SL.NO:2265 **SUBJECT CODE:48121C01**

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
BIOTECHNOLOGY
FIRST SEMESTER
ADVANCED BIOCHEMISTRY

(candidates admitted under 2021 Regulations)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Write note on diabetes mellitus.

2 Mention in detail about bioenergy.

3 List out the laws of thermodynamic in bioenergy.

4 What is meant by Clinical Correlation?

5 Write short note on conjugated proteins.

6 Draw the structure of any one purine & pyrimidine.

7 What is ‘equation of state’?

8 What is the end product of glycolysis?

9 Comment on glycerolipids.

10 Write the classifications of Proteins based on structure.

Answer **Any FIVE** questions

Part-B (5 x10 =50 Marks)

11 a. Note down an account on reactions of monosaccharides.

OR

b. Write detailed note on Fatty Liver and Gaucher’s Disease.

12 a. Write in detail about degradation of nucleic acid by exo and endo nucleases.

OR

b. Enumerate in detail about orotic aciduria disorder

13 a. Explain in detail about glycolysis cycle in metabolism of carbohydrates.

OR

b. Write short notes on a) Glycogenesis b) Glycogenolysis**.**

14 a. Note down an account on atherosclerosis.

(P.T.O)

OR

b. Write brief note on biosynthesis six essential amino acids.

15 a. Give an account on structural organization of mRNA, rRNA.

OR

b. List out the types of biomolecules and enumerate on it.

16 a. Comment on bioenergy. Explain in detail about thermodynamic quantities and laws of bioenergy.

OR

b. Enumerate in detail about carbohydrates and its classification.

17 a. Give an account on the classification of fatty acids.

OR

b. Write short note on the following. 1)Fatty acid. 2) Glycerolipids. 3) Phospholipids. 4) Glycolipids.

18 a. Write detailed account on primary, secondary and tertiary structure of protein.

OR

b. Explain the properties of DNA.

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Assess the fate and formation of Cholesterol biosynthesis.

OR

b. Draw neatly about the structures of various energy compound and its energy utilization for various functions of the body.

20 a. Illustrate Pyrimidine Nucleotide biosynthesis by denovo pathway and their energy consumption.

OR

b. Give a brief account on the structural characteristic of Fatty acid synthase complex. Highlight the biological advantage of having Multi enzyme complex.

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SL.NO:2258 **SUBJECT CODE:48121C02**

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
BIOTECHNOLOGY
FIRST SEMESTER
PRINCIPLES OF CHEMICAL ENGINEERING

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Outline the significances of dimensional analysis.
2 What is momentum transfer?
3 State Buckingham's Π –theorem.
4 How do you calculate the % excess air?
5 What are the common flow patterns in agitation?
6 Define the terms molarity and molality.
7 Outline the guidelines for solving material balance problems without chemical reaction.
8 Show the differcene between drying ad evaporation process with block diagram
9 Classify the industrial pumps.
10 Classfiy heat transfer equipments

Answer **Any FIVE** questions

Part-B (5 x10 =50 Marks)

11 a. Calculate the density of air containing 21% O_2, 79% by volume at 503K and 1519.875 kPa.

OR

b. A distillation column separates 10000 kg/hr of 50% benzene and 50 % toluene. The product D recovered from the top contains 95% benzene and the bottom product contains 96% toluene. The steam V entering the condenser from the top of column is 8000 kg/hr.Assume that V, R,and D are identical in composition since V is condensed completely. A portion of this product is returned to column as reflux R and the remaining withdrawn as top product. Calculate the ratio of the amount of refluxed to the product withdrawn.

12 a. A sample of mixed acid contains 55% HNO_3 and 48% H_2SO_4 with 3% negative water (mass) basis. Find the actual constituents present in it. The above mixed acids are prepared by mixing 100% HNO_3 and oleum. Identify the required strength of oleum and the proportions of the two acids in which they should be mixed.

OR

(P.T.O)

b. Gas cotaining 25% CO, 5% CO_2, 2% O_2 ad rest N_2 by volume is burnt with 25% excess air .if combustion is 90% complete, Calculate the composition by voulme of flue gases

13 a. The liquid used has a density of 912 kg/m^3 and the capillary has a diameter of 2.222 mm and a length of 0.1585 m. The measured flow rate was 5.33 x 10^{-7} m^3/s of liquid and the pressure drop 131 mm of water (density 996 kg/m^3). Neglecting end effects, calculate the viscosity of the liquid in Pa . s

OR

b. The distance between the two parallel plates is 0.00914 m and the lower plate is being pulled at a relative velocity of 0.366 m/s greater than the top plate. The fluid used is soybean oil with viscosityof 4 x 10^{-2} Pa s at 303 K.Calculate the shear stress and the shear rate.

14 a. Explain the any three valves used in chemical and bioprocess industry wih neat sketch.

OR

b. Develop the one dimenstioal steady heat coduction flux equation for heat transfer through composite wall.

15 a. The temperature at the inner and outer surfaces of a boiler wall made of 20 mm thick steel and covered with an insulating material of 5 mm thickness are 300^oC and 50^oC . If the thermal conductivities of steel and insulating material are 58 W/m^oC an 0.116 W/m^oC, Determine the rate of flow through the boiler wall.

OR

b. Convert (i) 54.75 gm/lit. HCl to molarity (ii) 5N H_3PO_4 to gm/lit (iii).294 gm/lit. H_2SO_4 to normality (iv) 4.8 mg/ml $CaCl_2$ to normality

16 a. Explain how the Rayleigh's method used for dimensional analysis.

OR

b. Explain how Raoult's law ad Boiling point diagram used to generate vapor liquid equilirum data

17 a. Explain in detail i) Yield ii) Selectivity iii) Bypass and Recycle operations iv) Limiting reactants v) Conversion with examples

OR

b. Develop the continuity equation in 3 – D form.

18 a. Explain in detail the measurement of fluid flow using Direct displacement method,

OR

b. Explain any three mass tranfer theories.

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Develop the expression for the drag force on smooth sphere of diameter D, moving with a uniform velocity V in a fluid of density ρ and dynamic viscosity μ using dimensional analysis.

OR

b. Explain in detail measurement of fluid flow using hydrodynamic methods, direct displacement method,

20 a. Demonstrate ΔP in terms of dimensionless parameters using Buckingham's theorem for the pressure difference ΔP in a pipe of diameter D and length l due to turbulent flow depends on the velocity v, viscosity μ, density ρ and roughness k.

OR

b. Derive an expression for flux equation of steady state diffusion in gases when (a) one component diffusing and other non – diffusing (b) equimolar counter diffusion.

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SL.NO:2271 **SUBJECT CODE:48121C03**

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
BIOTECHNOLOGY
FIRST SEMESTER
MICROBIAL TECHNOLOGY

(Candidates admitted under 2021 Regulations-SCBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Functions of Immersion oil and Sub stage condenser?

2 Conclusion on MPN method.

3 Distinguish Dermatophytes.

4 Explain Gram staining? Write its significance.

5 Conclude about the different methods of measuring growth.

6 Define Drug.

7 What is the function of Phase plate in Phase contrast microscope?

8 Outline Binary Fission.

9 Explain short notes on Salmonella

10 Classify Food infections.

Answer **Any FIVE** questions

Part-B (5 x10 =50 Marks)

11 a. Elaborate about the Biofouling and its applications.

OR

b. Examine detailed note on Yeast reproduction.

12 a. Distinguish between Aerobic and anaerobic Growth of Microorganism.

OR

b. List out the methods of Preservation of Microbes.

13 a. Interference on Biofertilizers and Biopesticides. List out its application.

OR

b. Distinguish on Drinking water and Waste water treatment.

14 a. Experiment on effect of immunity in response to clinically important organisms.

(P.T.O)

OR

b. Discuss in detail the physical and chemical factors that affect the growth of microorganisms.

15 a. Discuss the epidemiology, pathogenesis, and laboratory diagnosis of influenza virus

OR

b. Elaborate on Drug, Chemotherapy and their applications.

16 a. Conclude various methods of preservation of foods.

OR

b. Explain the importance of Bergey's Manual in bacterial taxonomy

17 a. Summarize the morphology of a bacterial cell with the help of a neat diagram and mention the functions of various appendages.

OR

b. Illustrate detail of algae. note on structure

18 a. Explain the types of culture techniques

OR

b. Explain the role of biochemical tests in diagnosis of bacterial infections.

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Interference on various types of viruse

OR

b. Discuss in detail about various types of preservation techniques

20 a. Elaborate the definition of viruses and list the components of Virus

OR

b. Summarize about pathogencity of shigellosis, TB

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SL.NO:2278 **SUBJECT CODE:48121P01**

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.E./ M.TECH DEGREE EXAMINATIONS- APRIL -2022
BIOTECHNOLOGY
FIRST SEMESTER
ELECTIVE - BIOPHARMACEUTICAL TECHNOLOGY

(Candidates admitted under 2021 Regulations-SCBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Write note on the sizes of capsules.
2 Write the significance of WBC.
3 Explain about GMP.
4 Define drug delivery system
5 Find some drugs derived from genetically modified plants
6 Comment on pharmacodynamics
7 Comment on granulocyte
8 Explain PTMs
9 Write the types of Granulation.
10 Comment on platelets as growth factor

Answer **Any FIVE** questions

Part-B (5 x10 =50 Marks)

11 a. Write an essay on clinical trials with their imporatance.

OR

b. Discuss in detail about the evaluation techniques for tablet preparation.

12 a. Explain the ways of preservation of drugs and discuss the factors that affect the preservation.

OR

b. Infer notes on a) Haemostasis b) Antithrombin

13 a. Write short note on a) Virtanen b) Antisense agent.

OR

b. Elaborate about antisense oligonucleotide.

14 a. Comment on major sources of Biopharmaceuticals

OR

b. Elaborate about hormones and their therapeutic importance.

15 a. Write short note on a) oligonucleotide b) adjuvant technology.

(P.T.O)

OR

b. What is your opinion about future prospects of biopharmaceuticals?

16 a. Write an essay on drug metabolism

OR

b. Write in detail about the different types of tablet coating.

17 a. Write short note on a) Granulocyte b) Epidermal growth factor.

OR

b. Write an essay on polyclonal antibodies and their medical importance.

18 a. Explain in detail about the role of gene in drug discovery

OR

b. Explain in detail about Vaccine technology.

Answer ALL questions

PART-C (2 x 15 = 30)

19 a. Illustrate about pharmacokinetic activity of drug - Durg absorption , Distribution and Metabolism

OR

b. Indentify and write in detail about different analytical methods used in drug manufacturing

20 a. Why physio chemical properties of drug is important?List the various physio chemical properties of drug?

OR

b. Explain in detail about the role of gene in drug discovery with example

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