

The page features a decorative design with three blue circles of varying sizes, each composed of concentric circles in different shades of blue. These circles are arranged in a vertical line, with the largest at the top, a medium one in the middle, and a large one at the bottom right. Thin blue lines extend from the top left and bottom right corners towards the circles.

GRASSROOTS ACADEMY **GATE-BIOTECH 2007**

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GATE BIOTECHNOLOGY – 2007

- The specific growth rate (μ) of a microorganism in death phase is
(A) 0 (zero) (B) μ_{\max}
(C) Less than zero (D) Greater than zero
- Which of the following reagents is used for harvesting anchorage – dependent animal cells from culture vessels?
(A) Trypsin/ Collagenase (B) Trypsin/ Collagen
(C) Collagen /Fibronectin (D) DMSO
- Protein binding regions of DNA are identified by one of the following techniques
(A) Finger printing (B) Foot printing
(C) Southern blotting (D) Western blotting
- Plant secondary metabolites
(A) Help to increase the growth rate of plant
(B) Help in plant reproduction processes
(C) Provide defense mechanisms against microbial attack
(D) Make the plant susceptible to unfavorable conditions
- Si RNA (s) interfere at
(A) Transcriptional level (B) Post-transcriptional level
(C) DNA replication level (D) Translational level
- Presence of $CX_2-4CX_{\phi}X_8HX_3H$ sequence in a protein suggest that it is
(A) A protein kinase (B) GTP binding protein
(C) Zinc finger protein (D) Lipase

7 – 24 carry two marks each

- A protein binds to phosphocellulose column at pH 7.0 and elutes pH 8.0. if the protein has to be further purified on a DEAE sephacel column, the binding buffer should have a pH of
(A) 5 (B) 6
(C) 7 (D) 8
- Oils rich in PUFA are NOT desirable for biodiesel production because
(A) They form epoxides in presence of oxygen
(B) They do not form epoxides in presence of oxygen
(C) They have high ignition temperature
(D) They solidify at low temperature
- Gynogenesis is a process of development of haploid plants
(A) From a fertilized cell of female gametophyte
(B) From an unfertilized cell of female gametophyte
(C) From isolated pollen grains
(D) By selective elimination of chromosomes following distant hybridization
- Match items in group 1 with correct examples from those in group 2

Group 1

- (P) Catabolic product
(Q) Bioconversion
(R) Biosynthetic product
(D) Cell mass

(A) P-4, Q-3, R-2, S-1

Group 2

1. Griseofulvin
2. Bakers yeast
3. 6-Aninopenicillanic acid
4. Ethanol

(B) P-3, Q-4, R-1, S-2



- (C) P-4, Q-3, R-1, S-2 (D) P-1, Q-4, R-3, S-2
11. A bioremedial solution to reduce oxides of nitrogen and carbon in flue gases is to intergrate flue gas emission to
 (A) Micro–algal culture (B) Fish culture
 (C) Mushroom culture (D) Seri culture
12. The respiratory coefficient for the reaction
 $a \text{CH}_m\text{O}_n + b \text{O}_2 + c \text{NH}_3 \rightarrow d \text{CH}_\alpha\text{O}_\beta\text{N}_\gamma + e \text{H}_2\text{O} + f \text{CO}_2$ is defined as
 (A) f/a (B) e/b
 (C) b/f (D) f/b
13. Match the methods available on world wide web in group 1 for performing the jobs listed in group 2
- | | |
|------------------|--------------------------------------|
| Group 1 | Group 2 |
| (P). Boxshade | 1. Searching family data base |
| (Q) BCM launcher | 2. Finding alignments |
| (C) Prosite | 3. Displaying alignments |
| (D) PSI–BLAST | 4. Searching for multiple alignments |
- (A) P-1, Q-3, R-2, S-4 (B) P-2, Q-3, R-2, S-4
 (C) P-3, Q-4, R-1, S-2 (D) P-3, Q-2, R-1, S-4
14. Match the recombinant products in group 1 with their therapeutic applications in group 2
- | | |
|----------------------------|--|
| Group 1 | Group 2 |
| (P) Human growth hormone | 1. Pituitary dwarfism |
| (Q) Platelet growth factor | 2. Chemotherapy induced thrombocytopenia |
| (R) Factor VIII | 3. Haemophilia |
| (S) Erythropoietin | 4. Anaemia associated with chronic renal failure |
- (A) P-1, Q-2, R-3, S-4 (B) P-2, Q-1, R-3, S-4
 (C) P-1, Q-4, R-3, S-2 (D) P-2, Q-4, R-3, S-1
15. Mobile genetic elements present in human genome are
 (P) Long interspersed elements (LINEs)
 (Q) Short interspersed elements (SINEs)
 (R) P elements
 (S) IS elements
- (A) Q,R (B) P, Q
 (C) P, R (D) Q, S
16. Match the following marker genes in group 1 with suitable selecting agent in group 2
- | | |
|----------------|---------------------|
| Group 1 | Group 2 |
| P. npt II | 1. Glyphosate |
| Q. aro A | 2. Phosphinothricin |
| R. hpt | 3. Kanamycin |
| S. bar | 4. Hygromycin B |
- (A) P-1, Q-2, R-4, S-3 (B) P-3, Q-2, R-4, S-1
 (C) P-2, Q-3, R-4, S-1 (D) P-3, Q-1, R-4, S-2
17. Determine the correctness or otherwise of the following **Assertion [a]** and **Reason [r]**



Assertion: Enzymatic method of tissue dispersion is milder than chemical and mechanical methods.

Reason: Enzymes work at optimal temperature and pH

- (A) Both [a] and [r] are true and [r] is the correct reason for [a]
- (B) Both [a] and [r] true but [r] is not the correct reason for [a]
- (C) [a] is true but [r] is false
- (D) [a] is false but [r] is true

18. Match each parameter in group 1 with the appropriate measuring device in group 2

Group 1

- P. Pressure
- Q. Foam
- R. Turbidity
- S. Flow rate

- (A) P-3, Q-4, R-1, S-2
- (C) P-4, Q-1, R-2, S-3

Group 2

- 1. Photometer
- 2. Rotameter
- 3. Diaphragm gauge
- 4. Rubber sheathed electrode

- (B) P-1, Q-3, R-2, S-4
- (D) P-1, Q-2, R-3, S-4

