

18/05/24 A/N

(8 pages)

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M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2024.

Second Semester

Microbiology

Elective – BIOSAFETY, BIOETHICS AND IPR.

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. Which of the following best describes the role of IPR in biotechnology?
 - (a) Restricting access to scientific research
 - (b) Encouraging innovation and investment in research and development
 - (c) Limiting the dissemination of scientific knowledge
 - (d) Promoting monopolies in the biotechnology sector
5. What is the primary purpose of conducting a prior art search during the patenting process?
 - (a) To assess the novelty and inventiveness of the invention
 - (b) To determine the potential market value of the invention
 - (c) To identify potential competitors in the field
 - (d) To draft the patent application documents
6. Which of the following is a widely used patent database for accessing patent information and conducting prior art searches?
 - (a) PubMed
 - (b) Google Scholar
 - (c) IEEE Xplore
 - (d) WIPO PatentScope
7. Which of the following is a key criterion for determining the patentability a biotechnology invention?
 - (a) Geographical location
 - (b) Complexity of the invention
 - (c) Potential for commercialization
 - (d) Availability of research funding
8. What is the primary goal of implementing a uniform patent law across different jurisdictions?
 - (a) To prioritize the interests of multinational corporations
 - (b) To simplify the patenting process for inventors and applicants
 - (c) To increase legal barriers for small inventors and startups
 - (d) To restrict access to patented technologies in developing countries

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2. How does patent protection benefit biotechnology companies?
 - (a) By preventing others from conducting research in the field
 - (b) By allowing them to maintain exclusive rights to their inventions
 - (c) By restricting access to essential medicines and treatments
 - (d) By discouraging collaboration and knowledge sharing
3. What is a key advantage of having strong IPR in biotechnology?
 - (a) Facilitating widespread access to scientific discoveries
 - (b) Encouraging competition and lowering prices of biotechnological products
 - (c) Promoting investment in research and development
 - (d) Allowing unlimited replication and distribution of biotechnological innovations
4. Which of the following steps is typically NOT part of the patenting process?
 - (a) Filing a patent application
 - (b) Conducting a prior art search
 - (c) Reviewing the patent application by a jury
 - (d) Examination of the patent application by a patent office

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9. Which organization plays a key role in promoting harmonization of patent laws worldwide?
 - (a) United Nations Educational, Scientific and Cultural Organization (UNESCO)
 - (b) World Health Organization (WHO)
 - (c) World Trade Organization (WTO)
 - (d) World Intellectual Property Organization (WIPO)
10. Which ethical principle is most closely associated with the conservation of biodiversity?
 - (a) Utilitarianism
 - (b) Biocentrism
 - (c) Anthropocentrism
 - (d) Egalitarianism
11. Which of the following scenarios raises ethical concerns related to biodiversity?
 - (a) Introduction of genetically modified crops to increase agricultural yield
 - (b) Establishment of protected areas to conserve endangered species
 - (c) Development of sustainable fishing practices to prevent overfishing
 - (d) Destruction of natural habitats for urban expansion
12. What is the primary purpose of genetically modified organisms (GMOs) in agriculture?
 - (a) To reduce the need for chemical pesticides
 - (b) To increase crop yields and nutritional content
 - (c) To eliminate biodiversity in farming practices
 - (d) To promote organic farming methods

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[P.T.O.]

13. Which of the following principles is commonly emphasized in bioethics concerning medical practice?

- (a) Profit maximization
- (b) Patient autonomy
- (c) Technological advancement
- (d) Government regulation

14. What is the primary goal of xenotransplantation?

- (a) To transplant organs between individuals of the same species
- (b) To transplant organs from deceased donors to living recipients
- (c) To transplant organs between different species
- (d) To conduct genetic engineering on human organs

15. Which of the following best describes the main objective of the Human Genome Project (HGP)?

- (a) To clone humans for reproductive purposes
- (b) To map and sequence the entire human genome
- (c) To develop genetic engineering techniques for agricultural crops
- (d) To study the genetic diversity of wild animal populations

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20. (a) How do protocols for organ transplantation address the ethical implications of organ donation and procurement practices?

Or

(b) What are the main ethical considerations in stem cell research, and how does bioethics guide the ethical conduct of stem cell studies?

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

21. (a) Compare and contrast the different forms of intellectual property rights, including patents, trademarks, copyrights, and trade secrets, highlighting their unique characteristics and applications.

Or

(b) Explain the implications of TRIPS (Trade-Related Aspects of Intellectual Property Rights) for developing countries in the context of globalization and economic development.

22. (a) Discuss the procedural steps involved in patenting, detailing each stage and its significance.

Or

(b) Explain the process of conducting country-wise patent searches, highlighting the key steps involved and the importance of each step in ensuring comprehensive results.

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PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

16. (a) Discuss the significance of Intellectual Property Rights (IPRs) in the field of biotechnology.

Or

(b) Explain the role of the General Agreement on Tariffs and Trade (GATT) in international trade.

17. (a) Explain the concept of Patent Cooperation Treaty (PCT) and its significance for patent applicants.

Or

(b) What is patent mapping, and how does it contribute to innovation and intellectual property management?

18. (a) What potential challenges or drawbacks may arise from implementing a uniform patent law?

Or

(b) What are the potential effects of tentative harmonization on international trade and commerce?

19. (a) Why is there a growing need for bioethics in today's society?

Or

(b) What ethical considerations arise in the context of genetically modified organisms (GMOs) and how does bioethics address them?

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23. (a) Discuss the patentability criteria for biotechnology inventions in India, focusing on the requirements outlined in Section 3(j) of the Indian Patents Act. Provide a detailed explanation of each requirement.

Or

(b) Explain how tentative harmonization efforts contribute to global economic stability and growth. Provide examples to support your explanation.

24. (a) Discuss the application and key issues related to bioethics in the field of genetic engineering.

Or

(b) Discuss the major issues and concerns surrounding genetically modified (GM) food and food crops.

25. (a) Write in detail about one ethical concern related to gene therapy.

Or

(b) Explain the significance of the Human Genome Project (HGP) in advancing our understanding of genetics and its implications for medicine.

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