C 20657 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS–UG)

Microbiology

MBG6B15 (E3)—BIOINSTRUMENTATION

(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. Isopycnic centrifugation.
2. Beer Lambert's law.
3. Principle of turbidimetry.
4. RCF.
5. Isoelectric focusing.
6. PFGE.
7. Matrices used in column chromatography.
8. Geiger Muller Counter.
9. Quantum theory of electromagnetic radiation.
10. Gel documentation system.
11. HPLC.
12. Units for the measurement of radioactive decay.

(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.

1. Flow cytometry.
2. pH electrodes.
3. Types of biosensors.
4. Thin layer chromatography.
5. Rotors used in centrifuges.
6. Nephelometry.
7. Ion exchange chromatography.

(5 × 5 = 25 marks)

Section C

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

1. Explain the principle, instrumentation and applications of various gel electrophoretic techniques.
2. Discuss the principle, working and uses of atomic spectroscopy and NMR spectroscopy.

(1 × 11 = 11 marks)

C 20656 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Microbiology

MBG 6B 15 (E2)—MOLECULAR BIOLOGY

(2019 Admissions)

Time : Two Hours Maximum : 60 Marks

Wherever needed answers must be supported by structural illustrations and diagrams.

Section A (Short Answer Type Questions)

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

Write briefly on :—

1. Suppressor mutation.
2. Splicing.
3. Monocistronic and polycistronic mRNAs.
4. Nucleotide.
5. Rolling circle replication.
6. DNA ligase.
7. Promoter region.
8. Semi conservative replication.
9. Histones.
10. Peptidyl transferase.
11. Leading stand.
12. Primase.

(8 × 3 = 24 marks)

Turn over

Section B (Paragraph Type Questions)

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

Write notes on :—

1. Explain the various DNA repair mechanisms.
2. List the features of Watson and Crick model of DNA.
3. Explain the mechanism of 5^1 and 3^1 modifications in the primary transcripts.
4. Give a detailed account on different types of RNA molecules.
5. Explain the repressor mediated regulation of tryptophan operon.
6. Discuss the process of replica plating.
7. Write a note on prokaryotic DNA polymerases.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

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

Write essay on ;—

1. Explain the regulation of lac operon.
2. Explain the process of bacterial protein syntheis.

(1 × 11 = 11 marks)

C 20655 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Microbiology

MBG 6B 15 (E1)—CELL AND TISSUE CULTURE

(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.

Write briefly on :

1. Applications of haploid plants in plant breeding.
2. Organogenesis.
3. Meristem tip culture.
4. Secondary metabolites.
5. Cellular totipotency.
6. Embryo rescue.
7. Somaclones.
8. Growth chambers.
9. Somatic embryos.
10. Gibberlins.
11. Single cell culture.
12. Callus.

(8 × 3 = 24 marks)

Turn over

Section B (Paragraph Type Questions)

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

Write notes on :

1. Clonal propagation.
2. Selection of explant and sterilization.
3. Synthetic seed technology.
4. Culture media used for tissue culture.
5. Callus culture.
6. Stem cell culture and its applications.
7. Androgenesis in crop improvement.

(5 × 5 = 25 marks)

Section C (Essays)

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

Write essay on :

1. Discuss on protoplast technology for crop improvement.
2. Describe briefly about basic laboratory facilities required for tissue culture.

(1 × 11 = 11 marks)

C 20654 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CBCSS—UG)

Microbiology

MBG 6B 11—MEDICAL MICROBIOLOGY—II

(2019 Admissions)

Time : Two Hours and a Half Maximum : 80 Marks

Section A (Short Answer Type Questions)

Answer at least **ten** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 30.

1. Symptoms of chikungunya.
2. Taenia solium.
3. Synthetic antibiotics.
4. What is therapeutic index of antibiotics ?
5. Rabies vaccine.
6. ELISA.
7. Prophylaxis of Hepatitis A infection.
8. Symptoms of Swine flu.
9. Prophylaxis of filariasis.
10. BCG vaccine.
11. Mode of action of Beta lactam antibiotics.
12. DPT and its administration.
13. Sub unit vaccine.
14. Prophylaxis of amoebiasis.
15. SARS.

Section B (Paragraph Type Questions)

Answer at least **five** *questions.*
Each question carries 6 *marks.*
All questions can be attended.
Overall Ceiling 30.

16. Sub cutaneous and deep mycoses.
17. Laboratory diagnosis of parasitic infections in humans.
18. Types of vaccine.
19. Emergence of antibiotic resistance and resistant mechanisms.
20. Write on the symptoms, epidemiology and prophylaxis of influenza.
21. Write a note on bird flu.
22. Write briefly on trypanosomal infections.
23. Pathogenesis of polio.

(5 × 6 = 30 marks)

Section C (Essay Type Questions)

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

24. Write an essay on symptoms, pathogenesis, diagnosis of Hepatitis B infections.
25. Write briefly on pathogenesis, lab diagnosis and control measures of human rabies.
26. Write an essay on different types of fungal infections in humans.
27. Explain the symptoms, pathogenesis and diagnosis of malaria.

(2 × 10 = 20 marks)

C 20221 (Pages : 2) Name.....

Reg. No.....

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

Microbiology

MBG 6B 15 (E1)—CELL AND TISSUE CULTURE

(2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A (Objective/One word/Fill in the blanks Questions)

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

1. Which class of phytohormones is involved in cell division ?
2. Name any *two* tissue culture media.
3. What is indirect embryogenesis ?
4. What are somaclonal variants ?
5. What is the use of sodium hypochlorite in tissue culture ?
6. What are stem cells markers ?
7. What are pluripotent stem cells ?
8. Name any *four* explants used in tissue culture.
9. What is Androgenesis ?
10. What are Embryoids ?
11. What is in vitro culture ?
12. What are Synseeds ?

(12 × ½ = 6 marks)

Part B (Short Answer Questions)

Answer **all** *questions.*
Each question carries 2 *marks.*

13. Micropropagation technique is used for the mass production of triploids. Why ?
14. What are Cybrids ? How are they produced ?
15. What is the difference between dedifferentiation and redifferentiation ?

Turn over

16. Why is sub-culturing essential in tissue culture ?
17. Name any *two* growth promoting hormones and any one retardant ?
18. How is it possible to get homozygous diploids from haploids ?
19. Write a brief account on the effect of auxin/cytokinin ratio on organ formation.
20. What is EDTA ? Why is it added in tissue culture medium ?
21. What are the applications of meristem culture ?
22. What is biolistic method of gene transfer ?

(10 × 2 = 20 marks)

Part C (Short Essay Questions)

Answer any **six** *questions.*
Each question carries 5 *marks.*

23. Write a brief account on human embryonic stem cell culture.
24. What are the strategies for the enhanced production of secondary metabolites in tissue culture ?
25. Make a comparison of direct and indirect organogenesis.
26. Write a short note on the applications of cell lines in medical field.
27. Write a short note cell suspension culture and its applications.
28. Make a brief account on indirect gene transfer in tissue culture and method of screening genetically altered cells.
29. What are the applications of micropropagation ?
30. Explain the methodology involved in protoplast fusion.

(6 × 5 = 30 marks)

Part D (Essay Questions)

Answer any **two** *questions.*
Each question carries 12 *marks.*

31. Write a detailed account on different culture types and their practical applications.
32. Explain the steps involved in micropropagation technique.
33. Write an essay on the essential components of tissue culture media.

(2 × 12 = 24 marks)

C 20220 (Pages : 2) Name.....

Reg. No.....

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

Microbiology

MBG 6B 11—MEDICAL MICROBIOLOGY—II

(2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions in a word* **or** *sentence.*
Each question carries ½ mark.

1. Name a beta lactam antibiotic.
2. What is a Toxoid ?
3. Name the two major spikes present on influenza virus.
4. Name the vector for Dengue fever.
5. What is meant by incubation period ?
6. The head of Taenia solium is called as ————————.
7. Give an example for a haemoflagellate.
8. TAB vaccine is used against ————————.
9. Name the scientist who first introduced the concept of vaccination.
10. Aminoglycosides inhibit ————————.
11. Give an example for systemic mycoses.
12. Give an example for a synthetic antibiotic.

(12 × ½ = 6 marks)

Part B (Short Answer Questions)

Answer **all** *questions.*
Each question carries 2 marks.

13. Point out the clinical features of polio.
14. What is paediatric AIDS ?
15. What is Piedra ?

Turn over

16. Differentiate between cyst and trophozoite.

17. What is MMR vaccine ?

18. Comment on Reynolds Braude phenomenon.

19. What is malarial paroxysm ?

20. Comment on Aspergilloma.

21. What is a Toxoid ?

22. What is R-plasmid ?

(10 × 2 = 20 marks)

Part C (Short Essay Questions)

Answer any **six** *questions.*
Each question carries 5 *marks.*

23. What are the different types of Hepatitis virus ? Comment on their transmission and the diseases.

24. Write about the causative agent, symptoms and diagnosis of Giardiasis.

25. Comment on the diseases caused by influenza virus.

26. Write in detail about dermatophytosis.

27. Name the causative agent of sleeping sickness. Explain the various stages of the disease.

28. Briefly explain the lifecycle and pathogenesis of malarial parasite.

29. Comment on the various types of Vaccines. Give example for each.

30. Explain the mechanism of resistance to antibiotics.

(6 × 5 = 30 marks)

Part D (Essay Questions)

Answer any **two** *questions.*
Each question carries 12 *marks.*

31. Write an essay on the symptoms, pathogenesis, transmission, prophylaxis and control of any *one* zoonotic viral disease.

32. Explain in detail the various types of fungal diseases with examples.

33. Explain in detail the infection caused by roundworm and hookworm.

(2 × 12 = 24 marks)

C 20219

(Pages : 3)

Name.....

Reg. No.....

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

Microbiology

MBG6B10—GENETICS AND GENETIC ENGINEERING

(2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

Draw diagrams wherever necessary.

Section A

Answer **all** *questions.*
Each question carries ½ mark.

1. The theory of linkage was proposed by :

   (a) M. Delbruck. (b) O. Avery.

   (c) T.H. Morgan. (d) A. E. Garrod.

2. A situation in which an allele of one gene obliterates the phenotypic expression of all allelic alternatives of anther gene is called ————.

3. The ability of a given gene or gene combination to be expressed phenotypicaliy to any degree is called ————.

4. Name the personality who proposed the duplication theory to explain the mechanism of crossing over.

5. The number of linkage groups present in human female is ————.

6. Specialized transduction is usually mediated ———— phages.

7. The proteins involved in the chromosome compaction during early prophase is ————.

8. The enzyme used for prokaryotic cell disruption is :

   (a) Lysozyme. (b) α-amylase.

   (c) Cellulase. (d) β-galactosidase.

9. Introduction of foreign DNA into bacteria by bacteriophage is called ————.

10. Example for type II restriction endonuclease is :

    (a) Hind III. (b) Eco B1.

    (c) Eco P1. (d) Hin fIII.

11. In Sanger's DNA sequencing method the chain termination is achieved by using ———— sugar.

12. A transgenic animal in which a gene has been replaced or disrupted with an artificial DNA is called ————.

(12 × ½ = 6 marks)

Section B

Answer **all** *questions.*
Each question carries 2 *marks.*

13. Pedigree chart.

14. Allelomorph.

15. Pleiotropism.

16. Headful packaging mechanism.

17. Spindle fibres.

18. Cdk inhibitors.

19. Liquid shear technique.

20. Primer.

21. Exo-nucleases.

22. Cosmids.

(10 × 2 = 20 marks)

Section C

Answer any **six** *questions.*
Each question carries 5 *marks.*

23. Extra-chromosomal inheritance.

24. Mechanism of transformation in Gram positive bacteria.

25. Cell cycle.

26. Use of artificial chromosomes in cloning.

27. Genomic library.

28. Mendelian dihybrid cross.

29. Gene transfer techniques for plant transformation.

30. Transgenic animals.

(6 × 5 = 30 marks)

Section D

Answer any **two** *questions.*
Each question carries 12 *marks.*

31. Describe the mechanism of conjugation in bacteria. Write on the application of conjugation for gene mapping.

32. Describe Mendel's experiments using pea plants. Explain Mendel's laws of inheritance.

33. Write on blotting techniques used in *r*DNA technology. Add a note on the ethical issues associated with the use of *r*DNA technology.

(2 × 12 = 24 marks)

C 20218 (Pages : 3) Name.....

Reg. No.....

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

Microbiology

MBY 6B 18 (E2)—BIOSAFETY AND BIOETHICS

(2014 to 2017 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A

Answer **all** *questions.*

Each question carries ½ mark.

1. Among the following nations which one is not a party to CBD ?

   (a) United States. (b) India.

   (c) Canada. (d) Brazil.

2. The human pathogens causing lethal disease that are preventable or curable are categorized under :

   (a) RG 1. (b) RG 2.

   (c) RG 3. (d) RG 4.

3. The sub-committee of MOEF that decide on the large scale use of GMOs in India is ————.

4. The glasshouse containment used in the plant studies with non-pathogenic vector systems is ————.

5. Name the sponsors of human genome project.

6. Among the following a multi-factorial genetic disorder is :

   (a) Diabetes mellitus. (b) Phenylketonuria.

   (c) Sickle cell anemia. (d) Influenza.

7. The gene mutation is located in ———— chromosome of human cell in sickle cell disorder patients.

   (a) 11^{th} chromosome.
   (b) X-chromosome.
   (c) Y-chromosome.
   (d) 22^{nd} chromosome.

8. A person having origin in any of the original peoples of Europe is categorized as ————.

   (a) Asian.
   (b) Alaska native.
   (c) Black.
   (d) White.

9. In which year the MESA study funded by NIH for the search for genetic involvement of heart diseases was started ?

10. The GMO 'Golden Rice' to address vitamin A deficiency was developed by ————.

11. Based on risk assessment, undergraduate chemistry or biochemistry laboratories categorized under ———— CSL level.

12. Which article of the Cartagena Protocol on bio-safety implies risk assessment of GMOs ?

(12 × ½ = 6 marks)

Section B

Write briefly on **all** *questions.*
Each question carries 2 marks.

13. List out the fields in which GMOs are presently used.

14. In relation to GM crops, name the *three* major areas requiring risk assessment and management.

15. Differentiate genome and proteome.

16. What is meant by physical map of genome ?

17. What is the application of BAC in HGP ?

18. What is a mito-chondrial disorder ?

19. List out the techniques used for prenatal diagnosis.

20. What is germ line therapy ?

21. Who is categorized as an African American ?

22. What is the aim of biological containment ?

(10 × 2 = 20 marks)

Section C

Write short essays on any of **six** *questions.*
Each question carries 5 *marks.*

23. Ethical implications in HGP.

24. Laboratory biosafety level criteria.

25. Ethical concerns of GM foods.

26. Applications of bio-ethics.

27. Differentiate genetic linkage map and physical map of genome.

28. Methods for presymptomatic genetic testing.

29. Prenatal diagnosis and its applications in India.

30. Advantages and applications of genetic studies on ethnic races.

(6 × 5 = 30 marks)

Section D

Write essays on any **two** *questions.*
Each question carries 12 *marks.*

31. Write a note on bio-safety guidelines for research in transgenic organisms.

32. Write a note on methodologies adopted for HGP. Discuss the future use of human genomic data in the medicine and genetics.

33. Discuss the genetic basis of diseases. Write a note on testing for genetic diseases and their importance in the health care system.

(2 × 12 = 24 marks)

C 20217 (Pages : 2) Name.....

Reg. No.....

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

Microbiology

MBY 6B 18 (E1)—CELL AND TISSUE CULTURE

(2014 to 2017 Admissions)

Time : Three Hours Maximum : 80 Marks

Section A (Objective)

Answer all the **twelve** *questions.*
Each question carries ½ mark.

1 ———— leads to the production of bipolar structure containing root and shoot axis with closed independent vascular system.

2. Partof plant used for culturing is called ————.

3. Cybrids are produced by the fusion of ————.

4. Unorganised mass of actively dividing cells is called ————.

5. The ability of callus cells to forms a whole plant is known as ————.

6. Cells devoid of cell wall are called ————.

7. Whichbacteria is used for gene transfer to plant cells ?

8. Name any *one* plant tissue culture media.

9. The father of tissue culture is ————.

10. DNA delivery using liposomes is called ————.

11. Cells that require attachment for growth are called ————.

12. Name the bacteria that can pass through bacterial filter and cause cell line contamination.

(12 × ½ = 6 marks)

Section B (Short Answer Questions)

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

13. What is tissue culture ?

14. Comment on Callus culture.

Turn over

15. Explain Micro chamber technique.

16. How is Protoplast fusion done.

17. How can we produce homozygous plants using tissue culture ?

18. What are the limitations of plant tissue culture ?

19. How can we sterilize plant growth regulators used in tissue culture media ?

20. What are the major animal cell culture contaminants ?

21. What are continuous cell lines ?

22. Comment on chromosomal variability in callus culture.

(10 × 2 = 20 marks)

Section C (Short Essay Questions)

Answer any **six** *questions.*
Each question carries 5 *marks.*

23. What are the major types of animal tissue culture media ?

24. Briefly explain the process of somatic hybridization.

25. Comment on explant selection and sterilization.

26. What is a cell line ? Mention its types

27. Whatare the basic laboratory requirements for plant tissue culture ?

28. How can we produce virus free plants ? Explain.

29. Comment on secondary metabolite production using suspension culture.

30. what are the various gene transfer methods used in animal cells ?

(6 × 5 = 30 marks)

Section D (Essay Type Questions)

Answer any **two** *questions.*
Each question carries 12 *marks.*

31. Write in detail about the specific gene transfer mechanisms.

32. Explainin detail the applications of plant tissue culture and animal tissue culture.

33. What is clonal propagation ? How is it done ?

(2 × 12 = 24 marks)

C 20216 (Pages : 3) Name.....

Reg. No.....

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

Microbiology

MBY 6B 16—MEDICAL MICROBIOLOGY—II

(2014 to 2017 Admissions)

Time : Three Hours Maximum : 120 Marks

Section A

Answer **all** *questions.*

Each question carries ½ mark.

1. The Lipschutz inclusions are formed as CPE in ———— infection.
2. Name the virus causing swine fever.
3. The negative staining technique is used for detecting

   (*Sporothrix schenckii*, *Candida albicans*, *Histoplasma capsulatum*, *Rhinosporidium seeberi*)
4. Name the causative agent of white piedra.
5. Name the process of transformation of *Entamoeba* cyst to trophozoite is called ————.
6. The vector transmitting African sleeping sickness is ————.
7. The inactivated vaccine for immunoprophylaxis of polio is ————.
8. What are the toxoids present in DPT vaccine ?
9. The enzyme produced by carbapenam resistant bacteria is ————.
10. The organism producing streptomycin is a :

    (Fungi, Bacteria, Actinomycete, Mycoplasma)
11. The 'window period' of HIV infection can be diagnosed by :

    (Antigen detection, Anti-HIV antibodies, Peripheral blood smear analysis, Light microscopy)
12. The nail infection caused by fungi are called :

    (Tinea corporis, Tinea capitis, Onychomycosis, Otomycosis)

(12 × ½ = 6 marks)

Turn over

Section B

Write briefly on **all** *questions.*
Each question carries 3 *marks.*

13. Differentiate antigenic shift and antigenic drift.
14. Cytopathic effect.
15. Ectothrix and Endothrix infections.
16. *Malssezia furfur.*
17. Giardiasis.
18. Amoebic dysentery.
19. Post immunization complications.
20. Mode of action of penicillin.
21. Mechanisms of tetracycline resistance.
22. MMR vaccine.

(10 × 3 = 30 marks)

Section C

Write short essays on any **six** *questions.*
Each question carries 8 *marks.*

23. Chicken pox.
24. Laboratory diagnosis of HIV infection.
25. *Tinea nigra.*
26. Sporotrichosis.
27. Leishmaniasis.
28. Life cycle of *Plasmodium vivax.*
29. DNA vaccines.
30. Different types of antibiotics.

(6 × 8 = 48 marks)

Section D

Write essays on any **two** *questions.*
Each question carries 18 *marks.*

31. Write a note on emerging viral diseases.

32. Describe characteristic features of dermatophytes. Write on clinical features and laboratory diagnosis of dermatophytoses.

33. Describe the characteristics of cestodes. Write a note on the life cycle, clinical features and diagnosis of *Taenia solium* infection.

(2 × 18 = 36 marks)

C 20215 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. DEGREE EXAMINATION, MARCH 2022

(CUCBCSS—UG)

Microbiology

MBY 6B 14—MICROBIAL GENETICS AND GENETIC ENGINEERING

(2014—2017 Admissions)

Time : Three Hours Maximum : 120 Marks

Part A

Answer **all** *the questions.*
Each question carries ½ mark.

1. The phenotypic characters produced by Y-linked genes which are confined to males only are called ————————.
2. Crossing over takesplace during stage ———————— of meiosis.
3. When homologous chromosomes begin to move away from each other during diplotene stage ———————— are formed at the points where crossing over had taken place earlier.
4. A DNA mutation that results in no change in protein product is termed as ————————.
5. A tautomeric shift causing the substitution of one purine for a pyramidine is called ————————.
6. An F plasmid carrying bacterial genomic DNA is called ————————.
7. Name a method of introducing rDNA in to host cell by bomarding high velocity microparticles of gold and tungsten coated DNA
8. Name a common viral vector used in gene therapy.
9. What aspect of mitosis is affected by colchicine in inducing polyploidy ?
10. Expand HRT.
11. Name *two* selectable marker genes in pUC18.
12. At the ———————— check point, cell growth is controlled ?

(12 × ½ = 6 marks)

Turn over

Part B

Answer **all** *the questions.*
Each question carries 3 *marks.*

13. Explain the kinds of DNA damage caused by UV and X-rays.
14. What is the concept of Luria Delbrucki experiment ?
15. Mention the theories of chiasma formation.
16. Why are sex chromosome aneuploids more common than autosomal aneuploids ?
17. Explain the phenomenon of interference in crossing over.
18. Explain missense mutation with example.
19. Write about expression vectors.
20. Write a note on lysogeny.
21. Differentiate between tandem duplication and displaced duplication in chromosomes.
22. Write on Ame's test.

(10 × 3 = 30 marks)

Part C

Answer any **six** *questions.*
Each question carries 8 *marks.*

23. Briefly explain about specialized transduction.
24. Write a note on phage vectors in rDNA technology.
25. Discuss the chromosome theory of heredity.
26. Describe the principle and applications of PCR.
27. Explain the molecular mechanism of recombination.
28. Give an account on induced mutations.
29. Briefly describe about interrupted mating experiments ?
30. Discuss on ethical issues associated with Genetically Modified Foods.

(6 × 8 = 48)

Part

Answer any **two** *questions.*
Each questions carries 18 *marks.*

31. Discuss briefly about different steps involved in cell cycle. Explain about cell cycle check points.
32. Explain different strategies used in rDNA technology for the introduction of rDNA in to host cells.
33. Give an account on extrachromosomal inheritance with suitable examples.

(2 × 18 = 36 marks)

C 1258 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, MARCH 2021

Microbiology

MBY 6B 18 (E3)—BIO INSTRUMENTATION

Time : Three Hours Maximum : 80 Marks

Section A

Answer **all** *questions.*
Each question carries ½ mark.

1. In centrifugation RCF stands for ————.
2. The 0.4 potential is developed in the electrodes of pH meter when the pH of the solution is ————.

   (2.6, 4.2, 7.3, 8.4)

3. The layer of organic solvent dissolved with an ion-exchanger is used as a sensing element in ———— electrodes.
4. The most commonly used source of UV radiation in spectrophotometer is ————.

   (Hydrogen lamp, Tungsten lamp, Nernst Glower, Globar)

5. The absorption maximum of a compound shifts to higher wavelength due to presence of auxochrome is called ————.

   (Hypsochromic shift, Hyerchromic effect, Hypochromic effect, Bathochromic shift)

6. The detector used in spectrophotometer working in visible range is :

   (Photomultiplier, Photovoltaic cell, Photoemissive tubes, Photodiodes)

7. In gel chromatography the non-aqueous separations are done using ———— beads.
8. In column chromatography if a single solvent is used as an eluant during separation, the process is called ————.
9. The most common dye used for detection of DNA on gels after electrophoresis is ————.

   (Bromophenol blue, Coomassie Brilliant Blue, Ethydium bromide, Alcian Blue)

10. The free radicals for initiation of polyacrylamide gel polymerization are provided by_____.

    (TEMED, SDS, Ammonium persulphate, β-mercaptoethanol)

11. A positron is a positively charged ————.
12. The process of emission of light by solvent molecules excited by collision with the radiation is called ————.

(12 × ½ = 6 marks)

Turn over

Section B

Write briefly on **all** *questions.*
Each question carries 2 *marks.*

13. Svedberg unit.
14. Redox reaction.
15. $CsCl_2$ gradient.
16. Monochromators.
17. HPLC.
18. DEAE cellulose.
19. Reversed phase chromatography.
20. Pulsed field gel electrophoresis.
21. Scintillation.
22. pH.

(10 × 2 = 20 marks)

Section C

Write short essays on any **six** *questions.*
Each question carries 5 *marks.*

23. Biosensors.
24. Density gradient centrifugation.
25. Atomic absorption spectroscopy.
26. Ion-exchange chromatography.
27. Isoelectric focusing.
28. Applications of radioisotope techniques in biology.
29. Flowcytometry.
30. Zone electrophoresis.

(6 × 5 = 30 marks)

Section D

Write essays on any **two** *questions.*
Each question carries 12 *marks.*

31. Discuss the principle and methodology GLC. Write on the detectors used in GLC columns.
32. Describe laws of absorption. Discuss the components of a UV-visible spectrophotometer.
33. Discuss the principle, methodology and application of submerged gel electrophoresis.

(2 × 12 = 24 marks)