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Seat No.: _____

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SARDAR PATEL UNIVERSITY
T. Y. B.Sc. (V SEMESTER) EXAMINATION

2019

Monday, 11th November

10.00 a.m. to 1.00 p.m.

USO5CENVO1 ENVIRONMENTAL BIOTECHNOLOGY

Total Marks: 70

Q.1. Select the correct answer and write it in the answer sheet

(10)

1. Bioremediation is a natural process which relies on _____ to alter contaminants harmless or less toxic.
(a) Bacteria (b) Fungi (c) Yeast (d) All three
2. _____ is an Ex Situ method of Bioremediation
(a) Bioreactor (b) Biosparging (c) Bioslurping (d) Bioventing
3. Most bacteria that degrade petroleum hydrocarbon are mesophiles which have optimum temperature ranging from
(a) 05^o C to 15^o (b) 15^o C to 25^o (c) 25^o C to 45^o C (d) 45^o C to 65^o
4. The filtering of water through a mass of roots to remove toxic substances or excess of nutrients is _____
(a) Phytoextraction (b) Rhizofiltration (c) Phytotransformation (d) Phytovolatilization
5. The growing of plants in clean water until a large root system is developed is a technique called _____
(a) Hydrology (b) Hydrophytes (c) Aeroponics (d) Hydroponic
6. The sterilization of thermolabile compounds is carried out by _____
(a) Autoclave (b) Hot Air Oven (c) Membrane filter (d) Laminar Air flow
7. The undifferentiated and actively dividing mass of cells in tissue culture is _____
(a) Explant (b) Callus (c) Embryo (d) Zygote
8. Xenobiotics are the compounds of any _____ origin
(a) Tissue (b) Plant (c) Bacteria (d) Foreign
9. Restriction endonuclease _____ cuts the DNA, 25 base pair away from recognition site
(a) Type I (b) Type II (c) Type III (d) Type IV
10. _____ can accept the DNA insert of about 300 kb
(a) HAC (b) YAC (c) BAC (d) Cosmid

Q.2 Answer the following in brief (Any Ten)

(20)

1. Explain the significance of Bioremediation
2. State the factors controlling Bioremediation
3. Explain Bioaugmentation
4. Define 'Phyto remediation'
5. What are Hyper accumulators?
6. What is Phyto extraction ?
7. Explain the principle of Totipotency
8. State the use of Autoclave
9. What is Anther culture ?
10. Explain the term cloning vector
11. State the action of Ligases
12. What are Genetically modified organisms?

(1)

(PTO)

Q.3 (a) Discuss various *In situ* bioremediation techniques (06)

(b) Explain Composting and Land farming (04)

OR

Q.3 (a) Explain in brief the *Ex situ* bioremediation processes (06)

(b) Discuss Bioventing (04)

Q.4. (a) Discuss advantages and disadvantages of Phyto remediation (05)

(b) What is Rhizofiltration ? Explain its mechanism (05)

OR

Q.4. (a) Explain the role of Hyper accumulators and give few examples of plants used for removal of Heavy metals (06)

(b) Discuss the Phyto degradation process (04)

Q.5. (a) Discuss the aseptic conditions during tissue culture (06)

(b) Write in brief about Callus culture (04)

OR

Q.5. (a) Discuss the laboratory set up for tissue culture laboratory (06)

(b) Write a brief note on Nutrient media for plant tissue culture (04)

Q.6. Discuss transfer of genes in plants and animals with examples (10)

OR

Q.6. What is R DNA technology? Discuss with suitable illustration (10)

— X —
②

— X —
②