

[3 hours]

Total marks: 100

- N.B.** (1) Attempt all questions.
(2) Draw labeled diagrams wherever necessary.
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Q1 A Define the following terms :**5 marks**

- i. Photoautotroph
- ii. Focal length
- iii. Auxochrome
- iv. Antibiotic
- v. Enriched culture medium

B State whether the given statement is true or false :**5 marks**

- i. Total magnification obtained using oil immersion objective is 1000 times the size of the object.
- ii. In a GasPak jar the palladium catalyst helps remove CO₂ through the formation of water.
- iii. Autoclave is used to sterilize oil.
- iv. Phenol red is the pH indicating dye in MacConkey's agar.
- v. Metachromatic granules are rich in lipids.

C. Give one example for each of the following:**5 marks**

- i. Acidic dye
- ii. A dye used in a selective culture medium that does not inhibit Gram negative bacteria.
- iii. Decolourizer.
- iv. Gaseous disinfectant
- v. A microbial culture collection centre in India.

D Select the correct alternative and rewrite the statements:**5 marks**

- i. A special annular diaphragm is present in _____ microscope.
[Light , Phase-contrast, Darkfield]
- ii. _____ added to a complex medium provides vitamins as growth factors
[peptone, beef extract, casein]
- iii. Microbicidal agent used for skin is called _____ [disinfectant, antiseptic, sterilant]
- iv. _____ medium uses ingredients which are chemically defined. [complex, synthetic, selective]
- v. _____ is an example of basic dye. [Nigrosin, safranin, congo red]

Q 2 Answer briefly any two of the following:**20 marks**

- i. What are capsules? How would you demonstrate a bacterial capsule using a staining technique?
- ii. What are differential culture media? Explain how MacConkeys's agar and Blood Agar help us to differentiate bacterial growth on them.
- iii. Differentiate between sterilization using moist heat and dry heat.

[Turn over]

Q3 A Answer briefly any two of the following:**16 marks**

- i. With the help of diagram explain how bending of light takes place through a lens.
- ii. Justify: "Dark field microscopy is a simple modification of light microscope."
- iii. Explain differential staining with the help of one example.
- iv. Explain the physico-chemical basis of staining.

B. Do as directed**4 marks**

- i. What is the role of phenol in ZNCF?
- ii. Give two applications of Phase-contrast microscope.

Q4 A Answer briefly any two of the following:**16 marks**

- i. How does time and temperature affect activity of a disinfectant?
- ii. How would you prepare and sterilize media to be used for microbiological purpose?
- iii. Briefly explain how halogens and halogen compounds find use as disinfectants.
- iv. Discuss the use of mercurials, silver nitrate and copper sulphate in control of microorganisms.

B. Do as directed**4 marks**

- i. Give the significance of: "Use-dilution test".
- ii. Name two chemotherapeutic agents that inhibit protein synthesis.

Q 5 A Answer briefly any two of the following:**16 marks**

- i. What are culture collection centres? Discuss their functions and services.
- ii. Explain how bacteria are nutritionally classified with respect to carbon and energy source?
- iii. Describe how cultures are routinely preserved for routine laboratory and research work.
- iv. Explain the term colony. With the help of a neat labelled diagram illustrate streak plate method. Give one use of this method.

B. Answer each of the following in one line only:**4marks**

- i. Name a protein source used to make peptone
 - ii. Name a macronutrient element found in proteins but not in carbohydrates.
 - iii. What does yeast extract provide in a complex culture medium ?
 - iv. What is the role of agar in a culture medium?
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