watson and Crick model of DNA.
   c. Describe the application of fermentation technology in industries.
3. What is transpiration? Give an account of the structure of stomata and its working mechanism during transpiration. [7]
   OR
   Describe semi-conservative method of DNA replication.

Group 'B'
Zoology

Attempt all questions.

1. **Answer in short on any two.** [2×1=2]
   a. Write one important character of cardiac muscle.
   b. What is collip's hormone?
   c. Why is fish farming suitable for Nepal?
2. **Describe in brief on any two.** [2×3=6]
   a. Discuss the process of fertilization in frog.
   b. Describe artificial pace maker and its importance.
   c. Why is poultry farming important for Nepalese society?
3. Describe pituitary gland and various hormones produced by it with their functions. [7]
   OR
   Describe the causative agent, mode of transmission, symptoms, control and preventive measures of AIDS.

2077 (Set K)

Time: 1:30 hrs. **Full Marks (Condense): 30**

Group 'A'
Botany

Attempt all questions.

1. **Answer in short on any two.** [2×1=2]
   a. Define anatomy.
   b. What is callus?
   c. Define photo phosphorylation.
2. **Describe in brief on any two.** [2×3=6]
   a. Differentiate between the xylem and phloem tissues.
   b. Describe the types of RNA.
   c. Describe the application of genetic engineering in agriculture.
3. Describe the internal structure of dicot stem with its salient features and compare it with monocot stem. [7]
   OR
   What is mutation? Describe its types and their role in evolution.

Group 'B'
Zoology

Attempt all questions.

1. **Answer in short on any two.** [2×1=2]
   a. When is the first heart sound produced?
   b. What is the function of sympathetic nervous system?
   c. How is psychedelic drug different from psychotropic drug?
2. **Describe in brief on any two.** [2×3=6]
   a. Differentiate between compact bone and spongy bone.
   b. Illustrate mechanism of hearing.
   c. Discuss the scope of fish farming in Nepal.
3. Describe the structure and function of human heart with its working mechanism. [7]
   OR
   Describe the various aspects of cancer with its control and preventive measures.

2077 (Set R)

Time: 1:30 hrs. **Full Marks (Condense): 30**

Group 'A'
Botany

Attempt all questions.

1. **Answer in short on any two.** [2×1=2]
   a. Define guttation.
   b. What is criss-cross inheritance?
   c. Define hybridization.
2. **Describe in brief on any two.** [2×3=6]
   a. Structure and function of collenchyma.
   b. Explain the Mendel's law of dominance with chart.
   c. Mention the importances of vegetative propagation with examples.
3. Describe the anatomy of monocot stem with its salient features and compare it with dicot stem. [7]
   OR
   Describe the Griffith's Bacterial transformation experiment to show that DNA is a genetic material.

Group 'B'
Zoology

Attempt all questions.

1. **Answer in short on any two.** [2×1=2]
   a. Name sensory cranial nerves.
   b. What does it mean by window period in AIDS?
   c. What do you understand by carrying capacity?
2. **Describe in brief on any two.** [2×3=6]
   a. Differentiate between ligament and tendon.
   b. Discuss the artificial respiration and its importance.
   c. IVF technology in boon for human being. Justify.
3. Discuss the physiology of respiration in human beings. [7]
   OR
   Describe causative agents symptoms, mode of transmission and control of typhoid.