C 20531 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Biotechnology

BTY 6B 17—MEDICAL BIOTECHNOLOGY

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answers)

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

1. H1N1 disease.
2. Chlamydia.
3. Meningitis.
4. Septicemia.
5. Immunoprophylaxis.
6. Q-fever.
7. Virulence factors of Staphylococcus.
8. Selective and differential media.
9. Nosocomial infections.
10. Cell mediated immunity.
11. General properties of Enterobacteriaceae.
12. Adenovirus.

(8 × 3 = 24 marks)

Section B (Paragraphs)

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

13. Cultivation and identification methods for fungi.
14. Discuss different mechanisms of innate immunity.
15. Describe secondary lymphoid tissues.
16. Explain the structure of HIV virus.
17. Discuss control and prevention of H1N1.
18. Give an account on role of normal flora.
19. Brief account on cancer immunotherapy.

(5 × 5 = 25 marks)

Section C (Essay)

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

20. Write an essay on different sterilization methods.
21. What are immunoglobulins ? Explain different classes of immunoglobulins and general structure of immunoglobulin.

(1 × 11 = 11 marks)

C 20530 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Biotechnology

BTY 6B 15—RECOMBINANT DNA TECHNOLOGY AND 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 Cohen and Boyer patent ?
2. What is a multiple cloning sites ?
3. What is the role of alkaline phosphatase in cloning ?
4. What are selectable marker genes ?
5. What are telogenic nucleotides ?
6. What is FISH ?
7. Comment on CaMV 35S promoter.
8. What is vent polymerase ?
9. What are vir genes of *Agrobactriumtumefaciens* ?
10. What is GENBANK ?
11. What is a secondary sequence data base ?
12. Comment on BtBrinjal ?

(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 co-integrate vector system of *Agrobacterium tumefaciens*.
14. What is biolistics ? How is it advantageous in introducing foreign DNA into plant cells.
15. Explain briefly the principle and procedure of western blotting and hybridisation.
16. What is a multiple sequence alignment ? Comment on query cover and similarity index in BLAST ?
17. Explain the procedure of Sangers sequencing.
18. What is the principle and procedure of polymerase chain reaction.
19. Narrate any cosmid cloning scheme.

(5 × 5 = 25 marks)

Section C

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

20. What are the applications of transgenic plants ?
21. DNA sequencing has revolutionised life science research. Substantiate the statement.

(1 × 11 = 11 marks)

C 20529 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Biotechnology

BTY 6B 14—ANIMAL BIOTECHNOLOGY

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type)

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

1. Feeder layer.
2. Contact inhibition.
3. Cell culture contaminant.
4. Pluripotency.
5. Cytopathic effect.
6. Osmolarity in cell culture media.
7. Continuous cell lines.
8. Bicarbonate buffer in animal cell culture.
9. Any *four* characteristics of primary culture.
10. Any *four* characteristics of transformed cells.
11. Trypsinization.
12. Any four cell line.

(8 × 3 = 24 marks)

Section B (Paragraph Type)

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

13. Discuss the merits and demerits of serum free media.
14. Explain the immortalization of cell line with viral genes.
15. Describe different types of natural and artificial animal cell culture medias.
16. Describe the methods for quantification of cells in cell culture.
17. Discuss the physiochemical properties of the culture medium.
18. Explain the steps involved in cryo-preservation of animal cells.
19. Discuss various sterilization methods employed in animal cell culture.

(5 × 5 = 25 marks)

Section C (Essay)

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

20. Discuss media components in the animal cell culture media.
21. What is primary culture ? Explain different methods to develop primary culture.

(1 × 11 = 11 marks)

C 20528 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Biotechnology

BTY 6B 13—PLANT BIOTECHNOLOGY

(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. Synthetic seed
2. Embryo rescue.
3. Meristem culture.
4. Surface sterilization.
5. Slow growth cultures.
6. Hairy root culture.
7. PR protein.
8. Co integrate vector.
9. Cytokinin.
10. Chemofusion.
11. Distant hybridization.
12. Greenhouse technology.

(8 × 3 = 24 marks)

Section B (Paragraph Type Questions)

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

13. Explain the role of growth regulators in the medium.
14. Describe the methods for isolation of protoplast.
15. What is Somaclonal variation and explain its application in plant breeding.
16. Explain mechanism of plant gene transfer through viral vectors.

Turn over

17. Brief account on germplasm conservation.

18. Describe the stages of callus culture and application of callus culture.

19. Explain application of plant tissue culture.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

Answer any **one** *questions.*
It carries 11 *marks.*

20. Write an essay on haploid production and its application in plant breeding.

21. Explain different gene transfer methods in plants and how herbicide resistance developed in plant.

(1 × 11 = 11 marks)

C 20085 (Pages : 2) Name.....

Reg. No.....

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

Biotechnology

BTY 6B 17—MEDICAL BIOTECHNOLOGY

(2014 to 2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

Answer any **two** *out of four questions in about* 1500 *words.*
Each question carries 10 *marks.*

1. Describe the various methods of sterilization.
2. Discuss infection and immunity.
3. Describe the properties of Staphylococcus.
4. Explain the properties of HIV and the pathogenesis of AIDS.

(2 × 10 = 20 marks)

Section B

Answer any **seven** *out of* **fourteen** *questions in about* 750 *words.*
Each question carries 5 *marks.*

5. Describe the common biochemical tests used for the identification of medically important bacteria.
6. Describe the different types of precipitation reactions.
7. Explain antibiotic sensitivity tests.
8. Describe anaerobic culture methods.
9. Describe the structure of primary lymphoid organs.
10. Describe the properties of Rickettsiae and Chlamydiae.
11. Explain the pathogenesis of tetanus.

Turn over

12. Explain the pathogenesis of cholera.

13. How is rabies caused ?

14. Write a note on oncogenic viruses.

15. How is H1N1 influenza controlled and prevented ?

16. Write a note on normal flora of human body.

17. Write a note on nosocomial infections.

18. Describe the pathogenesis of enteric fever.

(7 × 5 = 35 marks)

Section C

Answer **all** *questions in about* 300 *words.*
Each question carries 3 *marks.*

19. How is bacillary dysentery caused ?

20. Write briefly on causative agent of syphilis.

21. What are the Adeno viral infections ?

22. Write a note on small pox virus.

23. What is the pathogenic importance of coliforms ?

(5 × 3 - 15 marks)

Section D

Answer **all** *questions in about* 200 *words.*
Each question carries 2 *marks.*

24. What is CRP ?

25. What is string test ?

26. What is Widal test ?

27. How is Herpes zoster caused ?

28. What is BCG ?

(5 × 2 = 10 marks)

C 20084 (Pages : 2) Name.....

Reg. No.....

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

Biotechnology

BTY 6B 15—RECOMBINANT DNA TECHNOLOGY AND BIOINFORMATICS

(2014 to 2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

Answer any **two** *out of four questions in about* 1,500 *words.*
Each question carries 10 *marks.*

1. Write down the principle, procedure and applications of Northern blotting.
2. What are the different methods of introducing DNA into plant and animals cells ?
3. What are the applications of rDNA technology ?
4. What is the principle and procedure of AFLP marker technology ?

(2 × 10 = 20 marks)

Section B

Answer any **seven** *out of fourteen questions in about* 750 *words.*
Each question carries 5 *marks.*

5. What are different protein databases ? Write in detail about PDB.
6. Write down briefly about CLUSTAL and MUSCLE.
7. What are the procedures for comparing two or more sequences ?
8. What are the applications of DNA finger printing ?
9. Narrate procedure and applications of differential screening.
10. What are cosmids ? Narrate its usefulness and steps in cosmid cloning.
11. Compare and contrast linkers and adapters.
12. What are the different classes of restriction endonucleases ?
13. Narrate the principle and procedure of alkali lysis method of plasmid DNA isolation.
14. What are the applications of bioinformatics ?

Turn over

15. What are the applications of DNA sequencing ?

16. What is the principle and procedure of PCR ? What is RTPCR ?

17. What is the Western blotting ?

18. What are the different biological databases ? Compare and contrast primary and secondary databases.

(7 × 5 = 35 marks)

Section C

Answer **all** *questions in about* 300 *words.*
Each question carries 3 *marks.*

19. Human genome project.

20. FISH.

21. RFLP.

22. T4 DNA ligase v/s E coli DNA ligase.

23. Biolistics.

(5 × 3 = 15 marks)

Section D

Answer **all** *questions in about* 200 *words as brief notes.*
Each question carries 2 *marks.*

24. SI nuclease.

25. FASTA.

26. Banklt.

27. T DNA.

28. *vir* genes.

(5 × 2 = 10 marks)

C 20083 (Pages : 2) Name.....

Reg. No.....

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

Biotechnology

BTY 6B 14—ANIMAL BIOTECHNOLOGY

(2014 to 2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

Answer any **two** *out of four questions in about* 1500 *words.*
Each question carries 10 *marks.*

1. Explain various methods used for cell counting and viability assay.
2. What is primary culture ? Explain different methods to develop primary culture.
3. What is immortalization ? Explain different methods for immortalization of cell lines
4. Discuss various components in the animal cell culture media and specify role serum in the media.

(2 × 10 = 20 marks)

Section B

Answer any **seven** *out of fourteen questions in about* 750 *words.*
Each question carries 5 *marks.*

5. Give an account on preparation of stock solutions for animal cell culture media.
6. Describe the methods for quantification of cells in cell culture.
7. What are growth factors ? Discuss the role of EGF and PDGF in animal cell proliferation.
8. Describe different types of natural and artificial animal cell culture media.
9. Give an account on contamination of animal cell culture media.
10. Explain cryopreservation of animal cells.
11. Comment on the composition and nutrient value of serum.
12. Give an account on different types of culture vessels used for animal cell culture.
13. Explain the isolation and preparation of Mouse embryo culture.
14. Discuss the cell line identification and maintenance of cell lines.

Turn over

15. Discuss the physiochemical properties of the culture medium.

16. What is balanced salt solution ? Explain its role in animal cell culture media.

17. Explain the MTT based cytotoxicity assay.

18. Discuss the essential equipments required in an animal cell culture lab.

(7 × 5 = 35 marks)

Section C

Answer **all** *questions in about* 300 *words.*
Each question carries 3 *marks.*

19. What is the importance of osmolarity in cell culture media ?

20. Define pleuripotency and totipotency with example.

21. Explain estimation of viability by dye exclusion.

22. Give brief account on any *two* human normal cell line

23. Write a note on continuous cell lines.

(5 × 3 = 15 marks)

Section D

Answer **all** *questions in about* 200 *words.*
Each question carries 2 *marks.*

24. Inverted microscope.

25. Karyotyping.

26. Passaging number.

27. BSS.

28. Feeder layer.

(5 × 2 = 10 marks)

C 20082 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION MARCH 2022

Biotechnology

BTY 6B 13—PLANT BIOTECHNOLOGY

(2014 to 2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

Answer any **two** *out of* **four** *questions in about* 1,500 *words.*

Each question carries 10 *marks.*

1. What are the applications of plant tissue culture ?
2. What are the applications of transgenic plants ?
3. What are techniques for protoplast isolation and fusion ?
4. What are the different direct methods of introducing DNA into plant cells ?

(2 × 10 = 20 marks)

Section B

Answer any **seven** *out of fourteen questions in about* 750 *words.*

Each question carries 5 *marks.*

5. What are the different kinds of auxins used in plant tissue culture ? What is the relevance of auxincytokinin ratio ?
6. Write down the different stages of somatic embryogenesis with suitable diagrams ?
7. What are soma clones ? What are the applications of somaclones ?
8. What is the difference between direct and indirect organogenesis ? Narrate the applications of both ?
9. What are the steps in the production of DH lines ? What are their applications ?
10. What is cryopreservation ? What are the advantages and disadvantages of cryopreservation ?
11. Compare and contrast binary and co-integrate vector systems in *Agrobacterium tumefaciens*.
12. What are the applications of organ culture ?

Turn over

13. Make a labelled diagram of an ideal plant tissue culture laboratory.
14. What are the different sterilisation procedures adopted for different media components and lab ware in PTC experiments ?
15. What are main components of an Ideal plant tissue culture medium? Explain with the example of MS medium.
16. What are the applications of protoplast fusion ?
17. What are the applications of hairy root culture ?
18. What is cell suspension ? What are the applications of cell suspension ?

(7 × 5 = 35 marks)

Section C

Answer **all** *questions in about* 300 *words.*
Each question carries 3 *marks.*

19. Cybrids.
20. Embryo rescue.
21. Production of virus free plants.
22. *vir* genes.
23. Synthetic seeds.

(5 × 3 = 15 marks)

Section D

Answer **all** *questions in about* 200 *words as brief notes.*
Each question carries 2 *marks.*

24. Acclimatisation.
25. Explant.
26. Macerozyme.
27. Golden rice.
28. HEPA filter.

(5 × 2 = 10 marks)