

12. Biotechnology

- 1) Are foods derived from genetically modified crops nutritionally superior?
 - (a) Yes, they offer substantial health advantages over foods produced from conventional crops.
 - (b) Yes, they offer some health advantages over foods produced from conventional crops.
 - (c) No, they are neither better nor worse than foods from conventional crops.
 - (d) No, they are slightly less healthful than foods from conventional crops.
- 2) The enzyme nuclease hydrolyses _____ of polynucleotide chain of DNA.
 - (a) hydrogen bond
 - (b) phosphodiester bonds
 - (c) glycosidic bond
 - (d) peptide bond
- 3) In vitro amplification of DNA or RNA segment is known as
 - (a) Chromatography
 - (b) Southern blotting
 - (c) Polymerase Chain reaction
 - (d) gel electrophoresis
- 4) _____ is a peptide hormone produced by cells of islets of Langerhans of pancreas.
 - (a) Relaxin (b) insulin
 - (c) adrenaline (d) thyroxine
- 5) _____ such as DNA, RNA and proteins are synthesised in the living cells.
 - (a) micro molecules (b) macromolecules
 - (c) enzymes (d) activators
- 6) Which of the following is not matched correctly?
 - (a) Polymerase – Taq polymerase
 - (b) Template – double stranded DNA
 - (c) Primer – oligonucleotide
 - (d) Synthesis – 5' to 3' direction
- 7) Primer used for the process of polymerase chain reaction are
 - (a) Single stranded DNA oligonucleotide
 - (b) Single stranded RNA oligonucleotide
 - (c) Double stranded DNA oligonucleotide
 - (d) Double stranded RNA oligonucleotide
- 8) Polymerase used for PCR is extracted from _____
 - (a) Escherichia coli (b) Homo sapiens
 - (c) Thermusaquaticus (d) Homo erectus
- 9) The mechanism of intake of DNA fragments from the surrounding medium by a cell is called
 - (a) transformation (b) transduction
 - (c) both a and b (d) conjugation
- 10) Which was the first transgenic plant produced?
 - (a) Cotton (b) Maize
 - (c) Tobacco (d) Wheat
- 11) Biopiracy means

- (a) Use of biopatents
 - (b) Thefts of plants and animals
 - (c) Stealing of bioresources
 - (d) Exploitation of bioresources without authentic permission
- 12)** A set standards used to regulate own or community activity in relation to biological world is
- (a) Biopotency (b) Biopiracy
 - (c) Biowar (d) Bioethics
- 13)** Bioethics is related to
- (a) Preventing biopiracy
 - (b) Regulation of unethical activities like, gene cloning in animals
 - (c) Preventing theft of living materials
 - (d) Moral guidance to the problems in biology
- 14)** Biopatents are _____.
- (a) Right to use invention
 - (b) Right to use biological entities
 - (c) Right to use products
 - (d) Right to use process
- 15)** The first successful transformation of rDNA molecule into a bacterium was carried out by
- (a) Boyer and Cohen
 - (b) Paul Berg
 - (c) Nathan, Arber and Smith
 - (d) Watson, Crick and Wilkins
- 16)** Gene cloning refers to the
- (a) production of large number of copies of the gene being cloned
 - (b) production of asexual progeny from a single individual or a cell
 - (c) Polymerase chain reaction
 - (d) rDNA technology
- 17)** Enzyme used to foreign DNA into cloning vector is
- (a) Lipase (b) Restriction enzyme
 - (c) Ligase (d) Endonuclease
- 18)** The DNA segment to be cloned is called
- (a) gene segment (b) DNA fragment
 - (c) DNA insert (d) all of these
- 19)** Which of the following is the correct recognition sequence of restriction enzyme hind III.
- (a) 5' ---A-A-G-C-T-T 3'
 - 3' ---T-T-C-G-A-A 5'
 - (b) 5' ---G-A-A-T-T-C 3'
 - 3' ---C-T-T-A-A-G 5'
 - (c) 5' ---C-G-A-T-T-C 3'
 - 3' ---G-C-T-A-A-G 5'
 - (d) 5' ---G-G-C-C 3'
 - 3' ---C-C-G-G 5'
- 20)** ____ consists of three parts, grant, specification, and claims.
- (a) Vaccine

- (b) Patent
- (c) Enzymes
- (d) Transgenic animal

21) Which one of the following is not correctly matched?

- (a) Provitamin A- lycopene cyclase
- (b) Flavonoids - chalcone isomerase
- (c) Fructans- sucrase transferase
- (d) Vitamin E - chalcone isomerase

22) The vaccine prepared through recombinant DNA technology are_____.

- (a) Recombinant vaccine
- (b) oral vaccine
- (c) edible vaccine
- (d) bacterial vaccine

23) Modern biotechnology is based on:

- (a) Genetic engineering and chemical engineering
- (b) Genetic engineering and mechanical engineering
- (c) Mechanical engineering and chemical engineering
- (d) None of these

24) Genetic engineering is often called as

- (a) Gene technology
- (b) Recombinant DNA technology
- (c) Gene cloning
- (d) Both b & c

25) Recombinant DNA technology was established by

- (a) Stanley Cohen (b) Herbert Boyer
- (c) Karl Fisher (d) Both a & b

26) How many DNA duplex is obtained from one DNA duplex after 4 cycles of PCR?

- (a) 4 (b) 8 (c) 12 (d) 16

27) Recombinant protein _____ is used to dissolve blood clots present in the body.

- (a) insulin
- (b) tissue Plasminogen Activator
- (c) Relaxin
- (d) erythropoietin

28) Recognition sequence of restriction enzymes are generally nucleotide long.

- (a) 2 to 4 (b) 4 to 8
- (c) 8 to 10 (d) 14 to 18

29) Karl Ereky in 1919 was the first to use the term

- (a) Biopiracy (b) Bioethics
- (c) Biotechnology (d) Biology

30) At what temperature do denaturation of DNA double helix takes place?

- (a) 100° (b) 84° (c) 74° (d) 94°

31) Which of the following shows sticky end?

- (a) 3'-G A-A-T-T-C----5'
 ---C-T-T-A-A G---5'
- (b) 3'—G G-A-T-C-C---5'
 ---C-T-T-A-A G---
- (c) both a & b
- (d) Only a not b

32) Smith Nathan and Arber were awarded Nobel Prize for physiology and medicine in 1978 for discovery of

(a) Cloning vector

(b) DNA primer

(c) Restriction enzyme

(d) Component cell

33) Restriction enzymes are also called

(a) Molecular cutter

(b) DNA slicer

(c) Molecular scissors

(d) Molecular breaker

34) Most foods derived from genetically modified crops contain:

(a) The same number of genes as food produced from conventional crops.

(b) The same number of genes as foods produced from hybrid crops.

(c) One or two additional genes.

(d) Hundreds of additional genes.

35) The temperature at which DNA synthesis takes place

(a) 74° (b) 54° (c) 75° (d) 70°

36) Some of the famous examples of biopiracy are related to the following

(a) Neem (b) Turmeric

(c) Basmati rice (d) All of the above

37) Bt Cotton is _____

(a) Cloned plant (b) transgenic plant

(c) Hybrid plant (d) Mutated plant

38) What are the current benefits of having foods made from genetically modified crops?

(a) They improve farm profitability and make some farmers' jobs easier.

(b) They allow farmers to greatly increase the amount of crops produced

(c) They improve convenience for consumers, e.g. by creating foods with longer shelf lives.

(d) They improve the nutritional quality of foods.

(e) They cause less damage to the environment than conventional chemical-intensive agriculture

39) At what temperature do annealing of DNA and primer takes place?

(a) 40° (b) 54° (c) 75° (d) 94°

40) Which of the following is the correct recognition sequence of restriction enzyme hind III.

(a) 5' ---A-A-G-C-T-T 3'
 3' ---T-T-C-G-A-A 5'

(b) 5' ---G-A-A-T-T-C 3'
 3' ---C-T-T-A-A-G 5'

(c) 5' ---C-G-A-T-T-C 3'

3' ---G-C-T-A-A-G 5'
(d) 5' ---G-G-C-C 3'
3' ---C-C-G-G 5'

- 41) The bacterium which causes a plant disease called crown gall is
- (a) *Helicobacter pylori*
 - (b) *Agrobacterium tumefaciens*
 - (c) *Thermophilus aquaticus*
 - (d) *Bacillus thuringiensis*
- 42) Recognition sequence of restriction enzymes are generally nucleotide long.
- (a) 2 to 4 (b) 4 to 8
 - (c) 8 to 10 (d) 14 to 18

----- All the Best -----

12. Biotechnology Keys

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

27) Ans. (b)

28) Ans. (b)

29) Ans. (c)

30) Ans. (d)

31) Ans. (c)

32) Ans. (c)

33) Ans. (c)

34) Ans. (c)

35) Ans. (a)

36) Ans. (d)

37) Ans. (b)

38) Ans. (d)

39) Ans. (b)

40) Ans. (a)

41) Ans. (b)

42) Ans. (b)