ADAMJEE GOVT. SCIENCE COLLEGE

PRELIMINARY EXAMINATION– 2026

(BOTANY PAPER – II)

Max Marks: 40

BOTANY (THEORY) (Science Pre- Medical Group)

SECTION 'A'

Time: 15 minutes (Multiple Choice Questions) – (M.C.Qs) Marks: 08

Note: i. This section consists of 16 part questions and all are to be answered. Each question carries ½ mark.

ii. Do not copy the part questions in your answer book. Write only the answer in full against the proper number of the question and its part.

Q.1 Choose the correct answer for each from the given option:

i. The Chromosomal theory of heredity was proposed by:
*Watson *Griffth *Fleming *Chase

ii. The holandric gene is located on the:
*X Chromosome *Y-Chromosome *Autosome *Giant Chromosome

iii. The coding region of DNA are called
*Intron *Exons *Genetic Code *Splicing

iv. IPV vaccine is used for
*Polio *Measles *Aids *Hepatitis

v. The fungus that gives dough its puffed appearance is:
*Lacto bacillus *Saccharomyces *E-coli *Penicilium

vi. The significance of PCR is
*Detecting protein *Creating GMO *Enzyme synthesis *Amplifying DNA fragment

vii. Archaeopteryx is a connecting link between:
*Amphibians and Reptiles *Reptile and Aves
*Fish and Aves *Fish and Amphibian

viii. The nitrogenous base present only in RNA is:
*Adenine *Guanine *Uracil *Cytosine

ix. Blood grouping is an example of:
*Multiple Alleles *Epistasis *Incomplete dominance *Test cross

x. The process of crossing a hybrid with one of its parents is called:
*Selection *Back cross *hybridization *Epistasis

xi. The pioneers in Xerarch succession are:
*Foliose Linchens *Mosses *Crustose Lichen *Shrubs

xii. A change in the DNA sequence is called:
*Gene pool *Mutation *Crossing over *Genome

xiii. Theory of Natural selection lacks:
*Biogeography *Genteic *Anatomy *Molecular biology

xiv. Plants that grow in salt marshes are called
*hydrophytes *Halophytes *Mesophytes *Xerophytes

xv. Down's syndrome is an example of
*Trisomic *Monosomic *Nullisonic *Disomic

xvi. Plants having staminate flowers cannot perform:
*Cross pollination *Selfpollination *Parthenocarpy *Double fertilization

ADAMJEE GOVT. SCIENCE COLLEGE

PRELIMINARY EXAMINATION– 2026

Time: 1hour 45 minutes **(BOTANY PAPER – II)** Marks: 32

BOTANY (THEORY) (Science Pre- Medical Group)

SECTION 'B'

(Short-Answer Questions) (16 Marks)

Q2. Attempt any eight part questions. Each question carries Two marks.

1. Name the major mechanisms of diseases management.
2. How does the protein synthesis differ in prokaryotes and eukaryotes?
3. What is mutation? Define the types of chromosomal mutation.
4. Briefly describe sickle cell anemia.
5. Why is vaccination important for infectious diseases?
6. How is Neo-Darwism different from Darwinism?
7. What is an ecological pyramid? Define the pyramid of energy.
8. What is a test cross? Explain with the help of a checker board.
9. Why is a person with "O" negative blood group considered a universal donor?
10. Why is haemophilia more common in males?
11. What do you understand by RFLPS?
12. Briefly describe the process of denitrification.
13. Enlist the enzymes used in DNA technology.
14. Describe the role of Microbes in sewage treatment.
15. Why can Rh incompatibility be dangerous for the developing foetus and the mother.

SECTION "C"

(Detail Answer Question) 16 Marks

Attempt any two questions from this section.

Q3. Explain the law of independent Assortment with the help of checker board.

Q4. Describe the chemical and ultrastructure of chromosome.

OR

Describe the latest techniques used to enhance crop and fruit yield.

Q5. Define succession? Describe Hydrarch succession in detail.

OR

What is gene expression? Describe the process of translation.

DJ SINDH GOVT. SCIENCE COLLEGE, KARACHI

Preliminary Examination 2026

Botany - XII

Friday 06-02-2026

Time allowed: 2 hours | For Science Pre Medical Group | Maximum Marks: 40

Time allowed: 15 minutes | ***SECTION 'A' (MULTIPLE CHOICE QUESTIONS) – (M.C.Qs.)*** | (*Marks : 08*)

NOTE: (i). This section consists of 18 questions-parts and all are to be answered. Each part question carries 0.5 mark.
(ii). The correct answer bubble must be filled on OMR sheet Ⓐ Ⓑ Ⓒ Ⓓ pasted in answer script.
(iii). Use only blue / black ball point pen or pointer and avoid using pencil / White-o pen on OMR sheet.

Q. 1. Choose the correct answer for each from the given options.

(i). Removal of floating solid and organic materials from the sewage is:

(a). Primary treatment (b). Secondary treatment (c). Tertiary treatment (d). No Treatment

(ii). Fungi that gives puff appearance to dough is called:

(a). Lactobacillus (b). Saccharomyces (c). E.coli (d). Penicillium

(iii). The significance of Polymerase Chain Reaction (PCR) is:

(a). Detecting Protein (b). Enzyme synthesis
(c). Creating GMO (d). For amplifying specific DNA fragment

(iv). Gel electrophoresis is a technique used to separate DNA fragments. Significance of this technique is to:

(a). Study gene expression (b). Sequencing DNA
(c). Identify genetic variation (d). Identify genetic disorder

(v). Genomic map are useful for:

(a). Identifying genes associated with specific disease (b). Creating genetically modified interaction
(c). Analyzing DNA methylation patterns (d). Detecting Protein-Protein interaction

(vi). The significance of Monoclonal antibodies is:

(a). Study gene expression (b). Diagnose diseases
(c). Genetically modified organisms (d). Develop new drugs

(vii). In plants, the source of carbon for carbon cycle is:

(a). Carbonate rock (b). Atmospheric carbon dioxide
(c). Fossil fuel (d). Sunlight

(viii). The pioneers in Xerarch succession are:

(a). Foliose lichens (b). Mosses (c). Crustose lichens (d). Shrubs

(ix). Theory of natural selection was lacking any support from:

(a). Biogeography (b). Genetics
(c). Comparative anatomy (d). Molecular biology

(x). Archaeopteryx is a connecting link between:

(a). Amphibians and Reptiles (b). Reptiles and Aves
(c). Aves and Mammals (d). Fish and Amphibians

(xi). The gene which interferes and masks the phenotype of non-locus gene:

(a). Mutant gene (b). Epistatic gene (c). Holandric gene (d). Sex-linked gene

(xii). A boy is color blind, which could be the genotype of his mother:

(a). X^NX^N (b). X^NX^c (c). X^cY (d). X^cX^c

(xiii). The allele of holandric gene is located at:

(a). X-Chromosomes (c). Y-Chromosomes
(b). Both X and Y Chromosomes (d). Autosomes

(xiv). International society of blood transfusion has found blood group system:

(a). 15 (b). 20 (c). 25 (d). More than 30

(xv). Plant having staminate flower can perform the following:

(a). Cross pollination (b). Self pollination
(c). Parthenocarpy (d). Double fertilization

(xvi). The Nitrogenous base present in RNA but not in DNA:

(a). Adenine (b). Guanine (c). Cytosine (d). Uracil

DJ SINDH GOVT. SCIENCE COLLEGE, KARACHI

Preliminary Examination 2026

Botany - XII

Friday 06-02-2026

Time allowed: 1 hrs. and 45 min. For Science Pre Medical Group Max Marks: 32

SECTION 'B' (SHORT-ANSWER QUESTIONS) (Marks : 16)

Q. 2. Answer any **eight** question-parts from this section. All questions carry equal marks. (i. e. 2 marks of each part).

(i). What are the causes and symptoms of Corona virus?

OR

Name the major mechanism of diseases management.

(ii). Define Speciation. Name different types of Speciation.

(iii). What is Test cross? Explain with the help of checker board.

(iv). Differentiate renewable and non-renewable resources.

OR

What is the role of DNA ligase in rDNA technology?

(v). Describe the process of denitrification.

(vi). What are leading and lagging strands of DNA during replication?

(vii). Why haemophilia is common in male?

(viii). Why Amp^R and Lac^z genes are used in construction of rDNA?

(ix). Why Mutation is not always harmful?

(x). Explain concept of trophic level.

(xi). Write a note on Tissue culture.

(xii). Write name of enzymes involved in replication of DNA and their function.

(xiii). Why 'O' negative blood group individuals considered as universal donor?

(xiv). Why endosymbiotic theory seems to be more powerful in dealing with the evolution of eukaryotes?

SECTION 'C' (DETAILED-ANSWER QUESTIONS) (Marks : 16)

NOTE: Attempt any **two** question from this section. Each questions carries 16 marks. Draw diagrams, where necessary.

Q.3. What is Succession? Describe Xerarch or Hydrarch succession.

Q.4. Describe latest techniques to enhance the crop and fruit yield.

OR

Explain gene amplification through PCR and mention any two applications.

Q.5. Define Mendel's law of Independent Assortment and explain with the help of checker board.

OR

Describe the process of Translation in gene expression.

Good Luck

GOVT. SUPERIOR SCIENCE COLLEGE

Shah Faisal Colony, Karachi

PRELIMINARY EXAMINATION 2026

9:15 a.m. 11:00 a.m. **BOTANY – II.** Max Marks: 32

SECTION – B
(SHORT-ANWERE QUESTIONS)-

Note: Attempt any **EIGHT** parts. Do not write more than 6 line to any answer: **(2 x 8 = 16Marks)**

Q # 2:

i. **Explain Endosymbiotic Theory.**

ii. **Why Hemophilia is common in humman male?**

iii. **Write note on any one of the following:** *** Multiple Alleles.** *** Tissue culture**

iv. **Differentiate between incomplete dominance and co dominance**

v. **Write different steps involved in Recombinant DNA technology.**

vi. **Write a note on crossing over.**

vii. **Difference between protein synthesis in prokaryotes and eukaryotes**

viii. **State four points of chromosomal theory of heredity.**

ix. **Differentiate between Nitrification and Denitrification**

x. **Write a note on Ecological pyramids.**

xi. **What is Test cross? Explain with the help of checker board.**

xii. **Do mutation is always harmful? Justify your answer.**

xiii. **How does energy flow between trophic level?**

xiv. **Why restriction enzyme are called molecular scissors?**

SECTION – C
(DETAILED-ANWERE QUESTIONS)-

Note: Attempt any **TWO** questions from this section. Draw diagram where necessary: **(8 x 2 = 16 Marks)**

Q # 3. Describe theory of Natural Selection in detail. **(OR)**

Explain gene amplification through polymerase chain reaction. Describe it's any two applications.

Q # 4. Explain in detail the process of DNA replication. **(OR)**

What is ecological succession? Describe Xerosere in detail.

Q # 5. Explain mechanism of Transcription in Protein Synthesis.

14/03/26

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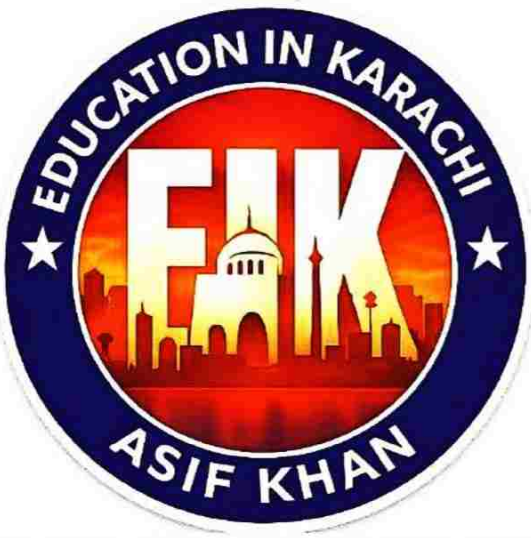
www.educationinkarachi.net



Sir Syed Govt. Girls College, Nazimabad.

Preliminary Examination 2026

Botany -II

Time: 2 hours. **Marks:40**

Section 'A' (MULTIPLE CHOICE QUESTIONS) Max. Marks:08

i. A population occupying the same geographical area but unable to mate called _____ speciation.
*Allopatric *Peripatric *Parapatric *Sympatric

ii. Children with muscular dystrophy face difficulty in standing out rising for standing and unable to move upto the age of 12.
*07 *13 *20 *25

iii. The traits expressed as dominant in one gender and recessive in other called _____.
*Sex linked trait * Sex Influenced trait *Holandric trait *X-linked trait

iv. A cross of heterozygous organism with its recessive parent called _____
*Test cross *Back cross *Monohybrid cross *Dihybrid Cross

v. *Mirobillus jalapa* (4o'clock plant) flower colour inheritance is an example of
*Dominance * Independent dominance
*Incomplete dominance *Co-dominance

vi. Exchange of chromosomal segments between non homologous chromosomes called:
*Linkage *Duplication *Inversion *Translocation

vii. Modification in mRNA before translation occurs in _____
*Bacteria *Archaebacteria *Cyanobacteria *Plants, Fungi and Animals

viii. Speed of DNA replication is _____ nucleotides per second.
*20-200 *40-400 *50-500 * 60-600

ix. The ozone layer is found in lower levels of the _____
*Troposphere *Stratosphere * Mesosphere * Thermosphere

x. UAG is _____ codon.
*Start codon *Stop codon *Anti-sense codon *Non-sense codon

xi. Kaposi's sarcoma (skin cancer) can be caused by:
*Biological mutagen *Physical mutagen *Chemical mutagen *UV radiations

xii. Main reservoir of water holds 97% of available water is:
*River *Ocean *Sea *Ditches

xiii. Exchange of genes between different populations of the same species called:
*Gene flow *Genetic drift *Natural selection *Speciation

xiv. _____ worked on Drisophila and get Noble prize in 1933.
*Mendel *Sutton *Watson and Crick *Morgan

xv. A person can clearly distinguish two colours called:
*Monochromatic *Dichromatic *Criss cross inheritance *Colour blind

xvi. In plants the source of carbon for carbon cycle is:
*Fossil fuel *Sunlight *Carbonate rock *Atmospheric Carbon dioxide

SECTION 'B' SHORT-ANSWER QUESTIONS. Max. Marks: 16

Note: Attempt any 08 part questions from this section. All questions carry equal marks:

2. i) Give the name of transgenic plants used to produce Biofuels.
ii) Differentiate between Renewable and Non-renewable Sources of Energy.
iii) What are the long term effects of global warming?
iv) Give a brief note on Sickle cell anemia or Genetic Code OR Why Mutation is not always harmful?
v) Enlist the enzymes use in rDNA technology. OR Give two advantages and disadvantages of Nuclear power.
vi) State the law of segregation also give ratio.
vii) Define monoclonal antibodies and their uses. OR What are conventional and non conventional sources of energy? Gives some examples.
viii) Write down the factors affecting Hardy-Weinberg theorem
ix) Why AmpR and Lac Z genes used in construction of rDNA? What are leading and lagging stands of DNA during replication?
x) What plant Mendel selected for his experiments and how that plant succeeded him in the field of genetics?
xi) Write name and functions of enzymes involved in replication of DNA.
xii) What is test cross? Explain with the help of checkerboard.
xiii) Give a cross between Normal male with normal carrier (colourblind) female. Also give phenotypic ratio in their children.
xiv) Why endosymbiotic theory seems to be more powerful in dealing with the evolution of eukaryotes? OR Explain the Co-dominance in Man with reference to example.
xv) Why haemophilia is common in males? OR Why O negative blood group individuals considered as universal donors?

Section 'C' (Detailed Answer Questions) Max Marks: 16

Note: Attempt any two questions from this section. All questions carry equal marks.

3. Describe the ultra-structure of chemical composition with diagram.OR Explain the Gene Amplification through PCR and Mention It's two examples
4. Prove with the help of experiments that DNA is a hereditary material. OR Describe the defects caused due to abnormal no. Of Chromosomes in Man.
5. Define Succession. Explain Hydrosere in detail. OR
Describe Mendel's 2nd Law of Independent Assortment of genes with reference to Double trait inheritance.

GOVERNMENT DEHLI INTER SCIENCE COLLEGE

Block 2, Hussainabad, F.B. Area Karachi.

Preliminary Examination – 2026

Botany Paper – II

Time: 15 Minutes Max. Marks: 08

SECTION "A" (MULTIPLE CHOICE QUESTION)

1. Choose the correct answer for each from the given options:

(i) The allele of holandric gene is located at

(A) X-Chromosome (B) Y-Chromosome (C) Autosome (D) None of these

(ii) Number of Chromosome in grass hopper male is

(A) 24 (B) 26 (C) 23 (D) 25

(iii) A protein which prevents the rebinding of complimentary strand during replication at fork is

(A) DNA helicase (B) Primase (C) SSB (D) Ligase

(iv) Small part of DNA which has information to synthesize specific polypeptide chain is

(A) Genome (B) Locus (C) Gene (D) Nucleotide

(v) Newly formed chromosome has two

(A) Chromatids (B) Heterologous (C) Centromere (D) Pairs

(vi) What is the significance of PCR technique?

(A) To sequence DNA (B) To study gene expression (C) To identify genetic disorder (D) All of them

(vii) The Pioneers in Xerarch succession are the

(A) Foliose lichens (B) Mosses (C) Crustose lichens (D) Shrubs

(viii) Which of the following cycle is not a gaseous type of cycle

(A) Carbon cycle (B) Oxygen cycle (C) Phosphorus cycle (D) Nitrogen Cycle

(ix) The theory on human population which inspired Darwin was proposed by

(A) Wallace (B) Lyell (C) Malthus (D) Hutton

(x) Archaeopteryx is a connecting link between

(A) Amphibia and reptiles (B) Reptiles and Aves.

(C) Aves and Mammals (D) Fish and amphibia

(xi) The Nitrogenous base present in RNA but not in DNA

(A) Adenine (B) Guanine (C) Cytosine (D) Uracil

(xii) Cloning of genes creates an identical copy of a DNA sequence. Cloning is significant because

(A) To create a transgenic organism (B) To diagnose genetic disorder

(C) To study gene function (D) All of them

(xiii) A boy is color blind, his mother genotype could be

(A) $X^N X^N$ (B) $X^N X^n$ (C) $X^N Y$ (D) $X^n Y$

(xiv) Theory of Natural Selection was lacking any support from

(A) Biogeography (B) Molecular Biology (C) Genetics (D) Comparative anatomy

(xv) What is the only source of energy for all ecosystems on earth.

(A) Water (B) Sun (C) Plants (D) Animals

(xvi) What is the significance of DNA SEQUENCING?

(A) To identify genetic variations (B) To create a transgenic organisms

(C) To study gene expression (D) All of these

GOVERNMENT DEHLI INTER SCIENCE COLLEGE

Block 2, Hussainabad, F.B. Area Karachi.

Preliminary Examination – 2026

Botany Paper – II

SECTION "B" SHORT ANSWERS' QUESTIONS (MARKS-16)

Q.2 Attempt any Eight part-questions from this section. All questions carry equal marks.

(i) Do introns are transcribed, and involved in translation.

(ii) Why Rh- incompatibility could be a danger to the developing foetus and mother.

(iii) Differentiate between (i) homologous and heterologous chromosomes (ii) Prokaryotes and Eukaryotes.

(iv) Discuss incomplete dominance with reference to *Mirabilis Jalapa*?

(v) Why O-negative blood group person considers as a universal donor?

(vi) Write a short note on Neo-Darwinism.

(vii) Discuss various levels of flow of energy in an ecosystem.

(viii) Why Mutation is not always harmful?

(ix) Discuss five points regarding authenticity of endosymbiotic theory?

(x) What do you understand by the "descent with modification"?

(xi) Describe Transgenic bacteria and animals?

(xii) Draw a Nitrogen Cycle?

(xiii) Define the following

(i) Micropropagation. (ii) Explants. (iii) Callus. (iv) Plantlets.

(xiv) Discuss Gene expression with its fundamental steps.

SECTION "C" (DETAILED ANSWERS' QUESTIONS) (16 Marks)

Note: Attempt Any TWO questions. All Parts Carry equal marks.

Q3) The process of DNA Replication is confined as semi conservative. Justify it in detail.

Q4) Explain gene amplification through PCR and mention any two applications.

OR

Discuss dominant Epistasis with respect to *Digitalis purpurea*.

Q5) Explain Succession in context to Hydrarch or Xerarch Succession?

PRACTICAL CENTRE

B-14, Block# 1, Gulshan-e-Iqbal, Karachi. Phone: 34976530-34812547-34984762

Comprehensive Examination - 2026

(According to the Syllabus of the Board of Intermediate Education, Karachi)

Time: 2 Hours **BOTANY (XII-GIRLS)** *Max. Marks: 40*

SECTION 'A' MULTIPLE CHOICE QUESTIONS (Marks-08)

Note: (i) This section consists of 16 questions and all are to be answered. Each question carries 1/2 Mark.

(ii) Do not copy the question in your answer book. Write only the answer in full against the proper number of the question and its part.

Q.1 Choose the correct answer for each from the given options.

i) Archaeopteryx is a connecting link between:
* Amphibian and reptiles * Reptiles and Aves
* Aves and mammals * Aves and pisces

ii) The coding region of a gene is called:
* Exon * Anti-sense strand * Intron * Promotor

iii) DNA wrapped around a histone octamer forms a unit called:
* Chromomere * Nucleosome * Centromere * Chromonema

iv) The International society of blood transfusion has identified blood group system about:
* 05 * 15 * more than 30 * 20

v) The mass of undifferentiated Plant cells is called:
* Phelloderm * Sap-wood * Callus * Heart-wood

vi) Cystic Fibrosis is a genetic disorder caused by a mutation in the gene:
* LAC' * ABCD[1] * CFTR * RFLP

vii) A person who has A and B antigens in saliva and other body secretions is called a:
* Non secretor * Universal donor * Secretor * Universal acceptor

viii) Organs that are similar in structure but different in function are termed:
* Homologous * Vestigial * Analogous * Rudimentary organs

ix) In Sickle cell anemia, the glutamate of residue β chain in the hemoglobin is replaced by:
* Phenylalanine * Folic acid * Valine * Serine

x) Bateson and Strasburger first time used this term for fundamental unit of heridity:
* Pangene * Nucleosome * Gene * Locus

xi) A protein which prevents the re-binding of complementary strands during replication at fork is:
* DNA helicase * SSB * Ligase * Primase

xii) Erythroblastosis fetalis occurs when an Rh +ve foetus is conceived by a mother who is:
* Rh-ve * Homozygous dominant * Rh+ve * Universal donor

xiii) Protein synthesis begins with the codon:
* AUG * UAG * UAA * UGA

xiv) There is a 25% chance that a boy will be color blind. What could be the genotype of his parents?
* X^NY X X^NX^N * X^NY X X^NX^n * X^nY X X^NX^N * X^nY X X^nX^n

xv) $N_2 + 3H_2 \rightarrow 2NH_3$ represent:
* Denitrification * Nitrification
* Biological nitrogen Fixation * Ammonification

xvi) The number of chromosomes in a female grass hopper is 24. How many chromosomes are present in the male:
* 26 * 25 * 24 * 23

SECTION 'B' (SHORT ANSWER QUESTIONS) (Marks – 16)

Q.2 Attempt any EIGHT parts questions. Each question carries TWO marks. Answer should not exceed more than SIX lines.

i. Why is mutation not always harmful?

ii. What are the drawbacks of Lamarckism?

OR Why is vaccination important for infectious diseases?

iii. Briefly describe the concept of trophic levels.

OR Write down the contribution of Charles Lyell to the early development of Darwinism.

iv. Differentiate between. **(Any one)**

a) Incomplete Dominance and Co-dominance b) Monohybrid cross and Dihybrid cross

v. Name the enzymes involved in DNA replication along with their brief functions.

vi. What is gene mutation? Briefly describe Sickle cell anemia?

OR Why is an individual with "O" negative blood group considered a universal doner?

vii. What is a Test cross? Mention it with the help of checker board.

OR Write note on Hardy Weinberg law.

viii. Why are Amp^R and Lac^Z genes used in the construction of rDNA?

ix. Why is hemophilia more common in males?

x. Define tissue culture. Write only names of different types of tissue culture in Plants.

xi. Briefly describe the concept of Endosymbiotic theory.

xii. Write down any four applications of PCR.

xiii. Write a note on genetic screening.

xiv. Differentiate between. **(Any one)**

a) Autosomes and Sex chromosomes. b) Renewable and Non-renewable resources.

OR Write the names and functions of enzymes involved in rDNA technology.

SECTION 'C' (DETAILED ANSWER QUESTIONS) (Marks-16)

Note: Attempt any TWO questions from this section. All questions carry equal marks.

3. What is Gene expression? Describe the mechanism of Translation. (No diagram required)

OR

Describe the inheritance of two traits with the help of a genetic cross.

4. What is Succession? Describe Xerarch OR Hydrarch succession.

OR

Describe the techniques of Recombinant DNA technologies by an example.

5. DNA is the hereditary material. Prove it with the help of an experiment.

OR

Write short note on Any Two of the following:

(a) Describe latest techniques to enhance crop and fruit yield.

(b) Explain in detail different steps of sewage treatment.

(c) Define vaccination and describe its role in preventing polio.

ADAMJEE COACHING CENTRE

Comprehensive Examination 2025-26

Botany II For XII

Time: 3 Hours **Max. Marks 40**

Section "A" Multiple Choice Questions (MCQs)

Note: (i) Attempt all the questions from this section.
(ii) Do not copy down all the part of questions. Write only the answer against the proper number of the question and its part according to the question paper.
(iii) Each question carries ½ mark. **(08)**

Q. 1 Choose the correct answer for each from the given options.

i. DNA analysis is used to identify:
(a) genetic disorders (b) gene expression (c) criminals (d) all of these

ii. Which is not the part of chromosomal theory of inheritance.
(a) Gametes do not make equal hereditary contribution
(b) Chromosomes segregate during meiosis
(c) Nucleus is the room of hereditary material
(d) Gametes have one copy of homologous chromosomes

iii. All of the following are homologous organs except
(a) Wings of bat (b) Wings of butterfly (c) limb of cat (d) Flippers of dolphin

iv. The gene which interferes and masks the phenotype of the non-alkalic gene is called.
(a)Mutant gene (b) Epistatic gene (c) Pleiotropy (d) sex-linked

v. The set of rules used to store the genetic information within a DNA for particular protein synthesis is.
(a)Gene (b) Genetic basis (c) Codon (d) Anticodon

vi. Archaeopteryx is a connecting link between
(a)Amphibia and reptiles (b) Reptiles and Aves
(c) Aves and mammals (d) Fish and Amphibia

vii. The source of nitrogen to plant in the nitrogen cycle is:
(a) Carbonate rock (b) Atmospheric nitrogen
(c) Fossil fuel (d) Sunlight

viii. Which of the following is incorrect regarding Lamarck's theory of inheritance of acquired characters?
(a) Use and disuse of the organs inherited
(b) Continuously using some organ results in its further strengthening in offspring
(c) Continuously disuse of some organ results in its weakening in offspring
(d) Concrete support to the theory through experiment

ix. Theory of natural selection lacking any support from:
(a)Biogeography (b) Genetics (c) Molecular biology (d) Comparative anatomy

x. Factors that affect the flow of energy at the trophic level?
(a)Non-predatory (b) Heat loss (c) Sunlight (d) Growth and reproduction

xi. Cloning of genes creates an identical copy of DNA sequence.
The process of cloning is significant for what reason?
(a) To create a transgenic organism (b) To diagnose genetic disorders
(c) To study gene function (d) All the above

xii. The significance of Polymerase Chain Reaction (PCR) is:
(a)Detecting Protein (b) diagnose disease
(c) Enzyme synthesis (d) for amplifying specific DNA fragment

xiii. Number of chromosome in grass hopper female is 24. How many chromosomes are present in grass hopper male?
(a)26 (b) 25 (c) 24 (d) 23

xiv. The pioneers in Xerarch succession are:
(a)Foliose lichens (b) Mosses (c) Crustose lichens (d) Shrubs

xv. Which of the following cycle is not a gaseous cycle?
(a)Carbon cycle (b) Nitrogen cycle (c) Oxygen cycle (d) Phosphorous cycle

xvi. Genomic map is useful for:
(a) Identifying genes associated with specific disease (b) Creating genetically modified interaction
(c) Analyzing DNA methylation patterns (d) Detecting Protein-Protein interaction

ADAMJEE COACHING CENTRE

Comprehensive Examination 2025-26

Botany II For XII

(12)

Section "B" (Short-Answer Questions)

Attempt any eight questions from this section. Each carry two marks. **(08)**

i. Define speciation. Name different types of speciation.

(OR)

What are the causes and effects of ozone layer depletion?

ii. Why mutation is not always harmful?

iii. Why differentiate between renewable and nonrenewable energy resources.

iv. Why restriction enzymes are called molecular scissors?

(OR)

Write down the main postulates of chromosomal theory of inheritance.

v. What do you mean by integrated diseases and its management?

vi. Write a note on tissue culture.

vii. Briefly describe the flow of energy in ecosystem.

viii. How nitrification is different from denitrifications.

(OR)

Why Amp R and lac Z genes are used in rDNA technology

ix. How Neo-Darwinism is different from Darwinism.

x. Why R h incompatibility could be a danger to developing foetus and mother.

xi. Why replication is called semiconservative process?

xii. What are leading and lagging strand of DNA

xiii. Why hemophilia or X linked diseases are common in males?

xiv. How the homologous organs support the theory of evolution

Section "C" (Descriptive-Answer Questions)

Note: Attempt any 02 questions. **(16)**

i. What is Succession? Describe Xerarch or Hydrarch succession.

OR

What is evolution? Discuses Drawin's theory of natural selection.

ii. Describe latest technique to enhance the crop and fruit yield.

OR

Describe the structure of chromosome in detail, with its chemical composition.

iii. Define Mendel's law of segregation and explain with the help of checker board.

OR

Describe the process of transcription or translation in gene expression

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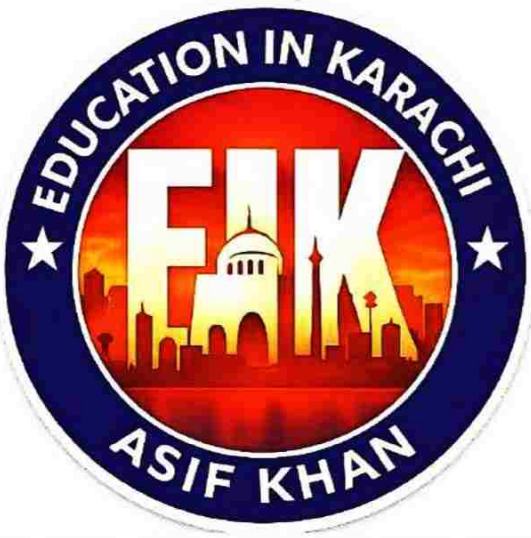

ADAMJEE COACHING CENTRE-13

Comprehensive Examination 2025-26

Botany II For XII

Time: 3 Hours | Max. Marks 40

Section "A" Multiple Choice Questions (MCQs)

Note: (i) Attempt all the questions from this section.
(ii) Do not copy down all the part of questions. Write only the answer against the proper number of the question and its part according to the question paper.
(iii) Each question carries ½ mark.

Q. 1 Choose the correct answer for each from the given options. (08)

1. Which of the following are nonsense codons?
(a) AUG (b) UAA (c) CUA (d) All of above

2. In klinefelter's syndrome
(a) one x chromosome is missing (b) additional sex chromosome is present
(c) sex chromosomes fail to segregate (d) none of these

3. When a single gene has multiple phenotypic effects, the phenomenon is called
(a) codominance (b) epistasis (c) pleiotropy (d) sex linkage

4. How many gene pairs contribute to the wheat grain colour?
(a) one (b) two (c) three (d) four

5. Which of the following traits is transmitted directly from an affected father to only his sons?
(a) autosomal (b) X – linked (c) Y – linked (d) X and Y linked

6. Which phenomenon reduces the chances of genetic recombination and variations among offspring?
(a) linkage (b) crossing over (c) independent assortment (d) dominance

7. Which of these traits zigzags from maternal grand father through a carrier daughter to a grandson?
(a) autosomal (b) X – linked (c) Y – linked (d) X and Y linked

8. When a haemophilic carrier woman marries a normal man, who among her offspring may be affected
(a) all her children (b) all her daughters (c) half of her daughters (d) half of her sons

9. What is the risk of a colour-blind child in a family when mother is colour-blind but father is normal?
(a) 100% (b) 75% (c) 50% (d) 25%

10. A gene pool consists of
(a) all the alleles exposed to natural selection
(b) the total of all alleles present in a population
(c) the entire genome of a reproducing individual
(d) the frequencies of the alleles for a gene locus within a population
(e) all the gametes in a population

11. Selection acts directly on
(a) phenotype (b) genotype (c) the entire genome (d) each allel (e) the entire gene pool

12. Similar group of individuals who can inter breed and produce organisms of their own kind forms
(a) population (b) community (c) species (d) succession

13. When living and non-living interact to produce a stable system in which exchange of materials with flow of energy takes place, it form a/an
(a) environment (b) ecosystem (c) stable community (d) ecological succession

14. The living organisms, which cannot prepare their own food but obtain ready- made food from others, are
(a) primary and secondary consumers (b) secondary and tertiary consumers
(c) only primary consumers (d) consumers

15. Which of the country has the highest rate of human population
(a) Australia (b) Africa (c) Asia (d) North America

16. What is our principle source of energy
(a) nuclear energy (b) geothermal energy (c) solar energy (d) tidal energy

ADAMJEE COACHING CENTRE-13

Comprehensive Examination 2025-26

Botany II For XII

Section "B" (Short-Answer Questions)

Attempt any eight questions from this section. Each carry two marks. **(08)**

i. Define speciation. Name different types of speciation.

(OR)

What are the mean of husbandry ?

ii. Why mutation is not always harmful?

iii. Why differentiate between renewable and nonrenewable energy resources.

iv. Why restriction enzymes are called molecular scissors?

(OR)

Write down the five stocks and their benefits .

v. What do you mean by integrated diseases and its management?

vi. Write a note on tissue culture.

vii. Briefly describe the flow of energy in ecosystem.

viii. Define down syndrom .

(OR)

Define nitrogen cycle by diagram

ix. How Neo Darwinism is different from Darwinism.

x. Why R h incompatibility could be a danger to developing foetus and mother.

xi. Why replication is called semiconservative process?

xii. What a meant of green house effect and acid rain

xiii. Why hemophilia or X linked diseases are common in males?

xiv. What's a benefits of home gardening

Section "C" (Descriptive-Answer Questions)

Note: Attempt any 02 questions. **(16)**

i. What is Succession? Describe Xerarch or Hydrarch succession.

OR

What is evolution? Discuss Drawin's theory of natural selection.

ii. Describe formation of Recombinanat DNA .

OR

Describe the replication mechanism of DNA .

iii. Define Mendel's law of segregation and explain with the help of checker board.

OR

Describe the process of transcription or translation in gene expression

ADAMJEE COACHING CENTRE

Preparation Paper 2025-26

XII – Botany **Prepared by: Sir Fareed Uddin**

Chapter 22

Short Questions Answers

Q1. Do introns are transcribed and involve in translation?
Q2. Do mutation is always harmful?
Q3. Give site at ribosome and their functions during translation?
Q4. Do introns are transcribed, and involve in translation?
Q5. Why replication is called semi-conservative process?

Detail Questions Answers

Q1. Define mutation. Discuss chromosomal mutation in detail?
Q2. Describe the chromosomal theory of inheritance?
Q3. Describe the semi conservative process of DNA replication?
Q4. Describe the process of transcription during gene expression?

Chapter 23

Short Questions Answers

Q1. Why Rh-in compatibility could be a danger to the developing foetus and mother?
Q2. Differentiate between following
(a) X- linked trait and Y- linked trait
(b) Incomplete dominance and Co-dominance
(c) Universal donor and universal recipient blood acceptor.
Q3. What do you mean by dichromacy and monochromacy?
Q4. Why incomplete dominance is called partial dominance?
Q5. Why law of segregation is called purity of gametes?

Detail Questions Answers

Q1. What are multiple alleles explain multiple alleles with reference to blood groups in man.
Q2. State and explain Mendel's law of segregation with the help of checker board.
Q3. What is polygenic inheritance? Explain polygenic inheritance with wheat grain colour and human skin colour.
Q4. Explain sex determination in human and sex linked (x-linked) trait with genetic cross.

Chapter 24

Short Questions Answers

Q1. Differentiate between the following.
(a) Convergent and divergent evolution.
(b) Homologues organs and analogous organs
Q2. Justify Lamarck as an early proponent of evolution.
Q3. How Neo-Darwinism differs from Darwinism?
Q4. What do you understand by the "descent with modification"?
Q5. What is Endosymbiotic theory?

Detail Questions Answers:

Q1. How biogeography, paleontology and molecular biology provide evidences in support of evolution?
Q2. Discuss the process of origin of single cell Eukaryotes.
Q3. What is speciation? Explain different ways of speciation.
Q4. Describe the Theory of Natural Selection.
Q5. State and explain the contribution of Lamarck in organic evolution / Theory of inheritance of acquired characters.

Chapter 25

Short Questions Answers

Q1. What are the causes of ozone layer depletion?
Q2. How does ecological succession affect the community?
Q3. Why should we conserve biodiversity?

Q4. How does energy flow between trophic levels?
Q5. Why biogeochemical cycle is named so?

Detail Questions Answers:

Q1. What is succession? Describe different stages of Xerach or hydrach succession.
Q2. Describe the effects of carbondioxide and global warming on human health.

Chapter 26

Short Questions Answers

Q1. What is human genome project what are their goals?
Q2. What are the main objectives of transgenic plants?
Q3. Why Amp^R and Lac^Z are used in construction of rDNA?
Q3. Enlist enzymes used in rDNA technology?
Q4. Why restriction enzymes are called molecular scissors?

Detail Questions Answers:

Q1. What is DNA sequencing and how has it been used to study genetic mutations and diseases?
Q2. What is tissue culture, Explain anther culture, ovary culture, meristem culture and embryo culture?
Q3. What are transgenic organisms? What are main objective behind transgenic bacteria, plants and animals?

Chapter 27

Short Questions Answers:

Q1. Name different vaccines use against Polio, Measles, Hepatitis and Tetanus.
Q2. What do you mean by integrated diseases and its management?
Q3. Differentiate between following
   a) Selection and Backcross
   b) Selection and Hybridization
Q4. Why vaccination is important for infectious disease?

Detail Questions Answers

Q1. What is home gardening. Describe importance of home gardening.
Q2. Describes the role of microbes in food processing and sewage treatments.
Q3. Explain vaccination and its importance.
Q4. What are the latest techniques applied to enhance crop and fruit yield.
Q5. Explain in detail different steps of sewage treatment.

BAMM PECHS GOVT COLLEGE
PRELIMINARY EXAMS 2026
PAPER: Botany CLASS: XII

Time: 15 minutes **Max marks: 08**

SECTION 'A'
(MULTIPLE CHOICE QUESTIONS) - (M.C.Qs.)

NOTE: Do not copy the part questions in your answerbook. Write only the answer in full against the proper number of the question and its part. This section consists of 16 part questions and all are to be answered. Each part question carries ½ mark.

1. The phenotypic ratio in a dihybrid cross is:
A.3:1 B.1:2:1 C.9:3:3:1 D.1:1:1:1

2. Succession that starts on bare rock is called:
A.Secondary succession B.Hydrarch. C.Primary succession. D.Mesarch

3. In sickle cell anemia Glutamic acid is replaced by.
A.Lysine B.Histidine C.leucine D.Valine

4. The enzyme used to join DNA fragments together is:
A.Helicase. B.DNA ligase. C.RNA polymerase. D.Endonuclease

5. Hydrogen is transferred in living cells mainly by:
A. ATP. B. Enzymes. C.Coenzymes (NAD, FAD) D. Ribosomes

6. The blood group of man is the example of.
A.Multiple alleles B.Recessive alleles C.Dominant alleles D.Co-dominant alleles

7. Which structure provides evidence of common ancestry?
A. Analogous organs B.Vestigial organs. C. Homologous organs. D.Artificial organs

8. The total aggregate of genes is a population at any one time is called
A.Linkage B.Gene-pool C.Crossing over D.Genome

9. Which of the following is a mechanism of evolution?
A. Mutation B. Natural selection. C. Genetic drift. D. All of these

10. Each intermediate stage of succession is called:
A. Climax stage. B. Pioneer stage. C. Seral stage. D. Stable stage

11. The main source of hydrogen in the biosphere is:
A. Carbon dioxide B. Glucose C. Water D. Minerals

12. The blood group of a man with neither antigen is
A. A group B. AB group C. B group D.O group

13. The theory that acquired characters are inherited was proposed by:
A. Darwin. B. Wallace. C. Lamarck. D. Mendel

14. Which microorganism is commonly used in genetic engineering?
A.Virus B.Algae C.Bacteria D.Protozoa

15. Plasmids are mainly used in biotechnology as:
A.Energy sources. B. Antibiotics. ●. Vectors for gene transfer. D.Enzymes

16. Which disease is caused by a gene mutation?
A. Malaria B.Tuberculosis. ●. Sickle cell anemia. D.Cholera

Max marks::32 **Section B** **Time:1hrs 45 minutes**

(Short questions answers) /16

NOTE: Answer any eight questions from this section all questions carry equal marks, No answer should exceed 5 to 6 lines.

i. Describe the test cross? 23
ii. What are the leading and lagging strands of DNA? 22
iii. Describe LAMARCKISM. Also mention its drawbacks. 24
iv. Differentiate between tissue culture and organ cloning.
v. Why are sex-linked diseases more common in males?
vi. Describe Theory of Natural Selection
vii. Why is monohybrid cross important?
viii. Describe the chromosomal aberration.
ix. What is a nucleotide?
x. Define global warming. How it's affecting our life.
xi. What is the role of histone proteins in DNA structure?
xii. Explain color blindness as a sex-linked disorder.
xiii. Why is the biogeochemical cycle named so?
xiv. Describe the importance of the RH factor.

Section C

(Detailed questions answers) Max Marks /16

NOTE: Answer any two questions from this section all questions carry equal marks.

Q1: What is Hydrarch Succession? Describe all the seral stages involved in the process.?

Q2: Define mutation and describe its various types. How do radiation and chemical mutagen damage DNA?

Q3: What is Epistasis? Explain dominance Epistasis with the help of an example.

Q4: What is DARWINISM. What theory did he propose? Mention the role of various scientists which supported Darwin's theory.

OR

What is Neo Darwinism? Explain how Hardy Weinberg theorem supports NeoDarwinism?

Replication

St. Lawrence's Govt.Girls Degree College Karachi

Preliminary Examination 2026

Botany Paper II

Name---------- Class ---------- Section---------- Roll No

Time: 15 Minutes Max.Marks:08

SECTION "A" (MULTIPLE CHOICE QUESTIONS)

NOTE: Attempt all questions from this section.

Q.1. Choose the correct answer for each from the given options.

i. Which Condition can be explained by Lamarckism.
a) how giraffes go their long neck b) how human lost their tail c) how humans became bipedal d) All

ii. The yeast that gives puff appearance to dough is called:
a) Saccharomyces b) Penicillium c) Lactobacillius d) Escherichia coil

iii. The process of hybrid crossing with its parents is called:
a) Selection b) Hybridization c) Back Cross d) Acclimatization

iv. The Top milk producing animal of Pakistan is:
a) Bhadawari b) Jaffrabadi c) Nilli Ravi d) Godavari

v. HPV vaccine is used for:
a) Polio b) Measles c) Hepatitis d) Common Cold

vi. What trophic level would a carnivore occupy?:
a) 1st trophic level b) Second trophic level c) Third trophic level d) 4th trophic level

vii. The Pioneers in xerarch succession are the:
a) Foliose lichens b) Mosses c) Crustose Lichens d) Shrub

viii. The most prominent chemical that depletes the ozone layer is :
a) Chlorofluorocarbons b) Hydrochlorofluorocarbons c) Chlorine d) halons

ix. Oil is known as:
a) Non-Renewable b) Renewable c) Non- Convectional d) None of these

x. The DNA wrapped around octamer and forms a unit called.
a) Nucleosome b) Chromatin c) Histone core d) Super Coil

xi. Change in DNA sequence is called:
a) Gene pool b) Mutation c) Crossing over d) genome

xii. Coding regions of DNA are called.
a) Introns b) Exons c) Genetic Code d) Splicing

xiii. Phenomenon of inheritance where expression of both contracting alleles expresses independently.
a) Incomplete dominance b) Co-dominance c) Multiple Allele d) Mutation

xiv. The allele of holandric gene is located at?
a) X-Chromosomes b) Y-Chromosomes c) Autosomes d) None of these

xv. Darwin collected a variety of birds specimen particularly finches in:
a) Galapagos Island b) South America c) England d) Pacific Ocean

xvi. Chromosomal theory of heredity was proposed by:
a) Watson b) Griffith c) Walter Fleming d) Chase

SECTION "B" - SHORT ANSWER QUESTIONS (20 MARKS)

Time: 1 hours 45 minutes Max.Marks:16

Q.2. **Note: Attempt any eight parts questions. Each part question carries two marks. Answer should not exceed more than two lines.**

i) Name any two markers which help in selection of clones why do biotechnologist use these?
ii) What are the caused and symptoms of Corona Virus?
iii) Define Speciation. Name different type of speciation.
iv) Name and define type of chromosomal mutation (aberration) OR Describe sickle cell anemia?
v) Differentiate renewable and non-renewable resources?
vi) Write down the role of holandric traits?
vii) Why Rh incompatibility could be danger to the developing foetus and mother?
viii) Find out the possible blood group of a child whose father has AB and mother has A blood group?
ix) Name any four N-fixing bacteria and cyanobacteria?
x) Name the major mechanism of disease management?
xi) Why are restriction enzyme called molecular scissors?
xii) Enlist enzyme use in rDNA technology?
xiii) Describe the role of microbes sewage treatment.
xiv) Why vaccination is important for infectious disease?

SECTION "C" - DETAILED ANSWER QUESTIONS (16 MARKS)

Attempt any two questions. Each question carries equal marks. Draw labeled diagrams where necessary.

Q 3 What is Succession? Describe Xerarch or Hydrarch sucession?

OR

Explain gene amplification through PCR and mention any two application.

OR

Describe the process of gene expression.

Q 4 State and explain law of independent assortment of genes?

OR

Explain epistasis with reference to inheritance of coat colour in Labrador retriever (dog)

Q 5 Describe chemical structure of chromosome.

Q 6 Describe latest techniques to enhance the crop and fruit yield.

SHAHEED FLYING OFFICER MARIUM MUKHTIAR GOVERNMENT DEGREE GIRLS COLLEGE
Preliminary Examination–2026
XII- Botany

Max. Marks: 40 **Time: 02 Hours**

SECTION 'A'
(MCQS—Multiple Choice Questions) (08 Marks)

NOTE: This section consist of 16 part questions and all are to be answered. Each part question carries ½ mark. Do not copy the part questions in your answer book. Write only the answer in full against the proper number of the question and its part.

1. Choose the correct answer for each from the given options.

i. The polymerase chain reaction is
• a DNA sequencing technique. • a DNA degradation technique
• a DNA amplification technique • All of correct

ii.Histones have abundance of amino acids which are
A. Valine & lysine B. Arginine & Lysine C. Valine & arginine D. Histidine & Threonine

iii.In polymerase chain reaction the denaturation step is the process of
• Heating between 72°C • Heating between 40 to 60°C
• Heating between 94 to 98°C • None of the above

iv. Different enzymes are used in various steps involved in the production of bacteria capable of synthesizing a human protein. Which step is catalyzed by a restriction enzyme?
A.DNA cloning. B. Cutting a plasmid vector.
C.Producing cDNA from mRNA. D.Reforming the DNA double helix

v). Which enzyme is responsible for unwinding the DNA double helix during replication?
• RNA polymerase • DNA ligase • DNA helicase • DNA polymerase

vi.What is the role of DNA in protein synthesis?
•Directly forms proteins •Serves as a template for mRNA
•Initiates translation •Catalyzes biochemical reactions

vii. Removal of floating solid and organic materials from the sewage is:
• Primary treatment • Secondary treatment
• Tertiary treatment • No Treatment

viii. Gel electrophoresis is a technique used to separate DNA fragments significance of this technique is to:
• Study gene expression • Sequence DNA
• Identify genetic variation • Identify genetic disorder

ix.Theory of natural selection was lacking any support from:
• Biogeography • Genetics
• Comparative anatomy • Molecular biology

x) Archaeopteryx is a connecting link between:
• Amphibians and Reptiles • Reptiles and Aves
• Aves and Mammals • Fish and Amphibians

xi) The gene which interferes and masks the phenotype of non-locus gene:
• Mutant gene • Epistatic gene • Holandric gene • Sex-linked gene

xii) The allele of holandric gene is located at:

• X-Chromosomes • Y-Chromosomes
• Both X and Y Chromosomes • Autosomes

xiii. Genomic map are useful for:
• Identifying genes associated with specific disease • Creating genetically modified interaction
• Analyzing DNA methylation patterns • Detecting Protein-Protein interaction

xiv. Plasmids are used as cloning vectors for which of the following reasons?
•Can be multiplied in culture •Self-replication in bacterial cells
•Can be multiplied in laboratories with enzymes help •Replicate freely outside bacterial cell

xv. Thermus aquatics is the source of
•Vent polymerase • Primase enzyme • Taq polymerase •Both a and c

xvi.Which of the enzymes act as molecular scissors?
• DNA ligase • Restriction endonucleases •DNA polymerase • RNA polymerase

SECTION 'B
(Short –Answer Questions) (16 Marks)

2. Attempt any Eight (8) part questions from this section .Each questions carry TWO marks.
i. Give changes occur in mRNA during transport from nucleus to cytoplasm.

ii. Name the major mechanisms of diseases management.

iii. What are leading and lagging strand of DNA?
iv. Define Speciation? Name different types of Speciation
v. What do you mean by dichromacy and monochromacy?
vi. Write a note about genetic drift?
vii).What is Test cross? Explain with the help of checker board.
viii.How Neo-Darwinism differs from Darwinism?
ix.Give the concept of trophic level?
x.Give the concept of productivity?
xi. Describe the Theory of Natural Selection.
xii.Why Amp^R and Lac^z genes are used in the construction of rDNA?
xiii. What do you mean by palindrome?
xiv. What are technique applied for selection of vector?
xv). Write a note about transgenic bacteria, transgenic animal, and transgenic plant?

SECTION'C'
Detailed –Answer Questions) (16 Marks)

Note: Answer any TWO questions from this section. All questions carry equal marks.

Q3.What is Succession? Describe Xerarch or Hydrarch succession.

OR

State and explain the contribution of Lamarck in organic evolution

Q4. Explain gene amplification through PCR and mention any two applications.

OR

Explain in detail the process in recombinant DNA technology?

Q5.A male has co-dominant blood group marry with female whose blood group is homozygous A, both have a male child who marry with a female with recessive blood group what will be the chances of blood group in their children? Prove it with genetic cross.

OR

Explain epistasis with reference to the inheritance of coat colour in Labrador retriever.