

KALYANI MAHAVIDYALAYA
CITY CENTRE COMPLEX, KALYANI, NADIA
TEST EXAMINATION 2016
DEPARTMENT OF MICROBIOLOGY
PAPER IV

F.M: 50

Time: 2 hrs

(Use separate sheet for each group)

Group: A

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

- a. What is myxotrophy?
- b. What is chemolithotrophy?
- c. What metal cofactors are found in nitrogenase complex?
- d. What is BNF?
- e. What are the different classes of bacteria according to their electron source?
- f. Name 1 methanogenic organism.
- g. What are energy rich compounds?

II. Answer the following questions in short. (Any five) (2X5)

- a. what is syntrophism?
- b. What are the roles of electron transport energy?
- c. What are the functions of pentose phosphate pathway?
- d. Name 1 lactic acid and 1 ethanol producing organism.
- e. What is the peculiarity of nitrogenase in *Streptomyces thermoautotrophicus*?
- f. Write about control of citric acid cycle.
- g. Write down the significance of HMP pathway.
- h. Write down two reactions where substrate level phosphorylation occurs.

III. Answer the following questions. (Any two) (5X2)

- a. Write down how ammonia oxidizing and iron oxidizing bacteria work. 2.5+2.5
- b. Write short notes on: Redox potential and β -oxidation. 2.5+2.5
- c. Difference between EMP and HMP. What is fermentation significance of E.D pathway? 3+2

Group: B

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

- a. Distinguish between batch and fed batch culture.
- b. Name one solidifying agent that is not currently used and write down the reason.
- c. What are the main events of stationary phase.
- d. When diauxic growth curve may be observed?
- e. What are the advantages of continuous culture?
- f. In which phase maximum growth is observed?
- g. What is generation time?

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

- a. How do X-ray and UV-ray act as sterilant?
- b. What will happen if *ftsZ* gene is mutated in a bacterial cell?
- c. What is the difference between continuous and synchronous culture?
- d. What are the disadvantages of UV radiation as sterilizing agent?
- e. Name an antibiotic which inhibits protein synthesis and how?

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

- a. What is growth curve? Explain different phases of growth. 1+5
- b. If two types of carbon sources (monosaccharide and disaccharide) are provided in a medium then what type of growth can be observed and why? 6
- c. What is divisome? Write down the main events of bacterial cell cycle in brief. 2+4

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PAPER V

F.M: 50

Time: 2 hrs

(Use separate sheet for each group)

Group: A

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

- a. What is a mutator gene?
- b. What is frequency of forming dimer among pyrimidines?
- c. Which repair system cleaves thymidine dimer?
- d. Name the structural genes of lac operon.
- e. Name a base analogue.
- f. What is frame shift mutation?

II. Answer the following questions. (Any five) (2X5)

- a. What is null mutation?
- b. Write two features of SOS repair.
- c. What is gratuitous inducer? Give example.
- d. Distinguish between missense and non sense mutation.
- e. Name two intercalating agents. What type of mutation is produced by these chemicals?
- f. What is transposase?
- g. Differentiate between wild type and mutated type.

III. Answer the following questions. (Any two) (5X2)

- a. What is positive and negative regulation? State the role of cAMP in lac operon. Name the repressor of lac operon. 2+2+1
- b. What is tautomerism? Explain with examples. How this mechanism causes mutation? 2+1.5+1.5
- c. Differentiate between (i) transition and transversion (ii) photo repair and dark repair. 2.5+2.5

Group: B

I. Answer the following questions briefly (Any ten) (1X10)

- a. Continuous DNA synthesis occurs on the 3' -5' template. T/F
- b. Discontinuous synthesis of DNA occurs in..... strand.
- c. In virus and prokaryotes replication starts at specific sites on chromosome, referred to as -----.
- d. Name the enzyme that relieves the positive tension created by the unwinding of the DNA molecule.
- e. RNA primers are ----- long that provides 3'-OH.
- f. Correct initiation of prokaryotic transcription requires another subunit called ---- factor .
- g. The consensus sequence at -10 position of prokaryotic cell is -
- h. Mutation or deletions at promoter region severely affects the transcriptional efficiency of that gene T/F.
- i. TBP stands for -----.
- j. Which transcription factor in eukaryotic transcription shows helicase activity?
- k. State the function of Enhancer in eukaryotic transcription.
- l. CAAT box, found approximately at -75 positions of many genes but the position may vary .T/F

II. Answer the following questions in brief. (Any five) (2X5)

- a. State the function of Primase.
- b. Differentiate between leading and lagging strand of DNA.
- c. Name the components of complete replication fork.
- d. What is the importance of Sigma factor in prokaryotic transcription initiation?
- e. State the difference between Prokaryotic and Eukaryotic transcription.
- f. What is hair pin loop?

III. Answer the following questions. (Any one) (5X1)

- a. Describe Rho-independent termination of prokaryotic transcription.
- b. Describe the process of removal of introns in eukaryotic transcription.

