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Invigilator's Signature :	

CS/B.Sc(H)/BT/SEM-6/BTL-604/2013 2013

BIOTECHNOLOGY SOCIAL, LEGAL & ETHICAL ISSUES

Time Allotted: 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.

GROUP - A

(Multiple Choice Type Questions)

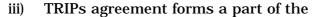
1. Choose the correct alternatives for any *ten* of the following :

 $10 \times 1 = 10$

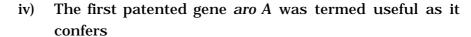
- i) IPR stands for
 - a) Indian Patent Regulation
 - b) Intellectual Property Right
 - c) International Patent Regulation
 - d) Intellectual Propery Regulation.
- ii) PVP is generally known as
 - a) Patent Variety Protocol
 - b) Plant Variety Protection
 - c) Patent Variety Protection
 - d) Plant Variation Patents.

6710 Turn over

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- a) Indian Patent Act, 1970
- b) Utility Patent Act, 1980
- c) Uruguay Round to GATT
- d) all of these.



- a) bacterial resistance
- b) pest resistance
- c) vitamin A
- d) glyphosate resistance.
- v) The first plant Patent was done in 1931 for a
 - a) climbing rose
 - b) climbing vine
 - c) climbing apple
 - d) none of these.
- vi) Convention of Biological Diversity in Rio de Jeneiro by United Nations at the year of 1992 is commonly known as
 - a) Global summit
 - b) Earth summit
 - c) Farmer's right
 - d) None of these.
- vii) According to Indian Patent Law an invention is
 - a) contrary to public order
 - b) a new property of a known substance

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- c) new product or process involving an inventive step and capable of industrial application
- d) none of these.





- viii) In India ethical guidelines for biomedical research in human was supplemented by
 - a) Medical Council of India
 - b) Departement of Biotechnology
 - c) University of Delhi
 - d) none of these.
- ix) A Cporyright is valid for
 - a) 25 years
 - b) 39 years
 - c) 50 years
 - d) 75 years.
- x) DNA fingerprinting using microsatellites, uses which of the following techniques ?
 - a) RFLP
 - b) PCR
 - c) Both (a) and (b)
 - d) none of these.
- xi) Screening via pap smear is recommended for
 - a) Lung cancer
 - b) Breast cancer
 - c) Cervical cancer
 - d) Prostate cancer.
- xii) Which novel therapeutic molecule is used to treat human diseases?
 - a) miRNAs
 - b) antisense RNAs
 - c) shRNAs
 - d) siRNAs.

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GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. Discuss the viral and nonviral methods of gene therapy.
- 3. Name one genetically modified food, one genetically modified microorganism. Discuss the controversies of GM food.

1 + 1 + 3

- 4. What is the difference between copyrights and patents?
- 5. Give one example of xenotransplantation which has been successfully commercialized in pig.
- 6. Mention the screening techniques of breast and prostate cancer.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

- 7. What is UPOV? What is the criteria for deciding protection of a plant variety? Does India have any law for protecting new plant varieties? What is the meaning of Farmers' Variety as per PPVFR Act, 2001? 2 + 8 + 2 + 3
- 8. Write short notes on any three:

 3×5

 3×5

- a) Minisatellite marker
- b) Patenting of life forms
- c) Patenting genes
- d) Protection of plant materials
- e) Sui generic system
- f) Applications of genetic testing.
- 9. Define Geographical indication with suitable examples. Write in brief about the various forms of protection of intellectual property and discuss the necessity for IPR. 3 + 7 + 5
- 10. Discuss a case in detail involving the patentability of live forms.
- 11. Write short notes on any *three* of the following :
 - a) Gene transfer methods
 - b) DNA-molecular conjugates in Gene therapy
 - c) In vivo Gene therapy
 - d) "Bubble boy" syndrome.
- 12. What is PGD ? Write down the methods used in PGD. What are the ethical and social issues ragarding PGD ? 3+6+6

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