Seat No..... **Enrollment No....**

THE CHARUTAR VIDYAMANDAL UNIVERSITY,
Vallabh VidyaNagar

M.Sc: Environmental Science and Technology **III Semester**

Course Title: Environmental Biotechnology **Course code: 101350301**

Date: 16th November, 2021 Time: 10.00-12.00 pm **Max.Marks:60**

Instructions:

- Attempt all questions.
- Number to right indicate full marks for each question
- Make suitable assumptions wherever necessary

Q1 A. **Answer the following multiple choice questions** **(12X1)**

i. Environmental Biotechnology involves
a. the use of microbes to clean up the environment
b. Bioremediation c. Study of benefits and hazards associated with GMMs d. All of these

ii.The process of converting environmental pollutants into harmless products by naturally occurring microbes is called
a. Exsitu bioremediation b. intrinsic bioremediation c. extrinsic bioremediation d. None

iii. A non directed physic-chemical interactions between heavy metal ions and microbial surface is called
a. Biotransformation b. Bioconversion c. Biosorption d. Biomining

iv. Which of the following is best suited method for production of various free plants
a. Embryo culture b. Meristem culture c. Ovule culture d. Anther culture

v. Immobilized cell bioreactors are based on
a. Cell cultures in solid medium b. Cell cultures in liquid medium c. Cell entrapped in gels d. Above all

vi. The gene formed by the joining of DNA segment from two different sources are called as
a. Recombinant gene b. Joined gene c. Both a & b d. Chimaeric gene

vii. Restricted enzymes are also called as
a. Biological Scissors b. Molecular scalpels c. Molecular knives d. All of these

viii. The mechanism of intake of DNA fragments from the surrounding medium by a cell is called
a. Transformation b. Transduction c. Both a & b d. Conjugation

ix. Which of the following is incorrectly matched
a. Alnus- Frankia b. Alfalfa- Rhizobium c. Nitrogen fixer- Anabaena d. Mycorrhiza- Rhodopirrilum

x. Which of the following is not a biofertilizer
a. Mycorrhiza b. Rhizobium c. Agrobacterium d. Nostoc

xi. The type of fermentation observed in yeast is
a. Acrylic fermentation b. Lactic acid fermentation c. Pyruvic acid fermentation d. Alcoholic fermentation

xii . Fermentation occurs in the
a. Presence of Oxygen b. Absence of Oxygen c. Presence of Nitrogen d. Presence of Carbon

Q. 2. Answer any EIGHT of the following **(8X2)**

a. Vermiwash
b. Structure of Rhizobium
c. Importance of SCP
d. VAM
e. Immobilization of Enzymes
f. Enlist six advantages of fermentation
g. DNA structure
h. Types of RNAs
i. Applications of PCR
j. Tissue culture media
k. Mechanism of Biosorption
l. Phtovolatilization
m. Palindromes

Q3. Describe isolation, structure, characterization, mass-cultivation and applications of Cyanobacterial biofertilizers . **(8)**

OR

Q3. Write importance of Mushrooms ? Describe the isolation, structure, masscultivation and applications of edible mushroom-Pluerotus species .

Q4. Describe microbial production of Alcohol and Antibiotic fermentation in brief **(8)**

OR

Q4. Discuss Biogas and biofuel production in fermentation methods

Q5. Narrate restriction enzymes used in rDNA technology and add a note RAPD markers **(8)**

OR

Q5. Explain various methods to separate recombinant cells from non-recombinant cells in rDNA Technology·

Q6. Define Bioremediation and explain in*situ* bioremediation methods in brief and add a note on Embryo culture. **OR** **(8)**

Q6. Discuss various parts involved in Biosensors and add a note on applications of Biosensors

Seat No. _____ Enrollment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY
M.SC. ENVIRONMENTAL SCIENCE & TECHNOLOGY (EST) – SEMESTER III
WINTER 2021 EXAMINATION

Course Title: Environmental Impact Assessment and Legislation
Course Code: 101350302
Total Printed Pages : 02 (Two)
Date: 17/11/20201 Time: 10.00 am to 12.00 pm Maximum Marks: 60

Instructions:

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

Q. 1 Answer the following **multiple choice questions.** **(12)**

(1) EIA is one of the tools available with the _____ to achieve the desired goal.
(a) Planners (b) Practitioners (c) Programmers (d) Decision-makers

(2) The project proponent should conduct his own screening phase to determine whether or not the proposal requires environmental clearance from _____.
(a) GPCB (b) IAA (c) CPCB (d) SEAC

(3) Baseline conditions refer to the background environmental features of the project site and surrounding identified area is commonly known as _____.
(a) Project Effect Area (b) Project Affect Area (c) Project Impact Area (d) None

(4) Physical planning including work program, time schedule and _____ for putting mitigation and compensation systems in place.
(a) Alternatives (b) Baseline (c) Financial Budget (d) Locations

(5) The _____ of EIA is to foresee the potential environmental problems that would arise out of a proposed development.
(a) Objective (b) Purpose (c) Key elements (d) Significance

(6) EIA integrates the environmental concerns in the developmental activities right at the time of initiating for preparing the _____ report.
(a) Draft (b) Feasibility (c) Final (d) Public hearing

(7) During identification of key issues, it is also recommended that the reviewer should refer the _____ guidelines.
(a) Phase-wise (b) Environmental (c) Sectoral (d) Industrial

(8) The project proponent after suitable _____ should provide environmental information for consideration in detailed EIA.
(a) Compliance (b) Public hearing (c) Screening (d) Scoping

(9) Baseline conditions refer to the _____ environmental features of the project site and surrounding identified area.
(a) Background (b) Foreground (c) Existing (d) Predicting

(10) It is important to ensure that the information utilised in _____ is provided in the description of baseline conditions.
(a) Project report (b) Impact prediction (c) Project proposal (d) Public hearing

(11) EMP should include delineation of mitigation and _____ measures for all the identified significant impacts.
(a) Regulatory (b) Precautionary (c) Compensation (d) Preventive

(12) The comprehensive list of identified significant impacts should be verified with community's perception during _____ process.
(a) Screening (b) Scoping (c) Review (d) Public hearing

Q.2 Attempt **any eight** of the following. **(16)**

(1) Expand the terms: ESA, SEAC
(2) Expand the terms: IDRA, SDI
(3) Global Environmental Issues in EIA
(4) Impact Prediction in EIA

(5) Key elements of EIA
(6) Purposes of EIA
(7) Role of Project Proponent & Environmental Consultant in EIA
(8) Role of SPCB, PCC, Public and IAA in EIA
(9) Types of impacts and their attributes
(10) What changes can EIA bring? Discuss.

Q. 3 Discuss in detail the methodology of mapping, gridding, blocking and zonation in EIA. **(08)**

OR

Q.3 Write a detailed note on phase-I and phase-II of EIA. **(08)**

Q. 4 Discuss in detail- Steps in EIA. **(08)**

OR

Q. 4 What are the industries and environmental guidelines? Discuss. **(08)**

Q. 5 Explain in detail the step-by-step process of EHS auditing. **(08)**

OR

Q. 5 What is environmental waste auditing? Discuss. **(08)**

Q. 6 Narrate Air (Prevention & Control of Pollution) Act, 1981. **(08)**

OR

Q. 6 Summarize Water (Prevention & Control of Pollution) Act, 1974. **(08)**

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Seat No. _____ Enrollment No. _____

THE CHARUTAR VIDYA MANDAL UNIVERSITY
M.SC. ENVIRONMENTAL SCIENCE & TECHNOLOGY (EST) – SEMESTER III
WINTER 2021 EXAMINATION

Course Title: Industrial Safety and Control Technology
Course Code: 101350303
Total Printed Pages : 02 (Two)
Date: 18/11/20201 Time: 10.00 am to 12.00 pm Maximum Marks: 60

Instructions:

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

Q. 1 Answer the following **multiple choice questions.** **(12)**

(1) Safety audit
(a) is a critical examination (b) is a systematic examination
(c) requires attributes (d) needs all of the above points

(2) Which one of the followings is odd in the group?
(a) IDLH (b) TLV (c) PEL (d) STEL

(3) Accident is equated as Human + _____.
(a) Risk (b) Hazard (c) Both a & b (d) None

(4) Plenum means _____.
(a) Mechanical ventilation (b) Forced Ventilation (c) Positive ventilation (d) All

(5) Safety Policy should be signed by the _____.
(a) Safety Officer (b) Company Owner (c) Factory Occupier (d) Factory Manager

(6) Which one of the followings is the accident investigation technique?
(a) FMECA (b) FTA (c) ETA (d) PROBIT

(7) Physical hazard is a type of _____ hazard.
(a) Occupational (b) Environmental (c) a & b (d) None

(8) A chemical can cause both physical and health hazards.
(a) True (b) False (c) May be (d) None

(9) Aspiration hazard is a type of _____ hazard.
(a) Health (b) Physical (c) Chemical (d) None

(10) Protective control measures are _____ controls.
(a) Engineering (b) Scientific (c) a & b (d) None

(11) Loading and unloading of materials are regulated as per _____ Act.
(a) HMR (b) HRM (c) HRA (d) None

(12) Coupling is a type of _____ on load.
(a) Grip (b) Tip (c) Pit (d) None

Q.2 Attempt **any eight** of the following. **(16)**

(1) Comment on the term 'LOC'
(2) Define: Flash Point
(3) Differentiate: Accident, Tragedy
(4) Distinguish: Hazard, Risk
(5) Enlist steps of HAZID
(6) Expand the abbreviations: HMIS, MSDS
(7) Expand the terms: OSHA, NIOSH
(8) Name the unit of density and specific gravity
(9) Name two approaches of HAZOP

	(10)	Sketch natural ventilation systems	
Q. 3		Sketch fire pentagon with the respective fire extinction methods.	**(08)**
		OR	
Q.3		Write a detailed note on physical hazards.	**(08)**
Q. 4		Compare and contrast dominos by Heinrich and Frank Bird.	**(08)**
		OR	
Q. 4		Write a note on chemical hazards in detail.	**(08)**
Q. 5		What is safety management? Enlist its salient features.	**(08)**
		OR	
Q. 5		Discuss in detail – Overview of industrial safety.	**(08)**
Q. 6		Define industrial hygiene. Enlist hygiene methods and hygiene priorities.	**(08)**
		OR	
Q. 6		Write a detailed note on safety during material handling.	**(08)**

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The Charutar Vidya Mandal University,
M.Sc. (EST) (Third Semester) Examination
Winter 2021 Examination

Course Title: Industrial Pollution and Control Technology
Course Code: 101350306
Total Printed Pages: 2
Date: 19th November 2021(Friday) Time: 10.00 a.m. to 12:00 p.m Maximum Marks: 60

Q.1 (a)Multiple Choice Questions (Choose Correct Answer) **[12]**

1.) Following is the example of Point sources.
(a) Fertilizer runoff (b) road salts (c) water runoff from city (d) leakages from septic tank

2.) A pipe carrying sewage/wastewater is called.....
(a) Manhole (b) Sewer (c) Waste pipe (d) Soil Pipe

3.) Aerobic floc in healthy state is commonly called.....
(a) Activated sludge (b) Mixed liquor (c) sludge (d) sewage

4.) Following is the discharge values for Total Dissolved solids into Inland surface waters.
(a) 2000 mg/L (b) 2200mg/L (c) 2100mg/L (d) 500mg/L

5.) The full Public ownership is supported by.....
(a) Company (b) Consultancy (c) Government (d) Contractor

6.) In the Aerobic pond treatment, the actions on organic matter taken by .....
(a) Algal (b) Bacteria (c) Algal-bacteria (d) Alage-Fungi

7) In the Flash Mixture, Following chemicals have been used.
(a) Lime and Polyelectrolyte (b) Lime and Alum (c) Ferric Chloride and Alum (d) None

8.) Black Liquor is rich in.....
(a) Cellulose (b) Hemicelluloses (c) Lignin (d) Sulphite

9) In the Scouring process, following chemicals are used to hydrolyze the starch.
(a) Starch (b) Enzymes and acids (c) Enzymes (d) Caustic soda

10) Caprolactam (a raw material for nylon-6 manufacture) is produced from _____?
(a) phenol (b) Naphtelne (c) Benzene (d) Pyridine

11) Alpha (α), beta (β) and gamma (γ) radiations are produced by the process called.....
(a) Radioactive propulsion (b) Radioactive decay (c) Both of above (d) None if these

12) .....unit measures the biological damage caused by radiation.
a) Curie b) Rad c) Rem d) Roentgen

Q.2 Attempt any eight of the following **[16]**

1. Different types of sewerage system
2. F/M Ratio
3. Mercerizing cotton process
4. Alpha and Beta particles
5. Define: Total Chlorine and Residual Chlorine
6. Grey water treatment recycling
7. Drawbacks of CETP
8. Diagram of Facultative Pond
9. Phenomenon of Trickling Filters
10. Identification of Noise Problems in the Workplace.

Q.3. Explain the basic principle of clarification treatment. Describe about the various biological treatment processes in details with diagram. **[08]**

OR

Q.3. What is the need of Disinfection process? Describe Chlorine chemistry with reaction and different type of chlorination practices in details. **[08]**

Q.4. Explain about Technological aspects and operational maintenance of CETP **[08]**

OR

Q.4. What are the objectives of Equalization tank and Grit Chambers in CETP. Write a note on working of MEE Plant. **[08]**

Q.5 Write details about manufacturing process and recovery of Black liquor for Pulp and Paper Industry. **[08]**

OR

Q.5 i) Describe about various treatments for Viscose rayon and mention the zinc recovery Process. **[04]**

ii) Explain about manufacturing process for woolen textile mills. **[04]**

Q.6. i) Define: Radioactivity. Explain radiation injury to DNA and also write a note radiation Units. **[08]**

OR

Q.6. Describe the different measurement techniques for noise. Explain the ear mechanisms in details. **[08]**