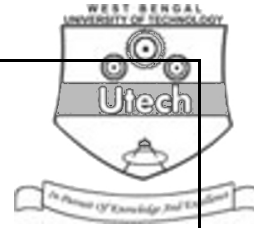


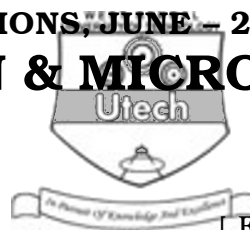
32013 (03/06)



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ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009
BIOSAFETY, INSTRUMENTATION & MICROSCOPY
SEMESTER - 2



Time : 3 Hours]

[Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Marks : 35

Biosafety

1. Name the full forms of any *five* of the following :

5 ∞ 1

- a) GMO
- b) LMO
- c) CBP
- d) CBD
- e) AIA
- f) BCH
- g) ICCP.

2. Answer any *four* among the following :

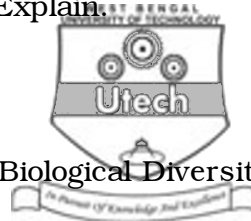
4 ∞ 5

- a) Are bioethics and biosafety related ? Explain.
- b) Is biosafety related directly to IPR ?



4

- c) Is there any difference between GMO and LMO ? Explain.
- d) What did the Cartagena Protocol Reflec ?
- e) State three fundamental pillars of Convention on Biological Diversity.
- f) What is the function of BCH ?



3. Answer any *one* among the following :

1 ∞ 10

- a) What does VAD stand for ? Explain the food based project executed in Bangladesh to fight VAD ?
- b) What are the main objectives of CPB ?
- c) What are the importance and loop holes of Biosafety protocol ?

Marks : 35

INSTRUMENTATION & MICROSCOPY

1. Answer any *five* from the following questions :

5 ∞ 1

- a) Compared to light microscope why does greater resolution and magnification take place in an electron microscope ?
- b) How are field strength, charge, size and viscosity related to the velocity of moving particles in an electric field ?
- c) What type of current is needed to conduct Polyacrylamide Gel Electrophoresis ?
- d) Why distilled or deionized water is not used to preserve electrode of a pH meter for a longer time ?
- e) Define Eastern Blot.
- f) "Branched chain compounds elute more rapidly than their corresponding linear isomers when separated by Reversed Phase HPLC". Why ?



5

- g) Why protein hydrolysis by both acid and base is needed to conduct amino acid analysis ?
- h) How is "void volume" in the Size Exclusion Column Chromatography determined ?



2. Answer any *four* questions among the following :

4 ∞ 5 = 20

- a) Sketch a diagram to define how Gas Chromatography instrument works. 5
- b) "Electrodes of a pH meter maintain a galvanic cell to measure pH of a buffer solution". Explain. 5
- c) What are the basic steps to determine N-terminal amino acid sequence of a protein colorimetrically ? What is "Available Lysine" ? 4 + 1
- d) Define "Western Blot" and explain the technique with a diagram.
- e) What is the principle of Confocal microscopy ? Describe with an example. 2 + 3
- f) Give examples of cation and anion exchange resins. What is gradient elution ? How are separated components eluted in the Affinity Chromatographic technique ? 2 + 2 + 1

3. Answer any *one* question from the following :

1 ∞ 10 = 10

- a) What are the roles of chloride ions and glycine present in different buffers used for SDS-PAGE ? What is the percentage of polyacrylamide gel used to prepare a "Stacking gel" ? "Potassium dodecyl sulphate cannot be used to denature proteins for SDS-PAGE." Why ? 6 + 2 + 2
- b) Describe with a valid diagram how Transmission Electron Microscopy of a biological sample is conducted. What is a Microtom ? 8 + 2
- c) How are beta-particles produced ? Define specific activity of a radioactive component. Describe critically how a Scintillation Counter works. 3 + 1 + 6

END