

**BIOETHICS & IPR**  
**(BIOT 4231)**

**Time Allotted : 3 hrs**

**Full Marks : 70**

*Figures out of the right margin indicate full marks.*

*Candidates are required to answer Group A and  
any 5 (five) from Group B to E, taking at least one from each group.*

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

**Group – A**  
**(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) In which year product patent started in India  
(a) 2001 (b) 2002  
(c) 2004 (d) 2005.
  - (ii) A patent may be granted if the invention is  
(a) novel (b) monovious  
(c) capable of industrial applicability (d) all of the above.
  - (iii) What ethical theory applies to the statements “Donated organs should be made available to patients on the basis of medical need and not on the basis of social status or other consideration?”  
(a) Justice (b) Rights  
(c) Double effect (d) Preference utilitarianism.
  - (iv) In India, a computer programme’s codes can be protected by way of  
(a) Patents (b) Copyrights  
(c) Trademarks (d) Trade secrets.
  - (v) A company developed by Sheldon Cooper. He invents an umbrella that could be folded 6 times and easily put into a trouser pocket or a hand purse. Which of the following IP rights is the most appropriate in protecting his novel invention?  
(a) Copyrights (b) Trade marks  
(c) Patent (d) Trade secrets.
  - (vi) Startup is considered as entity if  
(a) It is working towards innovation, development, improvement of product or process or services  
(b) It is working towards commercialization or marketing of product or process or services  
(c) It is working only towards a particular technology  
(d) None of these.

- (vii) Which of the following techniques is facing bioethical issues?  
(a) DNA microarray (b) Fluorescence activated cell sorter  
(c) Embryonic stem cell therapy (d) All of the above.
- (viii) Tulapanji rice is non-basmati aromatic rice with \_\_\_\_\_ status. It is being produced mostly in the Uttara Dinajpur district. The farmers producing the Tulapanji rice in this district get good price for their product.  
(a) Copy rights (b) Geographical Indications  
(c) Oligopolistic Competition (d) Trade mark.
- (ix) Which of the following person's make an application for a patent as per the patent Act, 1970?  
(a) Any person claiming to be the true and first inventor of the invention  
(b) Any person interested in the invention  
(c) Any assignee of the true and first inventor  
(d) Legal representative of the first inventor.
- (x) The duration of the design protection is  
(a) 15 years (b) 20 years  
(c) Lifetime (d) None of the above.

### **Group - B**

2. Write your opinion and explain the significance about of the following:  
(i) The responsible conducts of biotechnological research.  
(ii) Ethics and the natural world: environmental ethics. [[CO1](Explain/IOCQ)]  
**6 + 6 = 12**
3. (a) Discuss about Declaration of Helsinki and Belmont report. [[CO2](Remember/LOCQ)]  
(b) Explain about Ethical, Legal and Social Issues (ELSI) in Biotechnology on the following:  
(i) Stem cell research  
(ii) GM food. [[CO2](Explain/IOCQ)]  
**(3 × 2) + (3 × 2) = 12**

### **Group - C**

4. (a) Explain convention of biological diversity with reference to Kyoto protocol and Nagoya protocol. [[CO2](Understand/LOCQ)]  
(b) Describe different level of bio-safety in biotechnology work. [[CO3](Remember/IOCQ)]  
**6 + 6 = 12**
5. (a) "Informed consent is necessary in biotechnological research" justify this statement with three real examples from biotechnology. [[CO3](Understand/IOCQ)]  
(b) Write short note on any three of the following:  
(i) Guide lines of DBT (ii) Good clinical practices (iii) Bio-safety regulations in India and (iv) Protection of public health. [[CO3](Understand/LOCQ)]  
**6 + 6 = 12**

**Group - D**

6. (a) Explain in brief Indian patent Act 1970. [[C04](Understand/IOCQ)]  
 (b) Define claims of the patent. [[C04](Understand/IOCQ)], [[C02](Remember/LOCQ)]  
 (c) Discuss in brief effect of W T O agreement on Indian economy. [[C04](Understand/IOCQ)]  
**5 + 2 + 5 = 12**
7. (a) Explain the following in detail with reference to patentable invention. [[C04](Understand/IOCQ)]  
 Novelty, Monoviousness, utility and feasibility. [[C04](Understand/IOCQ)]  
 (b) What do you understand by the term most favoured nation? [[C04](Understand/IOCQ)]  
 (c) Explain the major changes in Indian patent system post TRIPS effects. [[C04](Understand/IOCQ)]  
 (d) What do you understand by the term “plant breeder’s right”? [[C04](Understand/IOCQ)]  
**4 + 2 + 4 + 2 = 12**

**Group - E**

8. (a) What is G20? Discuss how “India’s presidency in G20 in the year 2023” will help in the innovation and startups of India? [[C05](Remember/LOCQ)]  
 (b) (i) What is bioentrepreneurship? (ii) Why it is important? (iii) Which are the five most important characters necessary to become bioentrepreneur? (iv) Correlate that important character with an example of a bioentrepreneur from India (other than Kiran Majumdar Shaw). [[C06](Remember/IOCQ)]  
**(1 + 4) + (1 + 1 + 2 + 3) = 12**
9. (a) Write names of five biotechnological products available in the market. Write a name of virtual bioproduct or bioservice of biotechnology by which you want to start your start-up company and why? Draw the design of the logo or trade mark of your virtual bioproduct or bioservice. What will be the trade secret of your bioproduct or bioservice? [[C06](Remember, Explain/LOCQ)]  
 (b) Write the names of different business sector present in biotechnology. Discusses market size for each sectors of biotechnology you mentioned in India. What you understand by red, white, blue and green biotechnology? Explain. [[C06](Remember, Explain/HOCQ)]  
**(1 + 2 + 2 + 1) + (2 + 2 + 2) = 12**

<i>Cognition Level</i>	<i>LOCQ</i>	<i>IOCQ</i>	<i>HOCQ</i>
<i>Percentage distribution</i>	32.29	61.46	6.25

**Course Outcomes (CO):**

At the end of this course students will be able to:

1. Interpret basics of biosafety and bioethics and its impact on all the biotechnology and the quality of human life.
2. Understand and analyze the different ethical, legal and social issues aspects related to biological, biomedical, health care, biotechnology and biotechnology research.
3. Understand the historical background, importance and levels of biosafety at laboratory and industrial scale and explain the biosafety-regulatory framework in India & international Level.
4. Gain an understanding of the basic concepts of patents, trademarks, copy rights, geographical indications and patent data base and their protection in biotechnology.
5. Gain entrepreneurial skills to apply the different objectives and fundamentals of entrepreneurship in biotechnology.
6. Identify scope for entrepreneurship in biotechnology.

*\*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.*