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1B6M18241 (Pages : 2 ) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

**Sixth Semester B.Sc Botany Degree Examination, March 2018**

**BOT6B09T – Genetics & Plant Breeding**

(2015 Admission onwards)

Max. Time: 3 hours Max. Marks: 80

## PART- A
**Answer ALL the questions**

**Define/ Explain**

1. Transgressive variation
2. Chiasmata
3. Mutagen
4. Pureline
5. Heterosis
6. Law of purity of gametes
7. Quarantine
8. Emasculation
9. Interference
10. Shell coiling in snails

**(10 x 1 = 10 marks)**

## PART B
**Answer ALL the questions**

11. Explain synaptenemal complex
12. What are reciprocal, back and test crosses?
13. Explain the Hardy Wienberg Law.
14. What is lac operon?
15. Explain the stage of Meiosis during which crossing over takes place.
16. What are holandric genes, explain.
17. Explain autopolyploids with an example?
18. What are multiple alleles?
19. How does Klinefelter syndrome result?
20. What are sex linked genes?

**(10 x 2 = 20 marks)**

## PART C
**Answer any SIX of the following:**

21. Write a note on the genic balance theory of sex determination?
22. Explain the consequences of Distant hybridization.
23. What are the different types of layering?
24. What are the different intergeneric interactions? Explain with examples?
25. What is the importance of linkage and crossing over? Explain with theorie supporting them?
26. State and explain Mendelian laws
27. Explain the inheritance of blood groups in man
28. Explain quantitative inheritance with examples

**(6 x 5 = 30 marks**

## PART D
**Answer any TWO of the following:**

29. Explain the different selection methods employed in plant breeding, in a comparative manner
30. Explain the modified Mendelian ratios with examples for the different interactions
31. With suitable examples, explain the mechanism of cytoplasmic inheritance

**(2 x 10 = 20 marks)**

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

**Sixth Semester B.Sc Botany Degree Examination, March 2018**

**BOT6B10T – Plant Physiology & Metabolism**

(2015 Admission onwards)

Max. Time: 3 hours Max. Marks: 80

## PART - A
**(Answer all questions)**

1. The net diffusion pressure that acts as the driving force in the passive movement of water is called as _____
2. On the addition of insoluble solutes to the solution the OP will become _____
3. The quantity of $CO_2$ fixed by one gram of chlorophyll in a unit time is called as _____
4. Reaction site of β oxidation is _____
5. In fatty acid biosynthesis _____ is acting as the primer
6. Who proposed the Transpiration pull and Cohesion of water theory?
7. Name the cell organelles involved in $C_2$ Cycle
8. What are the export forms of fixed nitrogen?
9. Name the membrane transporter involved in the oxidation of fatty acids.
10. Name the symbiont of non-leguminous plants, involved in nitrogen fixation.

**(10 × 1 = 10 marks)**

## PART - B
**(Answer all questions)**

11. Differentiate between Symplastic and Apoplastic roots of water diffusion
12. Explain the advantages and disadvantages of transpiration
13. Add notes on the carrier concept in mineral absorption?
14. What is Action spectrum?
15. Differentiate between cyclic and non-cyclic electron transport systems
16. Describe different types of plant movements
18. Explain the energy coupling process of glycolysis
19. Add notes on Fatty acid synthase system
20. Comment on external dehydrogenase complex in respiratory chain

**(10 × 2 = 20 marks)**

## PART - C
**(Answer any six of the following)**

21. Describe the ion exchange theory of stomatal movements
22. Describe the process of active water absorption
23. Briefly explain the process of Calvin cycle
24. Elucidate the Two pigment system in photosynthesis
25. Describe the process of phloem loading and unloading
26. Describe Anaplerotic reactions of TCA cycle
27. What are the fates of Pyruvate under aerobic and anaerobic conditions?
28. Describe Chemiosmotic coupling hypothesis

**(6 × 5 = 30 marks)**

## PART - D
**(Answer any two of the following)**

29. Explain the different methods of passive water absorption
30. Describe the process of Ammonium Assimilation
31. Describe the shuttle systems in respiratory chain

**(2 × 10 = 20 marks)**

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

**Sixth Semester B.Sc Botany Degree Examination, March 2018**

**BOT6B11T – Cell Biology & Biochemistry**

(2015 Admission onwards)

ax. Time: 3 hours Max. Marks: 80

## PART A
**Answer All Questions**

1. Name the subunits of 70S prokaryotic ribosomes.
2. A sulphur containing amino acid.
3. Name a reducing disaccharide.
4. What are the main structures within the cell nucleus?
5. On which organelle of the cell does intracellular digestion depends?
6. The interval between the end of one mitotic cycle and the beginning of DNA synthesis.
7. Name a co-enzymatic nucleotide.
8. Define aneuploidy.
9. Non-protein part of an enzyme is called ---------
10. Give an example for a saturated fatty acid.

**( 10 x 1 = 10 Marks)**

## PART B
**Answer All Questions**

11. List out the differences between prokaryotic and eukaryotic cell.
12. Differentiate deletion and duplication that leads to structural aberrations of chromosomes.
13. What is the difference between rough and smooth endoplasmic reticulum?
14. Differentiate between purines and pyrimidines.
15. Mention the different types of leucoplasts and their functions.
16. What are homologous chromosomes?
17. Explain the formation of a triglyceride.
18. What are isozymes? Give example.
19. What are telomeres? Mention the function.
20. Amino acids are amphoteric in nature. Explain.

**(10 x 2= 20 Marks)**

## PART C
### Answer Any Six Questions

21. Briefly explain polysaccharides with examples.
22. Describe the mechanism of action of enzymes.
23. Explain euploidy with examples. Mention its significance.
24. Give an account of polytene chromosomes.
25. Explain the various linkages of amino acids.
26. Describe the structure of centromere. Add a note on its functions.
27. Differentiate between furanose and pyranose forms of sugars.
28. Give an account of ATP. Mention its role in biological reactions.

**(6 x 5 = 30 Ma**

## PART D
### Answer Any two Questions

29. Give an account of secondary metabolites and their significance in plants.
30. With the help of diagrams, explain the process of meiosis.
31. Give a detailed account of the structure and function of mitochondria with diagrams.

**(2 x 10 = 20 M**

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

**Sixth Semester B.Sc Botany Degree Examination, March 2018**

**BOT6B12T – Environmental Science**

(2015 Admission onwards)

Max. Time: 3 hours Max. Marks: 80

## Part A
**Answer all questions**

1. ..... is the study of the interrelations, adaptations and distribution of different populations.
2. Assimilation and storage of food energy in consumers is known as .....
3. ..... is an example for nitrite bacteria.
4. An example for sedimentary cycle is .....
5. ..... is a facultative root parasite.
6. ..... represent the pioneer community of hydrosere.
7. Diversity within a single community is known as .....
8. .....is a biodiversity hotspot in India.
9. .....is the first declared biosphere reserve in India.
10. ..... is an ocean warming phenomenon.

**(10 x1=10 marks)**

## Part B
**Answer all questions**

11. Distinguish between lentic and lotic ecosystem.
12. What is biological magnification?
13. Comment on exotic and indigenous plant species.
14. Mention about environmental legislation in India.
15. Define BOD. What is its significance?
16. Distinguish between endangered and endemic species.
17. Comment on UNEP.
18. What is a phytograph?
19. Write notes on WWF.
20. Kyoto protocol.

**(10 x 2=20 marks)**

## Part C
## Answer any six questions

21. Give an account on ex-situ and in-situ methods of biodiversity conservation?
22. Give an account on xerosere.
23. Give an account on any one gaseous biogeochemical cycle.
24. Draw and label ecological pyramids of biomass and energy of a pond ecosystem giving justifications.
25. Major causes and effects of acid rain.
26. Comment on solid waste management.
27. Give an illustration on any one technique in plant community study.
28. Comment on any two manmade pollution disasters.

**(6 x 5=30 marks)**

## Part D
## Answer any two of the following

29. Write an account on air pollution.
30. Briefly describe estuarine and forest ecosystem of the biosphere.
31. Citing suitable examples, give a detailed account on Ecological adaptations of hydrophytes.

**( 2 x 10=20 marks)**

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Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

**Sixth Semester B.Sc Botany Degree Examination, March 2018**

**BOT6B13T – Genetic Engineering**

(2015 Admission onwards)

Max. Time: 3 hours Max. Marks: 80

## Part A
**(Answer all the questions)**

1. FISH
2. Site directed mutagenesis
3. Expression vector
4. Buffers
5. Probe
6. Flavr Savr tomato
7. Liposomes
8. Primers
9. Electroelution
10. Characteristics of a vector

**(10 x 1=10 Marks)**

## Part B
**(Answer all of the following)**

11. Brief note on c-DNA library
12. Differentiate between linkers and adaptors.
13. Ethical and social issues associated with recombinant DNA technology.
14. What are reporter genes? Explain any two.
15. Illustrate the mechanism of RNAi
16. Chromosome painting
17. Describe the methods to isolate DNA.
18. Protocol for the preparation of plasmid vector
19. Short note on the fate of transferred DNA in eukaryotic cell.
20. What is meant by knockout animals and its use?

**(10 x 2=20 Marks )**

## Part C
## (Answer any six of the following)

21. Briefly describe the various methods to find the gene of interest from library.
22. Illustrate the mechanism of Agrobacterium mediated gene transfer..
23. Write a short essay on the method of transfer of recombinant DNA in to host cell.
24. Different enzymes used in genetic engineering
25. PCR in gene amplification
26. Antisense RNA technology and its applications
27. Describe the use of different enzymes in genetic engineering.

**(6 x 5=30 Marks)**

## Part D
## (Answer any two of the following)

28. Briefly describe different blotting techniques and its merits and demerits.
29. What are the vectors in genetic engineering? Describe briefly with suitable diagrams.

**(2 x 20=20 Marks)**