

31. Which of the following methods can be used for making the bacterial cell "competent"?
- (1) Treating with specific concentration of divalent cation (Ca^{+2})
 - (2) Treating with specific concentration of monovalent cation (K^+)
 - (3) Heat shock at 42°C
 - (4) Heat shock at 94°C
32. Which of the following explains the role of heat shock during transformation?
- (1) Binding of DNA to bacterial cell wall
 - (2) Uptake of DNA through transient pores
 - (3) Decreased efficiency of transformation
 - (4) All of these
33. PCR technique is best for
- (1) DNA synthesis
 - (2) Protein amplification
 - (3) DNA amplification
 - (4) DNA ligation
34. Which of the following is **not** required while performing a bacterial transformation experiment?
- (1) Insert DNA
 - (2) Ice cold calcium chloride
 - (3) Temperature around 90°C
 - (4) Bacterial cells
35. Which of the following is **not** an application of PCR?
- (1) ELISA
 - (2) Diagnosis of pathogens
 - (3) Diagnosis of sickle cell anemia
 - (4) In palaeontology
36. Select the name of the organism which is the source of heat-stable PCR enzyme
- | | |
|-----------------------------------|-----------------------------------|
| (1) <i>Thermophilus aquaticus</i> | (2) <i>Haemophilus influenzae</i> |
| (3) <i>Thermo proteus</i> | (4) <i>Bacillus thuringiensis</i> |
37. Which of the following is **not** a requirement for a successful PCR?
- (1) Thermostable DNA polymerase
 - (2) Nanogram of DNA template
 - (3) Primer with exposed $5'\text{-OH}$ group only
 - (4) Deoxyribonucleoside triphosphates

38. Method in which recombinant DNA is directly injected into the nucleus of animal cell by using microneedles is called

- (1) Gene Gun method
- (2) Biolistic method
- (3) Microinjection method
- (4) Electroporation

39. The most commonly used bioreactor is of stirring type. The stirrer mainly facilitates

- (1) Temperature control
- (2) pH control
- (3) Oxygen availability
- (4) Product removal

40. When DNA encoding human insulin is expressed in host like *E.coli*, this host is called

- (1) Recombinant host
- (2) Heterologous host
- (3) Homologous host
- (4) Analogous host



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1. Who is recognised as Father of Green Revolution?
(1) Norman Ernest Borlaug (2) Verghese Kurien
(3) Ernst Mayr (4) Eli Lilly
 2. Name the scientists associated with development of Golden Rice.
(1) Ingo Potrykus and Peter Beyer (2) Milstein and Kohler
(3) Stanley Miller and Harold Urey (4) Stanley Cohen and Herbert Boyer
 3. Which genes encode the protein to control bollworms infection in cotton plants?
(1) *cry IIAb* (2) *cry IAc*
(3) Both (1) & (2) (4) *cry IAb*
 4. What does 'Bt' in Bt toxin represent?
(1) Bioterrorism (2) Bleeding toxin
(3) *Bacillus thuringiensis* (4) Blue tooth toxin
 5. Which type of pH conditions are required for action by Bt toxin?
(1) 8.6 (2) 1
(3) 7.0 (4) 6.8
 6. Which organism is held responsible for causing root-knots in food and fibre crops especially tobacco?
(1) *Caenorhabditis elegans*
(2) *Meloidogyne incognita*
(3) *Nicotiana tobaccum*
(4) *Ascaris lumbricoides*
 7. Select the option that fills in the blank correctly :
Using _____ vectors, nematode-specific genes were introduced into the host plant for pest resistance.
(1) *Streptococcus* (2) *Bacillus anthracis*
(3) *Agrobacterium* (4) *Haemophilus influenzae*
 8. Select example of a GM crop that can tolerate abiotic stress.
(1) Transgenic tomato (2) Bt-Brinjal
(3) Golden rice (4) Pomato

9. Which one of the following can be used as a permanent cure for ADA deficiency?
- (1) Bone marrow transplantation upon detection of disorder in adult
 - (2) Enzyme replacement therapy at any point in life
 - (3) Both (1) & (2)
 - (4) Gene therapy at early embryonic stages
10. Which one of the following is a transgenic product useful for treatment of Haemophilia?
- (1) Factor VIII
 - (2) Antithrombin II
 - (3) α -1-antitrypsin
 - (4) Lysostaphin
11. Who is responsible for obtaining interferons through recombinant DNA technique?
- (1) A.R. Bunting
 - (2) Eli Lilly
 - (3) Charles Weissmann
 - (4) A. Tiselius
12. Select the **incorrect** statement
- (1) RNAi silencing takes place in all eukaryotic organisms as a method of cellular defense
 - (2) RNAi requires silencing of mRNA by binding of complementary ssDNA molecule
 - (3) Complementary nucleic acid could be from mobile genetic elements (transposons)
 - (4) Ti plasmid with nematode specific genes have been used in RNAi
13. Which gene controls transcription of chain A and chain B required for humulin synthesis in *E. coli*?
- (1) β -lactamase
 - (2) β -galactosidase
 - (3) Poly galacturonase
 - (4) Chitinase

14. Deficiency of gene coding for adenosine deaminase results in
- (1) Phenylketonuria
 - (2) SCID
 - (3) Emphysema (hereditary)
 - (4) CFTR
15. Which is not true w.r.t. transgenic animals and their contribution to human welfare?
- (1) Transgenic mice are being tested to ensure safety of polio vaccine
 - (2) Rosie's milk contained human gene-insulin
 - (3) Transgenic cows produce milk with less fat
 - (4) Transgenic sheep grow more wool
16. Choose the **incorrect** statement w.r.t. Bioweapons
- (1) They are low cost weapons
 - (2) They cause more casualties than conventional weapons
 - (3) They are extremely difficult to detect
 - (4) Bacterium *E. coli* created letter scare in 2001
17. A set of standards by which a community regulates its behaviour and activities in relation to the biological world is termed as
- (1) Biopatent
 - (2) Biopiracy
 - (3) Patent
 - (4) Bioethics
18. Nexia biotechnologies spliced spider genes into the cells of lactating
- (1) Cow
 - (2) Sheep
 - (3) Goat
 - (4) Buffalo

