BIOTECHNOLOGY

1. Genetic engineering has been successfully used for producing [CBSE-AIPMT]

(a) Transgenic mice for testing safety of polio vaccine before use in humans

(b) Transgenic models for studying new treatments for certain cardiac diseases

(c) Transgenic cow-Rosie, which produces high fat milk for making ghee

(d) Animals like bulls for farm work as they have super power

2. Restriction endonucleases are enzymes which

(a) Make cuts at specific positions within the DNA molecule

(b) Recognize a specific nucleotide sequence for binding of DNA ligase

(c) Restrict the action of the enzyme DNA polymerase

(d) Remove nucleotides from the ends of the DNA molecule

3. DNA or RNA segment tagged with a radioactive molecule is called [CBSE-AIPMT]

(a) Vector (b) probe (c) clone (d) plasmid

4. Which one of the following palindromic base sequences in DNA can be easily cut at about the middle by some particular restriction enzyme? [CBSE-AIPMT]

(a) 5'.....CGTTCG .....3'

3".....ATCGTA '..... 5'

(b) 5' '.....GATATG'..... 3'

3' '.....CTACTA'.....5'

(c) 5' '..... GAATTC'.....3'

3' '..... CTTAAG '.....5'

(d) 5' '..... CACGTA '.....3'

3' '..... CTCAGT '.....5'

5. The vector for T - DNA is [Kerala CEE]

(a) Thermus aquaticus

(b) Salmonella typhimurium

(c) Agrobacterium tumefaciens

(d) Escherichia coli

(e) Bacillus thuringiensis

6. Which of the following is 'a plasmid? **[Kerala CEE]**

(a) pBR 322 (b) BamH I

(c) Sal I (d) EcoR I

(e) Hind III

7. The mobile genetic element is **[OJEE]**

(a) Transposon (b) mutation

(c) Endonuclease (d) variation

8. In recombinant DNA technique, the term vector refers to **[OJEE]**

(a) Donor DNA, is identified and picked up through electrophoresis

(b) Plasmid, transfers DNA into living cell

(c) Collection of entire genome in form of plasmid

(d) Enzyme, cuts the DNA at specific sites

9. Enzyme that is used in PCR technology is **[OJEE]**

(a) Taq polymerase (b) polymerase

(c) helicase (d) reverse transcriptase

10. GAATTC is the recognition site for the restriction endonuclease **[OJEE]**

(a) Eco R I (b) Hind II

(c) Eco R II (d) Barn HI

11. Polyethylene glycol method is used for

(a) Gene transfer without a vector

(b) Biodiesel production

(c) Seedless fruit production

(d) Energy production from sewage

12. Which one of the following is commonly used in transfer of foreign DNA into crop plants?

(a) Trichoderma harzianum

(b) Meloidogyne incognita

(c) Agrobacterium tumefaciens

(d) Penicillium expansum

13. The genetic defect-Adenosine Deaminase (ADA) deficiency may be cured permanently by

(a) Periodic infusion of genetically engineered lymphocytes having functional ADA C-DNA

(b) Administering adenosine deaminase activators

(c) Introducing bone marrow cells producing ADA into cells at early embryonic stages

(d) Enzyme replacement therapy

14. What is true about Bt toxin? **[CBSE-AIPMT]**

(a) The inactive protoxin gets converted into active form in the insect gut

(b) Bt protein exists as active toxin in the *Bacillus* The activated toxin enters the ovaries of the pest to sterilise it and thus, prevent its multiplication

(c) The concerned *Bacillus* has antitoxins

(d) Reverse transcriptase

15. The bacterium *Bacillus thuringiensis* is widely used in contemporary biology as a/an **[CBSE-AIPMT]**

(a) Indicator of water pollution

(b) Insecticide

(c) Agent for production of dairy products

(d) Source of industrial enzyme

16. Who discovered that restriction enzymes have the capability of cutting DNA strands in a particular fashion, which left what has became known as 'sticky ends' on the strands? **[AFMC]**

(a) Ramdeo Mishra (b) Stanley Cohen (c) Herbert Boyer (d) James D. Watson

17. Genetically engineered bovine (bSI), sometimes called rbST (recombinant bovine somatotropin) or rbGH (recombinant bovine growth hormone) are used in the

(a) Therapeutic drugs (b) agriculture [AIIMS]

(c) Dairy industry (d) DNA fingerprinting

18. This method of finding a gene is used when researchers know very little about the gene they are trying to find. This process results in a complete gene library : a collection of copies of DNA fragments that represent the entire genome of an organism.

(a) Cloning (b) Shotgun cloning

(c) Gene synthesis cloning (d) PCR

19. The function of polymerase chain reaction is **[CPMT]**

(a) Transduction (b) DNA amplification

(c) Translation (d) None of these

20. Which of the following bio-engineered bacteria is utilised for cleaning of marine oil slicks? **[BHU]**

(a) Escherichia coli (b) Pseudomonas syringae

(c) Pseudomonas putida (d) Rhizoctonia solani

21. Product of biotechnology is **[BHU]**

(a) Transgenic crops (GM crops)

(b) humulin (c) biofertilizer

(d) All of the above

22. Natural genetic engineer is **[AMU]**

(a) Bacillus subtilis

(b) Pseudomonas sp.

. (c) Escherichia coli

(d) Agrobacterium tumefaciens

23. Somaclonal variation appears in plants **[DUMET]**

(a) Growing in polluted soil or water

(b) Exposed to gamma rays

(c) Raised in tissue culture

(d) Transformed by recombinant DNA technology

24. The characteristics of a molecular probe are

I. very long molecule

II. double-stranded

III. DNA or RNA

IV. complementary to a part of desired gene

The correct pair is [EAMCET]

(a) I, II (b) II, III (c) III, IV (d) IV, I

25. Assertion (A): Somoclonal variations may be present in plants produced from callus.

Reason (R): Somoclonal variations are caused due to recombination during meiosis.

[EAMCET]

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion

(c) Assertion is true but Reason is false

(d) Assertion is false but Reason is true

26. Blood stains are found at the site of a murder. If DNA profiling technique is to be used for identifying the criminal, which of the following is ideal for use?

(a) Serum (b) Erythrocytes

(c) Leucocytes (d) Platelets

27. Paleontologists unearthed a human skull during excavation. A small fragment of the scalp tissue was still attached to it. Only little DNA could be extracted from it. If the genes of the ancient man need to be analyzed, the best way of getting sufficient amount of DNA from this extract is [Manipal]

(a) Hybridizing the DNA with a DNA probe

(b) Subjecting the DNA to polymerase chain reaction

(c) Subjecting the DNA to gel electrophoresis

(d) Treating the DNA with restriction endonucleases

28. T_i plasmids used in genetic engineering is obtained from [Kerala CEE]

(a) Bacillus. thuringiensis

(b) Agrobacterium rhizogenes

(c) Agrobacterium tumefaciens

(d) Pseudomonas syringae

(e) Bacillus subtilis

29. Which of these is used as vector in gene therapy for SCID? [Kerala CEE]

(a) Arbovirus (b) Rotavirus

(c) Enterovirus (d) Parvovirus

(e) Retrovirus

30. DNA element with ability to change positions is called [MHT-CET]

(a) Cistron (b) Transposon

(c) Introit (d) recon

31. Which of the following is used in recombinant DNA technique? [MHT-CET]

(a) Cell wall of virus

(b) Gene which produces capsid of virus

(c) Virus (d) Capsid of virus

32. Which of the following is not a restriction endonuclease? [Haryana PMT]

(a) Eco RI (b) Hind III

(c) Pst I (d) DNAse I

33. Restriction endonuclease [JCECE]

(a) Cuts the DNA molecule randomly (b) Cuts the DNA molecule at specific sites

(c) Restricts the synthesis of DNA inside the nucleus (d) Synthesises DNA

34. Molecular scissors which cut DNA at specific site is

(a) Pectinase (b) Polymerase

(c) Restriction endonuclease (d) Ligase

35. Genetically engineered bacteria are being employed for production of [WB-JEE]

(a) Thyroxin (b) human insulin

(c) cortisol (d) epinephrine

36. Which one is regarded as a molecular scissor in biotechnology? [J & K CET]

(a) Bacillus subtilis (b) Pseudomonas sp

(c) Escherichia coli (d) Agrobacterium tumefaciens

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(c) cortisol (d) epinephrine

36. Which one is regarded as a molecular scissor in biotechnology? [J & K CET]

(a) Reverse transcriptase

(b) Restriction endonuclease

(c) Taq polymerase,

(d) Topoisomerase

37. Human insulin is being commercially produced from a transgenic species of [CBSE-AIPMT]

(a) Escherichia coli (b) Mycobacterium

(c) Rhizobium (d) Saccharomyces

38. The linking of antibiotic resistance gene with the plasmid vector became possible with

(a) DNA ligase (b) endonucleases

(c) DNA polymerase (d) exonucleases

39. Assertion (A) : In recombinant DNA technology, human genes are often transferred into bacteria (prokaryotes) or yeast (eukaryote). [AIIMS]

Reason (R) : Both bacteria and yeast multiply very fast to form huge population, which express the desired gene.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion

(c) Assertion is true but Reason is false

(d) Both Assertion and Reason are false

40. Which of the following pairs are correctly matched?

(a) Central dogma — Codon **[BHU]**

(b) Okazaki fragments — splicing

(c) RNA polymerase — RNA primer

(d) Restriction enzyme —Genetic engineering

41. Out of the following which is a genetically engineered anti-viral protein? [PMET]

(a) Humulin (b) Interferon

(c) Runagillin (d) Griseofulvin

42. A drug obtained through genetic engineering and useful for treating infertility is [PMET]

(a) calcitonin (b) chorionic gonadotropin

(c) interleukin (d) tissue plasminogen activator

43. Producing a giant mouse in the laboratory was possible through [DUMET]

(a) gene manipulation (b) gene mutation

(c) gene synthesis (d) gene duplication

44. Which of the following is obtained from genetic engineering? [DUMET]

(a) Hemoglobin (b) Glucose

(c) Golden rice (d) None of these

45. The construction of the first recombinant DNA was done by using the native plasmid of [Kerala CEE]

(a) E. coli (b) Salmonella typhimurium

(c) Bacillus thuringiensis (d) yeast (e) Agrobacterium

46. Match the following columns and choose the correct option. [Kerala CEE]

Column I	**Column II**
A. Bacillus thuringiensis	1.Production of chitinases
B. Rhizobium meliloti	2. Scavenging of oil spill
C. Escherichia coli	3. Incorporation of nif gene
D. Pseudomonas putida	4. Production of Bt toxin
E. Trichoderma	5. Production of human insulin

	A	B	C	D	E
(a)	2	4	1	5	3
(b)	2	4	5	1	3
(c)	4	3	5	2	1
(d)	5	4	3	1	2
(e)	4	2	5	3	1

47. Which of the following is used in genetic engineering?

(a) Plastid (b) Plasmid

(c) Mitochondria (d) ER

48. Genetically engineered human insulin, humulin was launched by American Drug Company on

(a) July1998 (b) 5th July1993

(c) 5th July1973 (d) 5th July1983

49. Which of the following is used as a best genetic vector in plants? [Haryana PMT]

(a) Bacillus thuringiensis

(b) Agrobacterium tumefaciens

(c) Pseudomonas putida

(d) None of the above

50. Transfer of any gene into a completely different organism can be done through [BCECE]

(a) Genetic engineering (b) tissue culture

(c) Transformation (d) None of these

51. A cybrid is hybrid carrying [AMU]

(a) genomes and cytoplasms of two different plants

(b) cytoplasms of two different plants

(c) cytoplasms of two different plants but genome of one plant

(d) genomes of two different plants

52. Solution of polyethylene glycol (PEG) or a very brief high voltage electric current is used in fusion of

(a) Protoplasms (b) Protoplasts

(c) Somatic cells (d) germinal cells

53. Who discovered recombinant DNA (r DNA) technology? [Kerala CEE]

(a) Har Gobind Khurana

(b) James D Watson

(c) Stanley Cohen and Herber Boyer

(d) Walter Sutton and Avery

(e) William Bateson and Hugo de Vries

54. Find out the wrong statement. **[Kerala CEE]**

(a) Mobile genetic elements, transposons were visualised by Barbara McClintock

(b) Udder cell, a somatic cell is used to produce the cloned sheep by nuclear'transplantation method

(c) In pedigree analysis, a person immediately affected by an action is called propositus

(d) Dr. Ian Wilmut produced a cloned sheep called Dolly

(e) DNA ligases are used to cleave a DNA molecule

55. Study the following columns and choose the correct option. **[EAMCET]**

Column I	**Column II**
A. Synthetic seeds	1. Anther culture
B. Gene cloning	2. Interspecific hybridization
C. Haploid plants	3. Polymerase chain reaction
D. Transgenic plants	4. Recombinant DNA technology
	5. Somatic embryogenesis

	A	B	C	D
(a)	5	3	1	4
(b)	1	2	5	3
(c)	4	1	3	2
(d)	2	5	4	1

56. Restriction endonucleases are **[Manipal]**

(a) Present in mammalian cells for degradation of DNA when the cell dies

(b) Used in genetic engineering for ligating two DNA molecules

(c) used for in vitro DNA synthesis

(d) synthesized by bacteria as part of their defence mechanism

57. Manipulation of DNA in genetic engineering became possible due to the discovery of **[R PMT]**

(a) Restriction endonuclease (b) DNA ligase

(c) Transcriptase (d) Primase

58. Which of the following enzymes are used to join bits of DNA? **[R PMT]**

(a) Ligase (b) Primase

(c) DNA polymerase (d) Endonuclease

59. Genetic engineering is related with **[BCECE]**

(a) Eugenics (b) Euphenics

(c) Euthenics (d) All of these

60. A technique which involves deliberate manipulation of genes within or between species is **[J & K CET]**

(a) gene therapy (b) hybridoma technology

(c) tissue culture (d) genetic engineering

61. One of the key factors, which makes the plasmid, the vector in genetic engineering? **[J & K CET]**

(a) It is resistant to antibiotics

(b) It is resistant to restriction enzymes

(c) It is ability to carry a foreign gene

(d) It is ability to cause infection in the host

62. Microbes found to be very useful in genetic engineering are **[CBSE-AIPMT]**

(a) Escherichia coli and Agrobacterium tumefaciens

(b) Vibrio cholerae and a tailed bacteriophage

(c) Diplococcus sp. and Pseudomonas sp.

(d) Crown gall bacterium and Caenorhabditis elegans

63. Restriction endonuclease cuts **[CPMT]**

(a) One strand of DNA at specific site

(b) Both strand of DNA

(c) Both strands of DNA at any site

(d) Single strand of RNA

64. In protoplast fusion, which chemical is used

(a) DMSO (b) liquid N_2

(c) pectinase (d) PEG

65. Restriction endonucleases are most widely used in recombinant DNA technology. They are obtained from

(a) bacteriophages (b) bacterial cells

(c) plasmids (d) all prokaryotic cells

66. Assertion (A) : Restriction endonucleases are also called 'molecular scissors'.

Reason (R) : When fragments generated by restriction endonucleases are mixed, they join together due to their sticky ends. [EAMCET]

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion

(c) Assertion is true but Reason is false (d) Assertion is false but Reason is true

67. Manipulation of DNA in genetic engineering become easy due to invention of [Manipal]

(a) Polymerase chain reaction (b) dot blot

(c) Enzyme linked immuno sorbant assay (d) eastern blotting

68. Who discovered the super bug? [R PMT]

(a) H G Khurana (b) Dilip Sah

(c) Anand Mohan Chakraborty (d) Robert Hooke

69. More advancement in genetic engineering is-due to [JCECE]

(a) Restriction endonuclease

(b) Reverse transcriptase

(c) Protease

(d) Zymase

70. Assertion (A): Agrobacterium tumefaciens is popular in genetic engineering because this bacterium is associated with the roots of all cereal and pulse crops.

Reason (R): A gene incorporated in the bacterial chromosomal genome-gets automatically transferred to the crop with which the bacterium is associated.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion

(c) Assertion is true but Reason is false

(d) Both Assertion and Reason are false

71. Hybridomas are result of the fusion of [PMET]

(a) Normal antibody producing cell with myeloma

(b) Abnormal antibody producing cell with myeloma

(c) Male reproductive cell with myeloma

(d) Female reproductive cell with myeloma

72. Find the incorrect statement. **[Kerala CEE]**

(a) Gene therapy is a genetic engineering technique used to treat disease at molecular level by replacing defective genes with normal genes

(b) Calcitonin is a medically useful recombinant product in the treatment of infertility

(c) Bt toxin is biodegradable insecticide obtained from *Bacillus*

(d) Trichoderma sp. is a biocontrol agent for fungal diseases of plants

(e) Totipotency is the potential ability of a cell to develop into a complete plant

73. Somatic hybrids are produced by **[Manipal]**

(a) Protoplast fusion (b) Tissue culture

(c) Pollen culture (d) Hybridoma process

74. First hormone prepared by genetic engineering is **[Manipal]**

(a) Oxytocin (b) somatotropin

(c) Adrenalin (d) insulin

75. Which one of the following hydrolyses internal phosphodiester bonds in a polynucleotide chain?

(a) Lipase (b) Exonuclease

(c) Endonuclease (d) Protease

76. Production of a human protein in bacteria by genetic engineering is possible because

(a) Bacterial cell can carry ut the RNA splicing reactions

(b) The human chromosome can replicate in bacterial cell

(c) The mechanism of gene regulation is identical in humans and bacteria

(d) The genetic code is universal

77. Identify the plasmid. **[K-CET]**

(a) Alt, I (b) Hind II (c) Eco RI (d) pBR 322

78. The protein toxin producing bacteria, which used to control biological pest is **[R PMT]**

(a) E. coli (b) Agrobacterium

(c) Mycobacterium sp. (d) B. thuringiensis

79. Use of biology in industrial process and for improving quality of life is called **[AFMC]**

(a) Genetic engineering (b) eugenics

(c) Microbiology (d) biotechnology

80. Maximum utilization of biotechnological techniques has been made in the field of [AMU]

(a) Industries (b) medicines

(c) Agriculture (d) biogas production

81. Restriction enzyme was discovered by [AMU]

(a) Alexander Fleming (b) Waksman

(c) Berg (d) Smith, Nathan and Arber

82. Molecular scissors are

(a) Restriction endonucleases (b) DNA polymerase

(c) DNA ligase (d) RNA polymerase

83. The enzymes, commonly used in genetic engineering, are [K-CET]

(a) Restriction endonuclease and polymerase

(b) Endonuclease and ligase

(c) Restriction endonclease and ligase

(d) Ligase and polymerase

84. Assertion (A): Humulin is better than conventional insulin.

Reason (R): Conventional insulin produces many side effects. [Haryana PMT]

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion

(c) Assertion is true but Reason is false

(d) Both Assertion and Reason are false

85. Assertion (A): All endonucleases cut DNA at specific sites.

Reason (R): Endonucleases are found in viruses.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion

(c) Assertion is true but Reason is false

(d) Both Assertion and Reason are false

KEY

Genetic Engineering

1. (a)	2. (a)	3. (b)	4. (c)	5. (c)
6. (a)	7. (a)	8. (b)	9. (a)	10. (a)
11. (a)	12. (c)	13. (a)	14. (a)	15. (b)
16. (c)	17. (c)	18. (b)	19. (b)	20. (c)
21. (d)	22. (d)	23. (c)	24. (c)	25. (c)
26. (c)	27. (b)	28. (c)	29. (e)	30. (b)
31. (c)	32. (d)	33. (b)	34. (c)	35. (b)
36. (b)	37. (a)	38. (a)	39. (a)	40. (d)
41. (b)	42. (b)	43. (a)	44. (c)	45. (a)
46. (c)	47. (b)	48. (d)	49. (b)	50. (a)
51. (c)	52. (b)	53. (c)	54. (a)	55. (a)
56. (d)	57. (a)	58. (a)	59. (b)	60. (d)
61. (c)	62. (a)	63. (b)	64. (d)	65. (b)
66. (b)	67. (a)	68. (c)	69. (a)	70. (d)
71. (a)	72. (b)	73. (a)	74. (d)	75. (c)
76. (d)	77. (d)	78. (d)	79. (d)	80. (b)
81. (d)	82. (a)	83. (c)	84. (a)	85. (d)

DNA Fingerprinting and Gene Cloning

1. **Satellite DNA is useful tool in**

   (a) organ transplantation (b) sex determination

   (c) forensic science (d) genetic engineering

2. **Which one of the following is used as vector for cloning genes into higher organisms?**

   (a) Baculovirus (b) Salmonella typhimurium

   (c) Retrovirus (d) Rhizopus nigricans

3. **The technique of DNA finger printing was initially developed by [Kerala CEE]**

   (a) Ian Wilmut (b) HarGobind Khurana

   (c) Jacque Monod (d) Alex Jeffreys

   (e) Francois Jacob

4. **An institution where valuable plant material-likely to become irretrievably lost in the wild or in cultivation is preserved viable condition is known as [AMU]**

   (a) genome (b) gene library

   (c) gene bank (d) herbarium

5. **The basis of DNA fingerprinting is [Kerala CEE]**

   (a) The double helix

   (b) Errors in base sequence

   (c) Polymorphism in sequence

   (d) DNA replication

6. **Which one of the following can help in the diagnosis of a genetical disorder? [MHT-CET]**

   (a) ELISA (b) ABO blood group

   (c) PCR (d) NMR

7. **Plasmids are suitable vectors for gene cloning because**

   (a) These are small circular DNA molecules, which can integrate with host chromosomal DNA

   (b) These are small circular DNA molecules with their own replication origin site

   (c) These can shuttle between prokaryotic and eukaryotic cells

   (d) These often carry antibiotic resistance genes

8. The tumor inducing capacity of *Agrobacterium tumefaciens* is located in large extra chromosomal plasmids called [K-CET]

(a) R_i -plasmid (b) lambda phage

(c) pBR 322 (d) T_i -plasmid

9. DNA fingerprinting refers to [Manipal]

(a) Molecular analysis of profiles of DNA samples

(b) Analysis of DNA samples using imprinting device

(c) Techniques used for molecular analysis of different specimens of DNA

(d) Techniques used for identification of fingerprints of individuals

10. Probes used in DNA fingerprinting initially [DUMET]

(a) Single stranded RNA

(b) Mini satellite

(c) 19 base long oligonucleotide

(d) All of the above

11. Variable number of tandem repeats (VNTRs) in the DNA molecule is highly useful in [K-CET]

(a) Recombinant DNA technology

(b) DNA fingerprinting

(c) Monoclonal antibody production

(d) Stem cell culture

12. The enzyme employed for amplification of DNA during PCR is commercially obtained from

(a) Streptococcus pyogenes

(b) Bacillus licheniformis

(c) Trichoderma reesi

(d) Thermus aquaticus

13. A technology, which has found immense use in solving cases of disputed parentage, is [K-CET]

(a) Polymerase chain reaction

(b) DNA fingerprinting

(c) Monoclonal antibody production

(d) Recombinant DNA technology

14. DNA fingerprinting technique was first developed by [K-CET]

(a) Jeffreys, Wilson and Thien

(b) Boysen and Jensen

(c) Schleiden and Schwann

(d) Edward and Steptoe

15. A clone is [JCECE]

(a) Heterozygote obtained asexually

(b) Homozygote obtained asexually

(c) Heterozygote produced by sexual methods

(d) Homozygote produced by sexual reproduction

16. Which one of the following pairs of term/names means one and the same thing? [AIIMS]

(a) Gene pool — Genome

(b) Codon — Gene

(c) Cistron — Triplet

(d) DNA fingerprinting — DNA profiling

17. The organism, which is used for gene transfer in higher organisms is [DUMET]

(a) Agrobacterium tumefaciens (b) E. coli

(c) Acetobacter aceti (d) Bacillus thuringiensis

18. Assertion Plant clones obtained through tissue culture are very susceptible to new diseases.

Reason Clones are genetically identical.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion

(c) Assertion is true but Reason is false

(d) Both Assertion and Reason are false

19. An extrachromosomal DNA which can be used as vector in gene cloning is called [J & K CET]

(a) transposon (b) intron (c) exon (d) plasmid

KEY-- DNA Fingerprinting and Gene Cloning

1. (c) 2. (c) 3. (d) 4. (c) 5. (c)
6. (c) 7. (b) 8. (d) 9. (a) 10. (b)
11. (b) 12. (d) 13. (b) 14. (a) 15. (b)
16. (d) 17. (a) 18. (a) 19. (d)

TRANSGENIC CROPS AND ANIMALS

1. The genetically-modified (GM) brinjal in India has been developed for **[CBSE-AIPMT]**

(a) insect-resistant (b) enhancing shelf life
(c) enhancing mineral content (d) drought-resistance

2. Some of the characteristics of Bt cotton are

(a) long fibre and resistance to aphids
(b) medium yield, long fibre and resistance to beetle pests
(c) high yield and production of toxic protein crystals which kill dipteran pests
(d) high yield and resistance to bollworms

3. An improved variety of transgenic basmati rice

(a) Does not require chemical fertilizers and growth hormones
(b) Gives high yield and is rich in vitamin-A
(c) Is completely resistant to all insect pests and diseases of paddy
(d) Gives high yield but has no characteristic aroma

4. Cry II Ab and Cry I Ab produce toxins that control

(a) Cotton bollworms and corn borer respectively
(b) Corn borer and cotton bollworms respectively
(c) Tobacco budworms and nematodes respectively
(d) Nematodes and tobacco budworms respectively
(e) Corn borer and tobacco budworms respectively

5. Which of the following is a transgenic plant? [OJEE]

(a) Hirudin (b) Flavr savr

(c) Triticale (d) All of these

6. Plants are more rapidly manipulated by genetic engineering than animals due to [OJEE]

(a) Single somatic cell can regenerate a whole plant body

(b) A group of somatic cells can regenerate a whole plant body

(c) May be (a) or (b) (d) None of the above

7. First genetically modified plants commercially released in India is [WB-JEE]

(a) Golden rice (b) slow ripening tomato

(c) Bt brinjal (d) Bt cotton

8. Transgenic plants are [CBSE-AIPMT]

(a) Produced by a somatic embryo in artificial medium

(b) Generated by introducing foreign DNA in to a cell and regenerating a plant from that cell

(c) Produced after protoplast fusion in artificial medium

(d) Grown in artificial medium after hybridisation in the field

9. Golden rice was created by transforming rice with two beta-carotene biosynthesis genes, namely,

(a) Psy and Cry 1 genes (b) LCY-e

(c) CHY-1 (d) CHY-2

10. In transgenics, expression of transgene in target tissue is determined by [JCECE]

(a) enhancer (b) transgene

(c) promoter (d) reporter

11. Main objective of production /use of herbicide resistant GM crops is to [CBSE-AIPMT]

(a) Eliminate weeds from the field without the use of manual labour

(b) Eliminate weeds from the field without the use of herbicides

(c) Encourage eco-friendly herbicides

(d) Reduce herbicide accumulation in food articles for health safety

12. A transgenic food crop which may help in solving the problem of night blindness in developing countries is [CBSE-AIPMT]

(a) Flavr savr tomatoes (b) starlink maize

(c) Bt soybean (d) golden rice

13. Cultivation of Bt cotton has been much in the news, The prefix Bt means [AIIMS]

(a) Barium-treated cotton seeds

(b) Bigger thread variety of cotton with better tensile strength

(c) Produced by biotechnology using restriction enzymes and ligases

(d) Carrying an endotoxin gene from *Bacillus thuringiensis*

14. 'Golden rice' is a rice variety rich in [BHU]

(a) 13-carotene (b) lysine

(c) vitamin-C (d) iron

15. In Bt cotton, a transgenic plant, Bt refers to

(a) Botanical (b) Beta

(c) Biotechnology (d) *Bacillus thuringiensis*

16. Golden rice is a transgenic crop of the future with the following improved trait [MHT-CET]

(a) high lysine (essential amino acid) content

(b) insect resistance

(c) high protein content

(d) high vitamin-A content

17. A genetically engineered microorganism used successfully in bioremediation of oil spills, is a species of [CBSE-AIPMT]

(a) Pseudomonas (b) Trichoderma

(c) Xanthomonas (d) Bacillus

18. In cloning of cattle, a fertilised egg is taken out of the mother's womb and [CBSE-AIPMT]

(a) The egg is divided into four pairs of cells, which are implanted into the womb of other cows

(b) In the eight cell stage, cells are separated and cultured until small embryos are formed, which are implanted into the womb of other cows

(c) In the eight cell stage, the individual cells are separated under electrical field for further development in culture media

(d) From this up to eight identical twins can be produced

19. Bt toxin is obtained from [DUMET]

(a) Prokaryotes (b) eukaryotes

(c) Both (a) and (b) (d) None of these

20. Blindness can be prevented by use of which crop in poor countries ? [HUME]]

(a) Golden rice (h) Wheat

(c) Gram (d) Pea

21. In transgenics, expression of transgene in target tissue is determined by [Manipal]

(a) enhancer (b) transgene

(c) promoter (d) reporter

22. The I, -plasmid, is often used for making transgenic plants. This plasmid is found in [Manipal]

(a) Azotobacter

(b) Rhizobium of the roots of leguminous plants

(c) Agrobacterium

(d) yeast as a 2 gm plasmid

23. Test tube baby means, a baby born when

(a) The ovum is fertilised externally and thereafter implanted in the uterus

(b) It develops from a non-fertilised egg

(c) It is developed in a test-tube

(d) It is developed through tissue culture method

24. A tumour inducing plasmid widely used in the production of transgenic plant is that of [AIIMS]

(a) Escherichia coli

(b) Bacillus thuringiensis

(c) Staphylococcus aureus

(d) Agrobacterium tumefaciens

25. Which one of the following is a correct statement?

(a) 'Be in 'Bt cotton' indicates that it is a genetically modified organism produced through biotechnology

(b) Somatic hybridisation involves fusion of two complete plant cells carrying desired genes

(c) The anticoagulant hirudin is being produced from transgenic *Brassica napus* seeds

(d) 'Flavr savr' variety of tomato has enhanced the production of ethylene, which improves its taste

26. Choose the correct statement with reference to 'Dolly'.

(a) She was created by taking nucleus from unfertilised eggs and cytoplasm from fertilised eggs

(b) She was created by taking nucleus from udder cells and cytoplasm from unfertilised egg

(c) She was created by taking cytoplasm from udder cell and nucleus from unfertilised egg

(d) She was created by taking cytoplasm from udder cell and nucleus from fertilised egg

(e) She was created inside the test tube

27. Which of the following is false for Bt transgenic plant?

(a) Disease resistance

(b) Prepared by *Bacillus thuringiensis*

(c) It is recombinant type

(d) No such plant is known

28. Insect resistant transgenic cotton has been produced by inserting a piece of DNA from

(a) An insect (b) a bacterium

(c) A wild relative of cotton (d) a virus

29. The name of first cloned sheep is [Haryana PMT]

(a) Dolly (b) Polly (c) Molly (d) Holly

30. Transgenic crops are modified through genetic engineering to develop natural resistance to insect pests. Which one is a transgenic plant?

(a) Tobacco and cotton (b) Tomato and rice

(c) Maize and sugarcane (d) Tomato and wheat

31. The first case of IVF-ET technique success, was reported by [K-CET]

(a) Louis Joy Brown and Banting Best

(b) Patrick Steptoe and Robert Edward

(c) Robert Steptoe and Gilbert Brown

(d) Baylis and Starling Taylor

KEY----Transgenic Crops and Animals

1.	(a)	2.	(d)	3.	(b)	4.	(a)	5.	(b)
6.	(a)	7.	(d)	8.	(b)	9.	(a)	10.	(d)
11.	(d)	12.	(d)	13.	(d)	14.	(a)	15.	(d)
16.	(d)	17.	(a)	18.	(b)	19.	(a)	20.	(a)
21.	(d)	22.	(c)	23.	(a)	24.	(d)	25.	(c)
26.	(b)	27.	(d)	28.	(b)	29.	(a)	30.	(a)
31.	(b)								

BIOPATENT, BIOPIRACY, BIOWAR AND BIOETHICS

1. Which of the following is/are true?

I. Biowar is the use of biological weapons against humans and/or their crops and animals.

II. Bioethics is the unauthorised use of bioresources and traditional knowledge related to bioresources for commercial benefits.

III. Biopatent is exploitation of bioresources of other nations without proper authorisation.

(a) II only (b) I only

(c) I and II only (d) I and III only (e) II and III only

2. Most widely used bioweapon is [BHU]

(a) Bacillus subtilis

(b) Pseudomonas putida

(c) Bacillus anthracis (d) None of these

3. Biopiracy is related to which of the following?

(a) Traditional knowledge [**Manipal]**

(b) Biomolecules and regarding bioresources

(c) Bioresources

(d) All of the above

KEY: 1. (b) 2. (c) 3. (c)