(Pages : 2)

Name..

Reg. No..................................

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Genetics

GEN 6B 15 (E2)—CANCER 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 Melanomas ?

2. Write a brief account on induced neoplasia.

3. Mention any four features of malignant cells.

4. Write a brief note on Hodgkin's lymphoma.

5. What is Retinoblastoma ?

6. Write a short note on p21.

7. Give an account of tumour markers.

8. Distinguish between benign tumours and malignant tumours.

9. What are Carcinogens ? Give an example.

10. Mention the features of features of Gorlin syndrome.

11. What is Metastasis ?

12. Comment on Philadelphia chromosome.

(8 × 3 = 24 marks)

Turn over

Section B

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

13. Give a detailed account on myeloproliferative disorders.

14. Give a brief account on genetic markers of Cancer.

15. Explain the cytogenetics of chronic myeloid leukemia

16. Comment on tumour suppressor genes.

17. Write a short note on various viruses involved in human cancer.

18. Explain the genetic effects of ionizing radiations.

19. Give an account of Burkitt's lymphoma.

(5 × 5 = 25 marks)

Section C

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

20. Explain myelodysplastic syndromes. Add a note on chromosomal changes in acute lymphoblastic leukemia.

21. Describe various mechanisms involved in the activation of oncogenes.

(1 × 11 = 11 marks)

C 20608

(Pages : 2)

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Genetics

GEN 6B 14—GENETICS AND FAMILY WELFARE

(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 Genetic counseling.

2. Give examples of genetic markers.

3. Mention the importance of linkage analysis in human gene mapping.

4. How is pre-symptomatic genetic testing done ?

5. What are two non-invasive techniques used in prenatal diagnosis ?

6. What is the difference between ART and IVF ?

7. How does chromosomal abnormality affect pregnancy ?

8. What does the amniocentesis test for ?

9. Write the advantages and disadvantages of preimplantation genetic diagnosis ?

10. What is meant by bioethics ?

11. Comment on the importance of PND act.

12. What are reproductive rights ?

(8 × 3 = 24 marks)

Turn over

Section B

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

13. Explain the steps involved in IVF.

14. Discuss the correlation between physical map and genetic map.

15. Comment on the importance of molecular medicine.

16. Explain the differences between ZIFT and GIFT.

17. Write notes about chorionic villus sampling.

18. Give a brief account of Gene therapy.

19. How does preimplantation genetic diagnosis work ?

(5 × 5 = 25 marks)

Section C

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

20. Explain various techniques involved in prenatal diagnosis of genetic diseases. Add a note on chromosome abnormalities and pregnancy loss.

21. Explain the genetic susceptibility to Alzheimer's, Schizophrenia and CAD.

(1 × 11 = 11 marks)

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS–UG)

Genetics

GEN 6B 13—GENETICS AND SOCIETY

(2019 Admissions)

Time : Two Hours　　　　　　　　　　　　　　　　　Maximum : 60 Marks

Section A

Answer atleast **eight** *questions.*
Each question carries 3 marks.
All questions can be attended.
Overall ceiling 24.

1. Explain GEAC.

2. Give an account on various vectors used in gene therapy.

3. Discuss the importance of learning genetic and society.

4. Differentiate between racism and idealism.

5. Explain the significance of stem cell research.

6. Comment on amniocentesis.

7. Explain the major postulates of Lamarckism.

8. How is cultural evolution paralleled with organic evolution ?

9. What is a transgenic chimera ?

10. Name any *two* examples of ethnic traits.

11. Comment on ethical issues specific to prenatal diagnosis.

12. Write a note on chromosome banding.

(8 × 3 = 24 marks)

Turn over

Section B

Answer atleast **five** *questions.*
Each question carries 5 marks.
All questions can be attended.
Overall ceiling 25.

13. What is gene patenting ? Discuss its implications.

14. Explain carrier screening. Mention its advantages and drawbacks.

15. Explain gene therapy. Why it is important ?

16. What is eugenics ? Give any *two* examples.

17. Give an account of multi-factorial genetic diseases citing specific examples.

18. Comment on pre-symptomatic and pre-implantation genetic diagnosis.

19. Explain the different types of natural selection.

(5 × 5 = 25 marks)

Section C

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

20. Comment on international conventions on intellectual property rights.

21. Discuss different kinds of genetic testing.

(1 × 11 = 11 marks)

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Genetics

GEN 6B 12—BIOINFORMATICS

(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 a model organism ?

2. Expand RCSB-PDB.

3. What are composite databases ?

4. Differentiate PAM and BLOSUM.

5. What do you mean by GBFF ?

6. What is the use of Needleman-Wunsch Algorithm ?

7. What is the sequence retrieval system available in EMBL ?

8. What is Cladistics ?

9. What do you mean by molecular clock hypothesis ?

10. Differentiate between orthologous and paralogous sequences.

11. What are ESTs ? What is their importance ?

12. What are the uses of Clustal Omega ?

(8 × 3 = 24 marks)

Turn over

Section B

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

13. Elaborate on structural databases with suitable examples.

14. What is dynamic programing ? Explain.

15. Summarize various scoring matrices used in computational biology exercises.

16. What are the various guidelines required for the designing of an in-silico primer ? What are the major tools used ?

17. What are the various methods used for the prediction and hunting of genes ?

18. What is genetic algorithm ? Mention the merits and demerits ?

19. What are the variants of BLAST ? Discuss.

(5 × 5 = 25 marks)

Section C

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

20. Discusses principles and methods involved in MSA ? Expand the major approaches used for the prediction of motifs by MSA.

21. Examine various methods used for the analysis of phylogenetic trees with relevant bioinformatics tools.

(1 × 11 = 11 marks)

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Genetics

GEN 6B 11—CURRENT TRENDS IN 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 'Biodiversity hotspots'.

2. What are 'Autoimmune diseases ?

3. What is meant by 'Primary immunodeficiency' ?

4. Comment on IgG.

5. Define Ecogenetics.

6. What are 'Allergic agents' ? Give any two examples.

7. What is genomics ?

8. Define pharmacogenomics.

9. What is lactose intolerance ?

10. Haemoglobinopathy.

11. What is Malignant Hyperthermia ?

12. What is pharmacokinetics ?

(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. Define the concept of 'metabolome' and metabolomics. What is the scope ? Explain.

14. Differentiate between gene and genome. What is meant by functional genomics ?

Turn over

15. What is 'gout' ? What are the symptoms ? Explain the causes.

16. Define Immunity. What are the components of Innate Immunity ? Explain.

17. Write a detailed account on 'Immunodeficiency' conditions.

18. How species extinction happen ? Detail the causes and consequences.

19. Differentiate between B-lymphocytes and T-lymphocytes.

(5 × 5 = 25 marks)

Section C (Essays)

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

20. Give a detailed account on Organs of the immune system.

21. Define the term proteome. Explain different techniques used in proteomics studies.

(1 × 11 = 11 marks)

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Genetics

GEN 6B 15 (E2)—CANCER GENETICS

(2014 to 2018 Admissions)

Time : Three Hours   Maximum : 80 Marks

Section A

Answer all the **ten** *questions in a word* **or** *phrases.*
Each question carries 1 mark.

1. Name the carcinogens.

2. BRCA1 is marker of which cancer ?

3. Define Oncogene.

4. Name the oncogeic virus.

5. What is Sarcoma ?

6. Name the oncofetal antigens.

7. Name the hormone that related to cancer.

8. What is Epimutagen ?

9. Name the Mutagens.

10. What is mean by metastasis ?

(10 × 1 = 10 marks)

Section B

Give Short Answer to any **ten** *out of twelve questions*
Each question carries 2 marks.

11. What familial factors to cause cancer ?

12. Explain burkitts lymphoma.

13. How hypoxia and cancer are related ?

Turn over

14. What is contact inhibition ?

15. Explain tumour initiator with example.

16. Justify radio activity used of treatment of cancer.

17. What are Biomarkers ?

18. What are the genetic effects of ionizing radiation ?

19. How viruses associated with cancer ?

20. Why chromosomal instability cause cancer ?

21. Name the cell cycle regulators.

22. Explain with example of DNA intercalating agents.

(10 × 2 = 20 marks)

Section C

Answer in **a paragraph** *to any* **five** *out of eight questions.*
Each question carries 6 marks.

23. What are cytogenetic techniques used to detect cancer ?

24. Explain mechanism of chemical carcinogenesis ?

25. What are growth factors ? Explain role in hyperproliferation with example.

26. What the techniques used to check the biochemical changes during cancer.

27. Write a note on tumor suppressors.

28. Why some people are more susceptible for cancer ?

29. What are the main variant of Burkitt lymphoma ?

30. What are oncogenes products ? Explain with examples.

(5 × 6 = 30 marks)

Section D

Write essays on any **two** *questions.*
Each question carries 10 marks.

31. Write a note on mechanism of activation of oncogenes.

32. Explain in detail on leukaemia.

33. Discuss genetic mechanism of cancer induction, progression.

34. Write detailed account of cancer stem cells.

(2 × 10 = 20 marks)

SIXTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, MARCH 2022

Genetics

GEN 6B 13—GENETICS AND SOCIETY

(2014 to 2018 Admissions)

Time : Three Hours   Maximum : 80 Marks

Section A

*Answer **all** the ten questions in a word **or** phrases.*
Each question carries 1 mark.

1. Who coined the term eugenics ?

2. What is the largest gene in humans ?

3. According to HGP, human genome consists of approximately ———— genes.

4. Which method is most commonly associated with a lack of informed consent ?

5. What is the main idea of social Darwinism ?

6. What is the most common cause of mental disabilities in children ?

7. What is genetic testing ?

8. What is the purpose of the conclusion in a research report ?

9. What is the main purpose of a patent ?

10. What is IPR protection ?

(10 × 1 = 10 marks)

Section B

*Give Short Answer to any **ten** out of twelve questions.*
Each question carries 2 marks.

11. How does natural selection affect behavior ?

12. Why should genetic testing be done ?

13. What is the importance of genetic counseling ?

14. What are the benefits of gene therapy ?

15. What is confidentiality ?

16. What are the different types of patents ?

Turn over

17. What is the purpose of eugenics ?

18. What is the main purpose of human genome project ?

19. What is population genetic screening ?

20. What is IPR protection ?

21. What is self-determination in medical ethics ?

22. Differentiate between a genome map and a genome sequence?

(10 × 2 = 20 marks)

Section C

Answer in a paragraph to any **five** *out of eight questions.*
Each question carries 6 *marks.*

23. What is organic evolution ?

24. Write a note on Bioethics in Genetics.

25. What are the different types of evolution, discuss with suitable examples ?

26. What is the Human Genome Project and why has it been important ?

27. What are the ethical considerations of population screening ?

28. What are the *five* fundamental principles of ethics in accounting ?

29. Write a note on Eugenic movement.

30. Write a note on patent issue in biotechnology.

(5 × 6 = 30 marks)

Section D

Write essays on any **two** *questions.*
Each question carries 10 *marks.*

31. Discuss the significance of intellectual property management.

32. What is immoral about eugenics ? Discuss on genetic remediation *vs.* genetic enhancement.

33. What is gene therapy ? Discuss on somatic cell and germ cell therapies.

34. Write essay on Huma Genome Project.

(2 × 10 = 20 marks)

SIXTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, MARCH 2022

Genetics

GEN 6B 12—BIO-INFORMATICS

(2014 to 2018 Admissions)

Time : Three Hours   Maximum : 80 Marks

Section A

Answer all the **ten** *questions in a word* **or** *phrases.*
Each question carries 1 mark.

1. NCBI.

2. BLAST.

3. DDBJ.

4. SNP.

5. SWISSPORT.

6. FASTA.

7. OMIM.

8. CLUSTAL.

9. Gen Bank.

10. cDNA.

(10 × 1 = 10 marks)

Section B

Give short answer to any **ten** *out of twelve questions.*
Each question carries 2 marks.

11. CLADOGRAM.

12. ALGORITHM.

13. PARALOGY.

14. EMBL.

15. Explain Dynamic programming.

16. Describe Primary databases.

Turn over

17. Explain about Hidden Markov models.

18. Explain about biological information access.

19. How do you interpret your BLAST result by using *e*-value ?

20. Name *two* tools used in phylogenetic analysis.

21. Discuss the major features of Protein Data Bank.

22. Write a short note on ESTs and their uses. Name a EST database.

(10 × 2 = 20 marks)

Section C

Answer in a paragraph to any **five** *out of eight questions.*
Each question carries 6 marks.

23. What do you mean by data mining ?

24. Differentiate between Dendrogram and Cladogram.

25. Explain the methods of genome analysis and mapping.

26. Compare PAM and BLOSOM matrices.

27. What is meant by secondary database ? What are the major secondary databases ?

28. What are the basic concepts of Phylogenetics ? How will you determine the evolutionary distance from a tree ?

29. Point out the major differences between BLAST and FASTA.

30. Discuss 'Maximum Parsimony method'.

(5 × 6 = 30 marks)

Section D

Write essays on any **two** *questions.*
Each question carries 10 marks.

31. Discuss the importance of biological databases in bio-informatics. Also comment on their modes of classification.

32. Describe in detail about the sorting and searching techniques.

33. Describe the tools for similarity search and sequence alignment.

34. Explain the various methods used in generating evolutionary tree and tree evaluation.

(2 × 10 = 20 marks)

C 20153

(Pages : 2)

Name..

Reg. No...................................

SIXTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, MARCH 2022

Genetics

GEN 6B 11—CURRENT TRENDS IN GENETICS

(2014 to 2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

Section A

Answer all the **ten** *questions in a word* **or** *phrase.*
Each question carries 1 mark.

1. Human drat genome was released in the year ————.

2. What is junk DNA ?

3. Muta'tions in human———— gene creates slow acetylators.

4. Which enzyme is responsible for succinylcholine sensitivity in humans ?

5. In pharmacokinetics what does the acronym ADME stand for.

6. Which antibody class is associated with allergic reactions ?

7. Small chemical group on the antigens that can react with an antibody is called ————.

8. A therapeutic approach for rheumatoid arthritis is to ———— TNFα activity.

9. Species which are at the verge of the extinction are called as ———— species.

10. Name any Indian bio-diversity hotspot.

(10 × 1 = 10 marks)

Section B

Give short answers to any **ten** *out of twelve questions.*
Each question carries 2 marks.

11. What are housekeeping genes ?

12. What is next-generation sequencing ?

13. What is the principle of 2D-PAGE ?

14. Define aldehyde dehydrogenase-2 deficiency.

15. What does FDA approval mean ?

16. What is allergic sensitization ?

Turn over

17. Mention any *two* food hazardous food additives.

18. What are macrophages ?

19. What is agglutination ?

20. Give *two* reasons for secondary immune deficiency.

21. What is alpha-diversity ?

22. Mention any *two* advantages of ex-situ conservation.

(10 × 2 = 20 marks)

Section C

Answers in a paragraph to any **five** *out of eight questions.*
Each question carries 6 *marks.*

23. Describe how the shotgun method is used to sequence a bacterial genome.

24. What is genome annotation ? How are genomes annotated ?

25. Write a short note on any genetic disorder with altered drug responses.

26. Comment on the genetics of porphyria.

27. Write a short note eco-genetics.

28. Discuss the importance of innate immunity.

29. Describe the structure and functions of any primary lymphoid organ.

30. What causes biodiversity loss ? What will be the consequences of biodiversity loss ?

(5 × 6 = 30 marks)

Section D

Write essays on any **two** *questions.*
Each question carries 10 *marks.*

31. Describe the principle application of micro-arrays in functional genomics.

32. Write an essay on pharmaco-genomics and drug development.

33. Write an essay on the health risks of pesticides in food.

34. Describe the functions of different immunoglobulin classes.

(2 × 10 = 20 marks)