# BIOSAFETY, INSTRUMENTATION & MICROSCOPY (SEMESTER - 2)

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## CS/PHMC/SEM-2/PHMC-202/09

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CS/PHMC/SEM-2/PHMC-202/09

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

Time: 3 Hours [Full Marks: 70

#### **INSTRUCTIONS TO THE CANDIDATES:**

- 1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
- 2. You have to answer the questions in the space provided marked 'Answer Sheet'. Write on both sides of the paper.
- 3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
- 4. Read the instructions given inside carefully before answering.
- 5. You should not forget to write the corresponding question numbers while answering.
- 6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
- 7. Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.
- 8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
- 9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

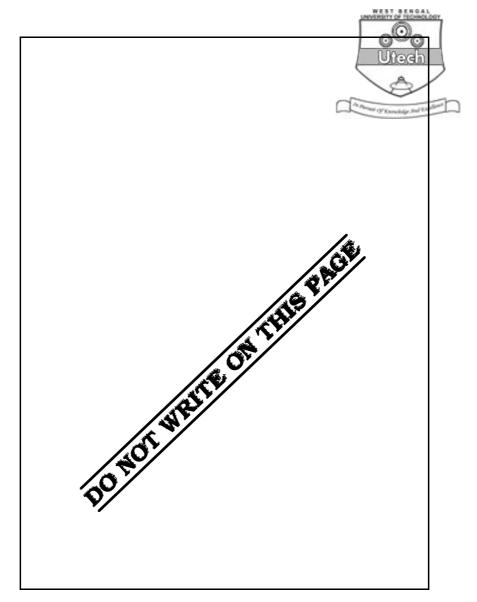
# FOR OFFICE USE / EVALUATION ONLY Marks Obtained

Question Number						Total Marks	Examiner's Signature
Marks Obtained							

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32013 (03/06)







# **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.	Nam	e the full forms of any <i>five</i> of the following :	5 ∞ 1
	a)	GMO	
	b)	LMO	
	c)	CBP	
	d)	CBD	
	e)	AIA	
	f)	ВСН	
	g)	ICCP.	
2.	Ansv	wer any four among the following:	<b>4</b> ∞ <b>5</b>
	a)	Are bioethics and biosafety related ? Explain.	
	b)	Is biosafety related directly to IPR?	
32	013 (	03/06)	





- c) Is there any difference between GMO and LMO? Explain.
- d) What did the Cartegena 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?

32013 ( 03/06 )



- 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:

 $4 \propto 5 = 20$ 

- 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.
- 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
- 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 :

 $1 \propto 10 = 10$ 

- 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**