D 10627 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Genetics

GEN 5B 10—DEVELOPMENTAL AND BEHAVIOURAL GENETICS

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. What are spermatozoa ?
2. What is Zona pellucida ?
3. What is manchette in sperm ?
4. What is ingression ?
5. What is Homeotic selector gene ?
6. What are the functions of Torso genes ?
7. Comment on the mechanisms that block polyspermy.
8. What are the functions of co-ordinate genes ?
9. What is cortical granule ?
10. What is meant by innate behaviour ?
11. Write notes on the role of Cadastral genes in Arabidopsis.
12. Write notes on the foraging behaviour in *Drosophila melanogaster*.

(8 × 3 = 24 marks)

Section B

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Describe the structure of typical ovum.
14. Explain the mechanism of Gastrulation.
15. Explain the role of Homeotic genes in *Drosophila* development.
16. Describe the mechanism of anterior posterior axis determination in Drosophila.
17. Briefly explain the genetic basis of sexual orientation in human beings.
18. Briefly describe the scent marking behavior ? Give an example.
19. Write a brief note on the embryogenesis of *Arabidopsis*.

(5 × 5 = 25 marks)

Section C

Answer any **one** *questions.*
The question carries 11 *marks.*

20. Write an essay on events in fertilization.
21. Give an account on courtship behaviour in animals.

(1 × 11 = 11 marks)

D 10624 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Genetics

GEN 5B 07—MOLECULAR BIOLOGY

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. What is supercoiling ?
2. What is Z DNA ?
3. What is Frame shift mutation ?
4. Write on Okazaki fragments.
5. Write about Chargaff's rule.
6. Define Replication fork.
7. Write on pyrimidines and purines.
8. Explain CIB method of mutations.
9. What is Lytic cycle ?
10. What is Dispersive mode of replication ?
11. Define Replicon.
12. What is a Histone ?

(8 × 3 = 24 marks)

Section B

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Explain direct repair of DNA with examples.
14. Explain Holiday model of recombination.

Turn over

15. Explain Hershey and chase experiment.
16. Comment on types of RNA and its functions.
17. Differentiate between eukaryotic and prokaryotic DNA replication.
18. Define replication and give a note on proteins involved in replication.
19. Briefly explain about homologous recombination.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. Write on the mechanism of DNA repair.
21. Explain in detail about Griffith's experiment.

(1 × 11 = 11 marks)

D 10625 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Genetics

GEN 5B 08—MOLECULAR GENETICS

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. Write a note on taq polymerases.
2. What is 'RAPD'?
3. What is co-integrate ?
4. What is '*p*' element in Drosophila and its implication ?
5. What is the logic of lac operon ?
6. What is transcription bubble ?
7. What are the differentiate between Rho dependent and Rho independent transcription termination in Prokaryotes ?
8. Write a note on 5' capping of mRNA.
9. What is ubiquitination ?
10. Why is genetic analysis of bacteria important ?
11. What is Hfr strain ?
12. What is interrupted conjugation mating experiment ?

(8 × 3 = 24 marks)

Section B

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Explain tRNA processing.
14. Write a note on nucleosome remodeling prior to transcription.
15. Describe the genetic transformation in bacteria.
16. Explain trp operon.
17. Explain Genetic code.
18. Explain Griffith experiment.
19. Explain the experiment which proved DNA is the genetic material.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. Describe in detail about the eukaryotic transposable elements.
21. Describe the Conjugational mapping in bacteria.

(1 × 11 = 11 marks)

D 10626 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Genetics

GEN 5B 09—MEDICAL GENETICS

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. Explain C and E group of chromosomes.
2. Describe on genetic markers.
3. What is autosomal dominant inheritance ?
4. Explain Isochromosome.
5. Differentiate between meningocele and myelomeningocele.
6. Write a note on map distance.
7. Explain spina bifida.
8. Write an account on trinucleotide repeat disease.
9. Explain cystic fibrosis.
10. Describe on PKU.
11. Describe 'one gene one enzyme' hypothesis.
12. What is pedigree ?

(8 × 3 = 24 marks)

Section B

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Explain different types of translocations.
14. Comment on the scope of medical genetics.
15. Describe on classification of birth defect.
16. Explain alkaptonuria and albinism.
17. Give a short essay on cystic fibrosis and sickle cell anaemia.
18. Explain maternal infection.
19. Describe multipoint mapping.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. Explain karyotyping and banding techniques.
21. Describe on numerical abnormalities of chromosomes.

(1 × 11 = 11 marks)

D 10630 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS—UG)

Genetics

GEN 5D 03—APPLICATIONS OF GENETICS

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A

Answer at least **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 24.

1. Define DNA.
2. What is a genetic code ?
3. What is autosomal single-nucleotide polymorphisms typing ?
4. Define mitochondrial DNA.
5. Define tRNA.
6. Mention the uses of biomarkers.
7. What is biomedical ethics ?
8. Give two examples of genetic industry .
9. Explain Cloning.
10. What is germ-line gene therapy ?
11. What is meant by confidentiality in genetic counselling ?
12. What is mandatory genetic counselling ?

(8 × 3 = 24 marks)

Section B

Answer at least **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall Ceiling 25.

13. Explain genetic engineering.

14. Comment on the analysis of Y-chromosomes in forensic medicine.

15. Describe on stem cell research.

16. Give an account on genetic disorders.

17. Explain uniqueness of medical genetics.

18. Describe on ethical issues in genetics.

19. Describe on prenatal diagnosis.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
The question carries 11 *marks.*

20. Explain the applications of genetics in agriculture and industry.

21. Describe the applications of genetics in medicine and forensics.

(1 × 11 = 11 marks)

D 10182 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Genetics

GEN 5B 08—MOLECULAR GENETICS

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions*
Each question carries 1 *mark.*

1. Hfr strain.
2. Retroposons.
3. Pilus.
4. Operon.
5. P elements.
6. Spliceosome.
7. Prophage.
8. Promoters.
9. Reverse Transcriptase.
10. Shine-Dalgarno (SD) sequence.

(10 × 1 = 10 marks)

Part B (Short Answer Type Questions)

Answer any **ten** *questions.*
Each questions carries 2 *marks.*

11. 7-Methylguanosine cap.
12. IS Elements.
13. Conjugational mapping.
14. rRNA.
15. Specialized Transduction.

16. Wobble hypothesis.

17. Merozygote.

18. TATA box.

19. Ribozymes.

20. Introns.

21. Exogenote.

22. Termination codons.

(10 × 2 = 20 marks)

Part C (Short Essays)

Answer any **five** *questions.*
Each question carries 6 *marks.*

23. Explain the mechanism of transposition in Prokaryotes.

24. What is a genetic code? Explain its features.

25. Explain the structure and regulation of LAC operon.

26. Write a note on post translational modifications in Eukaryotes.

27. Describe the structure of tRNA.

28. Explain the splicing of RNA in eukaryotes.

29. What are plasmids? Explain the various types.

30. Write an account on eukaryotic transposons.

(5 × 6 = 30 marks)

Part D (Essay Questions)

Answer any **two** *questions.*
Each question carries 10 *marks.*

31. Explain the mechanisms of genetic recombination in Bacteria and its significance.

32. Describe the process of translation in Eukaryotes.

33. With the help of diagrams, describe the structure and regulation of Trp operon.

34. Describe the central dogma of protein synthesis.

(2 × 10 = 20 marks)

D 10184 (Pages : 2) Name.....

Reg. No.....

FIFTH SEMESTER U.G. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS—UG)

Genetics

GEN 5B 10—DEVELOPMENTAL AND BEHAVIOURAL GENETICS

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. Pair rule genes.
2. Pole Cells.
3. Alcoholism.
4. Zygotic gens.
5. Capacitation.
6. Cystic fibrosis.
7. Fragile sites.
8. Penetrance.
9. Pseudogene.
10. Cystic fibrosis.

(10 × 1 = 10 marks)

Part B (Short Answer Type Questions)

Answer any **ten** *questions.*
Each question carries 2 *marks.*

11. What is the role of Nanos ?
12. Write notes on Polyspermy.
13. Write notes on cortical reactions.
14. Role of selector genes.

15. Steps in activation of sperm.
16. Role of selector gene.
17. Explain the function of Terminal genes.
18. Explain pair rule gene.
19. Write an account on behavioural aspects of Mice.
20. Explain homeotic gene.
21. Write an account on gap gene.
22. Differentiate fertilization and gastrulation.

(10 × 2 = 20 marks)

Part C (Short Essays)

Answer any **five** *questions.*
Each question carries 6 *marks.*

23. Mechanism of gastrulation.
24. Explain the functions of Hunch back proteins.
25. Explain Altruism.
26. Write notes on activation of egg.
27. Explain Oogenesis.
28. Explain Homeotic genes.
29. Write an account on genetical base of alcoholism.
30. Write an account on *Drosophila* behavioural aspects.

(5 × 6 = 30 marks)

Part D (Essay Questions)

Answer any **two** *questions.*
Each question carries 10 *marks.*

31. Write an account on genetic control of behavior.
32. Write an account on Spermatogenesis.
33. Explain the genetics of flower development.
34. Discuss molecular aspects of development.

(2 × 10 = 20 marks)