

KALYANI MAHAVIDYALAYA
1st Year Test Examination 2014
Microbiology Honours
Paper I

Time: 4 hrs

F.M: 75

(Use separate sheet for each group)

Group: A

I. Answer the following questions briefly. (Any six) (1X6)

- a. What is fungi imperfecti?
- b. What is ribozyme?
- c. What are coacervates?
- d. What is methanogenesis?
- e. Name one filamentous prokaryote.
- f. What is the definitive host for *Plasmodium*?
- g. Differentiate between virus and virion.
- h. Name one halophilic bacterium.

II. Answer the following questions in short. (Any ten) (2X10)

- a. Write characteristics of Ascomycetes.
- b. Write about the specialty of cell wall of archaea.
- c. Write a short note on Koch's postulates.
- d. Write a short note on *Giardia*.
- e. Why is the primitive earth condition termed as anoxic reductive atmosphere?
- f. Write about the economic significance of diatoms.
- g. Name one scientist who has contribution in environmental microbiology along with his contribution.
- h. What is the theory of endosymbiogenesis?
- i. Write a short note on prion along with name of a disease caused by it.
- j. Write a short note on RNA world.
- k. Write about the structure of TMV.
- l. Write about the replication of double stranded RNA virus.

III. Answer the following questions. (Any four) (6X4)

- a. Differentiate between lytic and lysogenic life cycle of virus. 3+3
- b. What are the salient features of Bacillariophyta? 6
- c. Write a short note on chemical evolution. Describe Oparin hypothesis. 2+4
- d. Write about the contributions of Alexander Fleming and Louis Pasteur. 3+3
- e. Differentiate between Archaea and Eubacteria. How many types of halophilic archaea are generally found? 4+2

Group: B

I. Answer the following questions briefly. (Any five) (1X5)

- a. What is plasmid?
- b. Name one endospore producing bacterium.
- c. What is the function of magnetosomes?
- d. What is transpeptidation reaction?
- e. What is pilin protein?
- f. What is the function of carboxysomes?

II. Answer the following questions. (Any four) (2X4)

- a. Differentiate between capsule and slime layer.
- b. Write a short note on functions of cytoplasmic membrane.
- c. How spores help bacteria to survive adverse conditions?
- d. Differentiate between endospore and exospore.
- e. Give a diagrammatic representation of structure of flagella.

III. Answer the following questions. (Any two) (6X2)

- a. Write a note on different storage granules found in bacteria. 6
- b. Differentiate between Gram +ve and Gram -ve bacterial cell wall. 6
- c. Write briefly about eukaryotic mitochondria and plastid. 3+3

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Paper II

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Group: A

I. Answer the following questions briefly. (Any six) (1X6)

- a. What are hopanoids?
- b. Name one basic and one acidic amino acid.
- c. What is enantiomer?
- d. How many essential amino acids are there?
- e. What is the general structural formula of carbohydrate?
- f. Name the purine bases found in DNA.
- g. What is denaturation of DNA?

II. Answer the following questions. (Any eight) (2X8)

- a. How many types of weak interactions are found in aqueous solution?
- b. How nitrogen acts as a micronutrient?
- c. Draw pyranose and furanose structure of glucose.
- d. Define isoenzymes.
- e. What is Chargoff's rule?
- f. Differentiate between α - helix and β - sheet.
- g. What do you mean by specific activity of an enzyme?
- h. What is the function of oxidoreductase and lyase?
- i. What is prosthetic group and co-factor?
- j. Write the reaction of amino acid with HCl.

III. Answer the following questions. (Any three) (6X3)

- a. Differentiate between competitive, uncompetitive and noncompetitive enzyme inhibition. 6
- b. Distinguish between nucleoside and nucleotide. Why DNA is more stable than RNA? What is hypertonic effect of DNA? 2+2+2
- c. Why amino acids are called ampholytes? Describe Xantho-proteic test. How sodium aminoacetate is formed from glycine? 1+3+2
- d. Describe lock and key model of enzyme action. What is feedback inhibition? Name one allosteric enzyme. 3+2+1

Group: B

I. Answer the following questions briefly. (Any five) (1X5)

- a. What is sedimentation coefficient?
- b. What do you mean by equally likely events in probability?
- c. What is half-life of a radioactive material?
- d. What is numerical aperture of a lens?
- e. What colour does proline develop on reaction with ninhydrin.
- f. Define range.
- g. What is null hypothesis?

II. Answer the following questions in brief. (Any six) (2X6)

- a. State Lambert-Beer's law.
- b. Write the principle of affinity chromatography.
- c. How anionic exchanger works?
- d. Define standard deviation.
- e. Name two tracer elements along with their roles.
- f. What is the relation between $T_{1/2}$ and λ ?
- g. What is dark field microscopy?
- h. What is SDS-PAGE?

III. Answer the following questions. (Any three) (6X3)

- a. Describe the process of paper chromatography with diagram. 6
- b. Calculate mean and standard deviation of the following data. 3+3
3,6,7,3,11,12,23,25,10,18,25 and 30
- c. Differentiate between SEM and TEM. Write the principle of phase contrast microscopy. 4+2
- d. Define median and mode for simple series as well as grouped series along with the formula. 3+3