

- All questions are compulsory.
- Figures to Right indicate marks.
- Draw diagram wherever necessary.

**Q I (A) Explain any four of the following terms.**

(08)

1. Red Biotechnology
2. Biotechnology
3. Pharmacogenomics
4. Green Biotechnology
5. Blue Biotechnology
6. Cloning
7. Gene therapy
8. Biopesticides

**Q I (B) Answer any two of the following.**

(12)

1. Explain a role of biotechnology in production of antibiotics.
2. Describe in detail about biotechnology in India.
3. Discuss the public perception of biotechnology.
4. Write in detail about the different areas and application of biotechnology that touches human life.

**Q II (A) Define any three of the following.**

(06)

1. Refraction
2. Focal length
3. Binocular microscope
4. Resolving power
5. Epifluorescence microscope
6. Interpupillary adjustment

**Q II (B) State the significance of any one of the following.**

(02)

1. Diaphragm
2. Coarse focus adjustment knob

**Q II (C) Answer any two of the following questions.**

(12)

1. List the parts of light microscope and describe their functions.
2. Illustratively explain condenser lens system of dark field microscope.
3. Explain principle and applications of fluorescent microscope.
4. Explain construction and working of phase contrast microscope.

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Q III (A) Explain any three of the following.

(06)

1. Nitro stains
2. Chromophore group
3. Leuco compound
4. Acidic dyes
5. Monochrome staining
6. Isoelectric point

Q III (B) Give significance of any one of the following.

(02)

1. Gram's staining
2. Mycolic acid

Q III (C) Answer any two of the following.

(12)

1. Describe principle and procedure of capsule staining.
2. Explain different types of differential staining.
3. Give an account on different types of basic dyes.
4. Explain with any three groups of stains with examples.

Q IV Write short notes on any three of the following.

(15)

1. Applications of bright field microscopy.
2. Applications of phase contrast microscope.
3. Negative staining.
4. Natural dyes.
5. White Biotechnology.
6. A new way of Zymotechnology to Biotechnology.

(12)

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