(A-14) **SEAT No._____**

No. of Printed Pages: 02

SARDAR PATEL UNIVERSITY

M. Sc. (Integrated) Biotechnology – Eighth Semester Examination

Wednesday, 19th April, 2017.

10:00a.m. to 1:00p.m.

PS08CIGGB4: ANIMAL BIOTECHNOLOGY

Note :(i) Figures to right indicate marks.
(ii) All questions are compulsory.

Total Marks: 70

Q – 1 Choose the most appropriate alternative for the following: **(08)**

1. Which component of the following maintained osmolarity of medium?
   a) $NaHCO_3$ **b)** Na_2CO_3
   c) NaCl **d)** Na_2HPO_4

2. The utilization of complete available growth area by cultured cells is called_____.
   a) Senescence **b)** Transformation
   c) Confluence **d)** Amplification

3. What would be the temperature of incubation in warm trypsinization technique?
   a) 4 °C **b)** 37 °C
   c) 56°C **d)** 80 °C

4. A cell line grows in three dimensional matrix to high density is called.....
   a) organ culture **b)** histotypic culture
   c) organotypic culture **d)** explant culture

5. The temperature of vapor phase of nitrogen is.....
   a) -79 °C **b)** -80 °C
   c) -150 °C **d)** -196 °C

6. The hybridoma cells can grow in _____ medium.
   a) DMEM **b)** HAT
   c) M-199 **d)** RPMI-1640

7. _____ days old embryos from in vitro culture are implanted in the reproductive tract of the recipient female.
   a) 2-3 **b)** 4-6
   c) 7-8 **d)** 10-12

8. The first animal used for transgenesis was _____.
   a) Mouse **b)** Pig
   c) rabbit **d)** sheep

P.T.O

Q – 2 Attempt ANY SEVEN from the following: **(14)**

1. Which type of microscope is used in Animal cell culture? Why?
2. Enlist the different techniques of sterilization.
3. Write about different types of serum used in animal tissue culture.
4. What is explant culture?
5. Write about mechanical disaggregation techniques of cell culture.
6. Write the working methodology of FACS.
7. Write about three dimensional culture of Multicellular tumor spheroids (MTCS).
8. What is superovulation?
9. What is attenuated vaccine?

Q – 3 **(a)** Discuss the physicochemical properties of culture media. **(06)**

(b) Write an explanatory note on serum free media. **(06)**

OR

(b) Write a note on Define media. **(06)**

Q – 4 **(a)** Explain development of Cell line and write about types of cell lines. **(06)**

(b) Discuss the criteria and method for subculture of monolayer culture. **(06)**

OR

(b) Give a detailed account on scale up of suspension culture. **(06)**

Q – 5 **(a)** Describe different techniques of cell viability assays. **(06)**

(b) Explain cryopreservation technique and its applications. **(06)**

OR

(b) Write a note on contaminants of animal cell culture. **(06)**

Q – 6 **(a)** Discuss in brief the basic steps of IVF. **(06)**

(b) Write an explanatory note on transgenic animals. **(06)**

OR

(b) Write notes on :

1. Applications of monoclonal antibodies. **(03)**

2. Artificial insemination **(03)**

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SEAT No._____ No. of Printed Pages: 02

( )

[A-25]

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eight Semester Examination

Tuesday, 11th April 2017

Time: 10:00 am to 01:00 pm

PS08CIGEB1: Applied Environmental Biotechnology

Total Marks – 70

Q.1 Mark the right answer of following questions. **[08]**

1. Determine bsCOD concentration using given values: F/M=0.8, MLSS=200g/m^3, flow rate= 40m^3 and volume of the reactor is 400m^3.
   a. 2500g /m^3 **b.** 25g /m^3 **c.** 1600g /m^3 **d.** 200g /m^3 **e.** 160g /m^3
2. Calculate SVI of ASP using given data: MLSS is 2000g/m^3 and settled sludge volume is 400ml.
   a. 200ml/g **b.** 500ml/g **c.** 8000ml/g **d.** 800ml/g **f.** 0.005ml/g
3. In wastewater treatment process, the purpose of coagulation and flocculation is to _____.
   a. Disinfect water supply **c.** Soften water by removing Ca^{+2} and Mg^{+2} ions
   b. Remove taste and odour problem **d.** Remove microbes, organic matter & SS particles
4. Why sodium hypochlorite and chlorine dioxide are not widely used as sanitizer in dairy industry?
   a. Produce carcinogen **c.** Affects Na^+ adsorption ratio of soil
   b. Leads to eutrophication **d.** Affects cation exchange capacity of soil
5. In chromium tanning cross linkage of chromium with _____ group of collagen is taking place.
   a. Carboxyl **b.** Hydroxyl **c.** Amino **d.** Phosphate **e.** Azo **f.** Alkyl
6. Biodiesel is also called what?
   a. Gasoline **b.** Gasohol **c.** Alcohol **d.** Ethanol **e.** Methyl ester
7. What is the mode of action of volatile fatty acids?
   a. Affects growth of *Methanogens* **c.** Decrease metabolic rate of anaerobes
   b. Causes pH variations **d.** All of these
8. Micronucleus test is an example of _____ bioassay of environmental monitoring.
   a. Cell biology **b.** Cytogenic **c.** Biotechnology **d.** All of these **e.** None of these

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) **[14]**

1. Write objectives and examples of waste reduction processes for solid waste management.
2. Write advantages and applications of fluidized bed reactor process.
3. Which techniques are used to detect *methanogens*?
4. What are the limitations of BOD?
5. Differentiate chromium and vegetable tanning processes.
6. Enlist examples of biological treatment processes.
7. Discuss advantages of composting process.
8. Write examples of advanced oxidation processes used for treatment of industrial effluents.
9. Differentiate single and two stage digestion process of anaerobic decomposition.

Q.3 A. What are the criteria for bio-monitoring of pollution? Outline the general and cell biological assays used for monitoring of pollution. [06]

B. Discuss various biotechnological methods used to detect pathogens in wastewater management by municipal corporation. [06]

OR

B. Write a note on water pollution. [06]

Q.4 A. Which factors affect microbial activity of oxidation pond? Write a detailed note on biology of facultative pond. [06]

B. What are the types of attached growth treatment process? Discuss process and biology of trickling filter. [06]

OR

B. Write short notes on: **A)** Rotating biological contactors **B)** Septic tank [06]

Q.5 A. Define anaerobic digestion. Give a note on factors affecting anaerobic digestion process. [06]

B. Which worms are commonly used in India in vermicomposting process? Outline the process of vermicomposting. [06]

OR

B. Mention advantages & disadvantages of bio-fertilizers and bio-fuel. [06]

Q.6 A. Which pollutants are produced by paper pulp industry? Summarize the treatment processes used for paper pulp industrial wastewater. [06]

B. What is "clean in place" cycle? Give an account on biomarkers used in dairy industry and impacts of dairy wastewater. [06]

OR

B. Describe various treatment process used for the management of tannery industrial effluent. [06]

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SEAT No._____ No. of Printed Pages : 02

[A-337]

SARDAR PATEL UNIVERSITY

M. Sc. Integrated Biotechnology (IG-EBT) 8th Semester
Theory Examination - April 2017
PS08CIGEB2 – Environmental Management
13th April 2017 (Thursday), 10:00 to 1:00 pm

Maximum Marks: 70

Note: (1) All the Questions are compulsory. (2) Figures on the right indicate marks.

Q.1 Select the most appropriate option 1 x 8= 8

(i) In India under CBD implementation _____act have been developed by India in 1998.
a. Biological conservation Act b. Biological Diversity Act
c. Biological Diversity Heritage Protect Act d. None of the above

(ii) _____ & _____ can be reasons for chronic wetland losses.
a. Agricultural conversion & deforestation
b. Degradation of water quality & Ground water depletion
c. Inundation by dammed reservoirs & Hydrologic alteration
d. Drainage from agriculture, Stream channelization

(iii) Common thematic areas of sustainable forest management are:
a. Biological Diversity b. Forest health & vitality
c. Socio-economic function d. All of these

(iv) Which one of the following is not included under *in situ* conservation?
a. National Park b. Zoological Garden
c. Wild life sanctuary d. Biosphere reserve

(vii) Nalsarovar wetland selected under the National Wetland Programme is situated in _____.
a. Punjab b. Maharashtra c. Gujarat d. Jammu & Kashmir

(vi) _____ kind of wetland is single most important least abundant habitat and contains most abused plant community for wildlife.
a. Livestock wetland b. Marsh wetland
c. Riparian wetland d. River line

(vi) The Satellite constellation NAVSTAR means
a. Navigation system Airborne Ranging
b. Navigation system using timing and Ranging
c. Navigation system Airborne Radar
d. None of these.

(viii) In India _____ acquires and processes data from all Indian remote sensing satellite.
a. IRSC b. IRSA c.NRSC d. NRSA

Q.2. Attempt any seven of the following 2 x 7= 14

1. Explain the terms : IUCN, TRIPS, CITES, FAO
2. Define bioprospecting & explain its significance.
3. What is Orthophotography?
4. What is the role of WWF?
5. Give types of mangroves and which type mangroves are salt tolerant.
6. Preburn preparation for wetland management.
7. Define remote sensing and types of remote sensing.
8. Environmental applications of remote sensing.
9. Highlight the criteria of Tribal development projects (TDPs)?

Q. 3. a). Discuss the role of CBD in biodiversity conservation in detail. 6
b). Define biopiracy and discuss various campaigns against biopiracy. 6

OR

b). Define biodiversity. Give different reasons for biodiversity conservation. 6

Q. 4. a). Discuss the criteria, indicators and issues of sustainable forest management. 6
b). Write a note on : Certification of forest management 6

OR

b). What are NTFPs? Discuss their importance and uses by suitable examples. 6

Q. 5. a). Write a note on criteria for wetlands of national importance. 6
b). Enlist various mechanical and physical methods of wetland management & explain the role of marshes in wetland management. 6

OR

b). Enlist various biological methods of wetland management and explain plant propagation in detail. 6

Q. 6. a). Explain in detail the IRS satellite systems with emphasis on image sensing characteristics of various sensors of IRS systems. 6
b). Write a note on different distortion & displacement observed in aerial photopgraphy. 6

OR

b). Discuss on Geographic Information System (GIS) 6

XXXXX_____BEST OF LUCK _____XXXXXX

SEAT No._____ No. of Printed Pages: 02

(A-18)

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eighth Semester Examination

Monday, 17th April 2017

Time: 10:00 pm to 01:00 pm

PS08CIGEB3: Environmental Toxicology

Total Marks – 70

Q.1 Mark the right answer of following questions. [08]

1. Which of the following in NOT a possible route of entry for a hazard?
   a. Ingestion **b.** Absorption **c.** Exposure **d.** Inhalation
2. Cadmium replaces _____ metal ion in liver and plasma.
   a. Ca^{+2} **b.** Mg^{+2} **c.** Fe^{+2} **d.** Cu^{+2} **e.** Hg^{+2} **f.** Na^{+}
3. The absorption of which of the following is facilitated by the prevailing pH in the stomach.
   a. Weak organic acids **c.** Strong acid
   b. Weak organic bases **d.** Strong base
4. Which information may be gained from an acute toxicity study?
   a. LD_{50} **b.** Target organ **c.** No effect level **d.** All of these **e.** None of these
5. Which is nerve toxin?
   a. Taxol **b.** Coniine **c.** Choline **d.** Psychodysleptics **e.** All of these
6. From the following which one is NOT true about 6-4 photoproducts production in UV radiation effect on DNA?
   a. Dewar isomer production **c.** Removal rate of 6-4 PPs is higher
   b. Affects DNA polymerase activity **d.** Oxidation of guanine occurs.
7. Conjugation of foreign compounds with cysteine results in formation of _____.
   a. Hippuric acid **b.** Mercapturic acid **c.** Uric acid **d.** Pyrimidine dimers
8. In metabolism of xenobiotics all of the following reactions occur in phase I except _____.
   a. Reduction **b.** Epoxidation **c.** Oxidation **d.** Conjugation **e.** Hydrolysis

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) [14]

1. What is the metabolic pathway of methanol degradation?
2. What's the difference between LD_{50} and LC_{50}?
3. Define bioconcentration and biotransfer factor.
4. Write any two examples of oxidation of non-carbon elements of phase I reactions.
5. Mention physiological roles of metals in human. Enlist mechanisms of metal toxicity.
6. Enlist the reptile toxins with their corresponding toxic effect.
7. Define toxicology and write its significances.
8. What are the effects of toxicants on ecosystem?
9. Explain mode of action of nucleophilic substances and free radicals.

Q.3	**A.**	Enlist examples of organo-oxygen compounds. Discuss mechanisms and adverse effects of methanol, and phenol.	**[06]**
	B.	Write a note on insect, spider and reptilian toxins.	**[06]**
		OR	
	B.	Summarize the toxic effects of aldehyde, carboxylic acid and esters.	**[06]**
Q.4	**A.**	Enlist and discuss various routes and sites of exposure and distribution of toxicants in body.	**[06]**
	B.	Write mechanisms of toxicology. Outline risk assessment methodologies of toxic agents with appropriate examples	**[06]**
		OR	
	B.	Explain dose-response relationship giving specific examples. Explain the factors influencing toxicity.	**[06]**
Q.5	**A.**	Explain categories of toxic substances and biomarkers used to measure toxic effects.	**[06]**
	B.	Explain phase II biotransformation reactions with any three examples.	**[06]**
		OR	
	B.	Describe epoxidation, alcohol dehydrogenation and metabolic reductions of phase I biotransformation.	**[06]**
Q.6	**A.**	Summarize cadmium and arsenic toxicity, metabolism and excretion in human body.	**[06]**
	B.	Write examples of carcinogenic compounds. Give a detailed account on process of carcinogenesis.	**[06]**
		OR	
	B.	Write short notes on: **1)** Epigenetic pathways **2)** Factors influencing cancer	**[06]**

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SEAT No._____ No. of Printed Pages: 02

(A-16)

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eight Semester Examination
Wednesday, 19th April 2017
Time: 10:00 am to 01:00 pm
PS08CIGEB4: Biodegradation and Bioremediation

Total Marks – 70

Q.1 Mark the right answer of following questions. **[08]**

1. What do you consider to be the most important factor affecting bioremediation?
   a. pH **b.** Oxygen **c.** Nutrients **d.** Microorganisms **e.** Temperature
2. Which compounds degrade faster than alkane?
   a. Alkene & alkynes **b.** Chlorinated aromatic **c.** PAHs **d.** Alkenes & aromatic
3. Which of the following is the non-ionic surfactant?
   a. Lecithin **b.** Triton X-100 **c.** SDS **d.** Quaternary ammonium salt
4. Which of the gas is generated during incineration of waste gas?
   a. Dioxins **b.** SO_x **c.** Dioxenins **d.** NO_x **e.** CO_x **f.** None of these
5. β – oxidation of fatty acids _____.
   a. Involves production of acetyl coA **c.** Feeds in to the TCA cycle
   b. Does not produce ATP **d.** All of this
6. Filter bed medium of bio-filter is made up of_____.
   a. Compost **b.** Peat **c.** Soil **d.** All of these
7. What happens at each chlorination step?
   a. Chlorine not released, H^+ & protons required **c.** Chlorine released, H^+ & protons required
   b. Chlorine released, H^+ & electrons required **d.** None of these
8. In anaerobic biodegradation of aromatic compounds the added oxygen is from _____.
   a. CO_2 **b.** NO_2 **c.** H_2O **d.** NO_X **e.** O_2 **f.** None of these

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) **[14]**

1. Write cyclohexane degradation pathway.
2. Write advantages and disadvantages of bioremediation.
3. Write examples of microbes and different anaerobic conditions for toluene degradation.
4. Discuss types and role of bio-surfactants in bioremediation.
5. Explain bio-augmentation with suitable examples
6. What are the applications of chlorinated alkanes?
7. What do you understand by microbial community of bio-filter?
8. What are the applications of chlorinated alkanes?
9. Define xenobiotic compounds. Write typical features recalcitrance compound.

Q.3	**A.**	Give an account on factors affecting biodegradation process.	**[06]**
	B.	Write notes on: 1) Determination of biodegradability 2) Pathway of n-alkane degradation	**[06]**
		OR	
	B.	Which organic pollutants do produce catechol as one of the intermediate? Outline the steps of catechol degradation pathway.	**[06]**
Q.4	**A.**	Illustrate microbial transformation processes of pesticides by oxidative dealkylation and hydrolysis.	**[06]**
	B.	What is 2,4,5-T? Discuss various steps of 2,4,5-T degradation.	**[06]**
		OR	
	B.	Write notes on: 1) β – oxidation process 2) Different degradation pathways of carbon tetrachloride	**[06]**
Q.5	**A.**	Explain the *Ex-Situ* bioremediation techniques in detail.	**[06]**
	B.	Describe the advantages and disadvantages of *in-situ* bioremediation processes.	**[06]**
		OR	
	B.	What is bio-reactor? Discuss the role of aqueous reactors used in bioremediation with suitable example.	**[06]**
Q.6	**A.**	Discuss the role of molecular techniques used in bioremediation of branched aromatic hydrocarbons.	**[06]**
	B.	How contaminants in gas phase is degraded by bio-scrubber and membrane bioreactor.	**[06]**
		OR	
	B.	Write a note on microbial ecology of bio-filters.	**[06]**

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SEAT No._____ No. of Printed Pages : 02

[A-317]

SARDAR PATEL UNIVERSITY

M. Sc. Integrated Biotechnology (IG-GBT) 8th Semester
Theory Examination - April 2017
PS08CIGGB2 – Bioprocess Engineering & Technology
13th April 2017 (Thursday), 10:00 to 1:00 pm

Maximum Marks: 70

Note: (1) All Questions are Compulsory. (2) Figures on the right indicate marks.

Q.1 Select the most appropriate option 1 x 8=8

(i) A thermal type paramagnetic analyzer is used for
a. Temperature measurement b. pH measurement
c. Pressure measurement d. Oxygen measurement

(ii) Some chemicals, when added to certain fermentation process, are directly incorporated into the desired product are called
a. Buffers b. Precursors
c. Inducers d. By product

(iii) Which of the following separation method is suited method for a protein sample with large differences in molecular mass
a. Disc-bowl centrifuge b. Multi-chamber centrifuge
c. Density gradient centrifugation d. Rate zonal centrifugation

(iv) Del factor is
a. Sterilization criteria b. ln No/Nt
c. Both a & b d. Only b

(v) K_{La} is _____
a. Mass transfer coefficient b. Volumetric Oxygen transfer coefficient
c. OTR d. Critical Oxygen level

(vi) Dissolved oxygen is measured with _____.
a. Polarographic electrode b. Galvinic electrode
c. pH electrode d. both a & b

(vii) dC_L/dt is _____
a. Mass transfer coefficient
b. Change in oxygen concentration over a time period t
c. Driving force
d. None of the above.

(viii) Scraper discharge is the cake discharge mechanism observes in _____filters.
a. Pressure leaf filters b. Plate and frame filters
c. Rotary Vaccum filters d. Cross-flow filters

Q.2. Attempt any seven of the following 2 x7=14

1. Explain the significance of Del Factor.
2. Explain the role of ultrasonication for cell disruption.
3. Explain the role of growth factors with suitable example in media preparation.
4. What is fed batch fermentation?
5. Explain Bingham plastic rheology.
6. Explain the role of ultra filtration in fermentation process?
7. Enlist various temperature measure devices utilize in fermentor.
8. Explain the role of orifice sparger in the aeration system of the fementor.
9. What is reverse phase chromatography (RPC)?

Q. 3. a). Discuss various carbon sources used in media preparation at industrial level. 6

b). Explain the ideal characteristics of an antifoam agent and discuss its role in a fermentation process. 6

OR

b). Discuss the role of precursor and inhibitors with suitable examples. 6

Q. 4. a). Describe continuous sterilization process. 6

b). Discuss the air sterilization and filter designing. 6

OR

b). Explain a batch sterilization process. 6

Q. 5. a). What is K_{La} ? Discuss the factors influencing the K_{La}. 6

b). Write a note on: PID controller. 6

OR

b). Discuss oxygen-balance technique for K_{La} determination with its merits & demerits. 6

Q. 6. a). Write a note on : Liquid-liquid extraction with suitable example. 6

b). Enlist and explain various chemical methods for cell disruption. 6

OR

b). Discuss Ion exchange chromatography method with suitable example. 6

XXXXX_____BEST OF LUCK _____XXXXXX

[A-16]

SEAT No._____

Pages : 2

Sardar Patel University

MSc Integrated Biotechnology Examination -Semester 8

PS08CIGGB3: Omics

Monday 17th April, 2017

10:00 am to 1:00 pm

Total Marks: 70

Note:

1. Figures to the right indicate marks.
2. Draw neat and labelled diagram, wherever necessary.

Q.1 Multiple choice questions [08]

1 Fluorescent labelling is not used in _____sequencing technique.
a) Sanger b) Pyro c) automated fluorescent d) SOLiD

2 Following is not true for ORF in eukaryotes.
a) can be translated in six frames b) covered between start and stop codon c) nucleotides present in ORF are in multiple of six d) intron interrupted

3 Which of these genetic markers is most likely to be highly polymorphic (have many different alleles)?
a) An RFLP b)A microsatellite c)An SNP d)All of these are equally polymorphic

4 Which of these is a key characteristic of a molecular marker?
a)It is a known gene.
b)It is located at a known site on the chromosome.
c)It is only useful for linkage and physical mapping studies.
d)None of these

5 In isoelectric focusing, proteins are separated on the basis of their_____
a) relative content of positively charged residue only
b) relative content of negatively charged residue only
c) size
d) relative content of positively and negatively charged residue

6 _____ is NOT the method used for protein-protein interaction study.
a) Far- western analysis b) Solid-phase ELISA
c) Yeast 2-hybrid system d) yeast 1-hybrid system

7 _____ is used for metabolome analysis.
a) GC b) LC-MS-MS c) UV VIS Spectrophotometer d) HPLC

8 _____ is used to construct cDNA probe for transcriptome analysis.
a) PCR b) RT-PCR c) SAGE d) DD-PCR

Q.2 Attempt any seven [14]

1 What is cDNA? Why cDNA synthesis is required?

2 Describe principle of Sanger sequencing.

3 Why *C. elegans* was selected as a model organism?

4 Goals of Human genome project.

5 Narrate the role of components of rehydration buffer in IEF gel.

6 Write principle of ionization in ESI.

7 What is phage display library?

8 Briefly describe probe immobilization chemistry on microarray chip.

9 What are differential gene expression?

Q.3 A What is C-value paradox? Give a detailed account on the Cot curve analysis to study the complexity of DNA. [06]

B What is genetic code? what is codon bias? Give detail account on codon bias and its benefits. [06]

OR

B What is next generation sequencing? Enlist various NGS platforms and explain any one in detail. [06]

Q.4 A Narrate the strategy adopted in initial phase of the human genome sequencing project. [06]

B Write a detailed note on restriction mapping. [06]

OR

B Enlist types of maps representing genome. Describe the FISH in detail. [06]

Q.5 A Why study of protein-Protein interactions are crucial? Enlist techniques to study protein-protein interactions. Write a short note on yeast two hybrid system. [06]

B Give comparative account on ESI and MALDI-TOF. [06]

OR

B Write a detailed note on 2D gel electrophoresis. [06]

Q.6 A Define transcriptomics. Enlist techniques use to study transcriptomics. Describe the principle of SAGE. [06]

B What is metabolomics? Write a note on importance of studying metabolomics and give overview of Human metabolome project. [06]

OR

B Write a note on *in situ* fabricated microarray along with advantages it offers over OND arrays. [06]

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(A-14) **SEAT No._____**

No. of Printed Pages: 02

SARDAR PATEL UNIVERSITY

M. Sc. (Integrated) Biotechnology – Eighth Semester Examination

Wednesday, 19th April, 2017.

10:00a.m. to 1:00p.m.

PS08CIGGB4: ANIMAL BIOTECHNOLOGY

Note :(i) Figures to right indicate marks.
(ii) All questions are compulsory.

Total Marks: 70

Q – 1 Choose the most appropriate alternative for the following: **(08)**

1. Which component of the following maintained osmolarity of medium?
   a) $NaHCO_3$ **b)** Na_2CO_3
   c) NaCl **d)** Na_2HPO_4

2. The utilization of complete available growth area by cultured cells is called_____.
   a) Senescence **b)** Transformation
   c) Confluence **d)** Amplification

3. What would be the temperature of incubation in warm trypsinization technique?
   a) 4 °C **b)** 37 °C
   c) 56°C **d)** 80 °C

4. A cell line grows in three dimensional matrix to high density is called.....
   a) organ culture **b)** histotypic culture
   c) organotypic culture **d)** explant culture

5. The temperature of vapor phase of nitrogen is.....
   a) -79 °C **b)** -80 °C
   c) -150 °C **d)** -196 °C

6. The hybridoma cells can grow in _____ medium.
   a) DMEM **b)** HAT
   c) M-199 **d)** RPMI-1640

7. _____ days old embryos from in vitro culture are implanted in the reproductive tract of the recipient female.
   a) 2-3 **b)** 4-6
   c) 7-8 **d)** 10-12

8. The first animal used for transgenesis was _____.
   a) Mouse **b)** Pig
   c) rabbit **d)** sheep

P.T.O

Q – 2 Attempt ANY SEVEN from the following: **(14)**

1. Which type of microscope is used in Animal cell culture? Why?
2. Enlist the different techniques of sterilization.
3. Write about different types of serum used in animal tissue culture.
4. What is explant culture?
5. Write about mechanical disaggregation techniques of cell culture.
6. Write the working methodology of FACS.
7. Write about three dimensional culture of Multicellular tumor spheroids (MTCS).
8. What is superovulation?
9. What is attenuated vaccine?

Q – 3 **(a)** Discuss the physicochemical properties of culture media. **(06)**

(b) Write an explanatory note on serum free media. **(06)**

OR

(b) Write a note on Define media. **(06)**

Q – 4 **(a)** Explain development of Cell line and write about types of cell lines. **(06)**

(b) Discuss the criteria and method for subculture of monolayer culture. **(06)**

OR

(b) Give a detailed account on scale up of suspension culture. **(06)**

Q – 5 **(a)** Describe different techniques of cell viability assays. **(06)**

(b) Explain cryopreservation technique and its applications. **(06)**

OR

(b) Write a note on contaminants of animal cell culture. **(06)**

Q – 6 **(a)** Discuss in brief the basic steps of IVF. **(06)**

(b) Write an explanatory note on transgenic animals. **(06)**

OR

(b) Write notes on :

1. Applications of monoclonal antibodies. **(03)**

2. Artificial insemination **(03)**

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SARDAR PATEL UNIVERSITY

MA (Journalism & Mass Communication) II Semester

Day : Wednesday Date : 19/04/2017 Time : 10.00 AM TO 12.00 PM

Subject Code : PG02JMCCO6 Subject : Indian Government & Politics

ગુજરાતી તરજૂમો

પ્રશ્ન : ૧ નીચેના બહુ વૈકલ્પિક પ્રશ્નોના જવાબ આપો. (૧૦)

૧) ગુજરાત રાજયની વિધાનસભામાં કુલ કેટલી બેઠકો છે.

અ) ૧૮૦ બ) ૧૮૨ ક) ૧૮૪ ડ) ૧૮૫

૨) ગુજરાત રાજયમાં લોકસભાની કુલ કેટલી બેઠકો છે.

અ) ૧૨ બ) ૧૦ ક) ૧૧ ડ) ૧૩

૩) બંધારણ બનતા કુલ કેટલો સમય લાગ્યો હતો.

અ) ૨ વર્ષ ૧૧ મહિના ૧૮ દિવસ બ) ૨ વર્ષ ૧૧ મહિના ૧૭ દિવસ

ક) ૨ વર્ષ ૮ મહિના ડ) એક પણ નહી

૪) બંધારણ સભાના ડ્રાફ્ટીંગ કમીટીનાં ચેરમેન કોણ હતાં.

અ) સરદાર પટેલ બ) જવાહરલાલ નહેરુ ક) બી.આર.આંબેડકર ડ) મૌલાના આઝાદ

૫) બંધારણમાં 'સેફટી વાલ્વ' કોને કહેવાય છે.

અ) સંસદ બ) કારોબારી ક) ન્યાય પાલીકા ડ) ચૂંટણીપંચ

૬) ગુજરાતના રાજયપાલ કોણ છે.

અ) ઓ.પી.કોહલી બ) નીતીન પટેલ ક) રમણલાલ વોરા ડ) કમલાબેનીવાલ

૭) લોકસભાના સ્વીકાર કોણ છે.

અ) હમીદ અંસારી બ) સુમિત્રા મહાજન ક) પી. જે. કુરીયન ડ) કોઈપણ નહી

૮) માહિતી અને પ્રસારણ મંત્રી કોણ છે.

અ) રવિપ્રસાદ બ) મનોજસિન્હા ક) વંકૈયા નાયડુ ડ) પ્રકાશ જાવડેકર

૯) રાજયભાષા તરીકે માન્યતા પાત્ર કુલ કેટલી ભાષા છે ?

અ) ૨૦ બ) ૨૧ ક) ૨૨ ડ) ૨૫

૧૦) ભારતના રાષ્ટ્રપતી દ્રારા લોકસભામા કુલ કેટલા સભ્યોની નિમણૂંક થાય છે ?

અ) ૩ બ) ૪ ક) ૫ ડ) ૨

પ્રશ્ન : ૨ ભારતના બંધારણની વિવિધ લાક્ષણિકતાઓ વિગતે ચર્ચો. (૧૫)

અથવા

પ્રશ્ન : ૨ ભારતીય સમવાય તંત્ર વિશે વિસ્તૃત નોધ લખો.

પ્રશ્ન : ૩ ભારતીય બંધારણમાં સમાવિષ્ટ મૂળભૂત અધિકારો વિશે જણાવી, સ્વતંત્રના અધિકારીની પત્રકારત્વના સંદર્ભે ચર્ચા કરો. (૧૫)

અથવા

પ્રશ્ન : ૩ લોકસભા અને રાજયસભાઓનું ઘડતર અને તેના કાર્યો વિશે નોધ લખો.

પ્રશ્ન : ૪ ટૂંકનોધ (ગમે તે બે) (૧૦)

અ) આમૂખ
બ) કાયદો બનાવવની પ્રક્રિયા
ક) વિધાનસભામાં રિપોર્ટિંગ વખતે ધ્યાનમાં રાખવાના મુદ્દા
ડ) બંધારણ ઘડતરની પ્રક્રિયા

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SEAT No._____ No. of Printed Pages: 02

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[A-24]

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eight Semester Examination

Tuesday, 11th April 2017

Time: 10:00 am to 01:00 pm

PS08CIGIB1: Applied Environmental Biotechnology

Total Marks – 70

Q.1 Mark the right answer of following questions. **[08]**

1. _____ gaseous pollutant can be monitored with the help of lichen.
   a. SO_2 **b.** NO_2 **c.** CH_4 **d.** NH_3 **e.** H_2S **f.** NO_X
2. _____ advanced polymeric flocculent is used in the treatment of paper pulp industry.
   a. Acrylamide **b.** Activated silica **c.** Metallic hydroxide **d.** Sulfonated compounds
3. What is the mode of action of volatile fatty acids?
   a. Affects growth of *Methanogens* **c.** Decrease metabolic rate of anaerobes
   b. Causes pH variations **d.** All of these
4. The process of composting _____.
   a. Uses synthetic materials **c.** Has little potential to conserve landfill space
   b. Could effectively handle variety of wastes **d.** Always carried out in city run facilities
5. Calculate flow rate of ASP using given data: MLSS=200g/m^3, F/M=0.8 and BOD is 1600g/m^3 and volume of the reactor is 400m^3.
   a. 1000m^3 **b.** 62.5m^3 **c.** 40m^3 **d.** 2560m^3 **e.** 640m^3
6. Find out dilution factor of aeration tank when flow rate is 80m^3, volume=400 & HRT is 24h
   a. 0.2 **b.** 5 **c.** 0.5 **d.** 1280 **e.** None of these
7. Why calcium hypochlorite and chlorine dioxide are not widely used as sanitizer in dairy industry?
   a. Produce carcinogen **c.** Affects Na^+ adsorption ratio of soil
   b. Leads to eutrophication **d.** Affects cation exchange capacity of soil
8. From the following, which water monitoring parameter is considered as most important for water supply by municipal corporation?
   a. BOD **b.** COD **c.** DO **d.** MPN **e.** a and b both

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) **[14]**

1. Differentiate chromium and vegetable tanning processes.
2. What are the disadvantages of anaerobic process?
3. Explain syntrophic (synergistic) interaction of anaerobic digestion process.
4. What are the limitations of BOD?
5. Write objectives and examples of waste reduction processes for solid waste management.
6. Differentiate single and two stage digestion process of anaerobic decomposition.
7. Draw a neat and labeled diagram of stages of composting process.
8. What are the impacts of paper pulp industrial wastewater?
9. Enlist examples of biological treatment processes.

Q.3 A. What is "clean in place" cycle? Give an account on biomarkers used in dairy industry and impacts of dairy wastewater. [06]

B. Describe various treatment process used for the management of tannery industrial effluent. [06]

OR

B. Which pollutants are produced by paper pulp industry? Summarize the treatment processes used for paper pulp industrial wastewater. [06]

Q.4 A. Define anaerobic digestion. Give a note on factors affecting anaerobic digestion process. [06]

B. Which worms are commonly used in India in vermicomposting process? Outline the process of vermicomposting. [06]

OR

B. Mention advantages & disadvantages of bio-fertilizers and bio-fuel. [06]

Q.5 A. Which factors affect microbial activity of oxidation pond? Write a detailed note on biology of facultative pond. [06]

B. What are the advantages of attached growth treatment process? Discuss process and biology of trickling filter. [06]

OR

B. Write short notes on: **A)** Rotating biological contactors **B)** Septic tank [06]

Q.6 A. What are the criteria for bio-monitoring of pollution? Outline the general and cell biological assays used for monitoring of pollution. [06]

B. Discuss various biotechnological methods used to detect pathogens in wastewater management by municipal corporation. [06]

OR

B. Write a note on water pollution. [06]

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SEAT No._____

[A-327]

No. of Printed Pages: 02

SARDAR PATEL UNIVERSITY

M.Sc. Examination - April 2017

M.Sc. Integrated Biotechnology (IG-IBT), VIII semester Examination

Thursday, 13th April 2017

Session: Morning Time: 10:00 am to 01:00 pm

Subject / Course Code: - PS08CIGIB2

Subject / Course Title: - Biotechnology of Fermentation and Biotransformation - I

Total marks: 70

Note:

1) Figures to the rights indicate marks
2) Draw neat and labeled diagram wherever necessary.

Q.I Multiple choice questions: **(08)**

1 Basidiocarp consists of a fleshy stalk called _____ and umbrella like head born on its top called _____.

A) Hyphae and Seta C) Seta and Annalus

B) Annalus and Antheridia D) Stipe and Pileus

2 In biosynthesis of EPS; group IV enzyme is involved in _____.

A) Formation of exopolysaccharide biopolymer molecule

B) Synthesis and inter conversion of sugar nucleotide

C) Metabolism of substrate

D) Formation off the repeating monosaccharide unit

3 A Science deal with study of wine making is called as _____.

A) Ecology C) Enology

B) Toxicology D) Mycology

4 High amount of _____ inhibits the growth of the yeast.

A) O_2 C) NO_2

B) SO_2 D) CO_2

5 For the production of alkaloids most common carbon source are_____.

A) Glucose C) Dextrose

B) Mannose D) Sucrose

6 _____ is inactive form of Vitamin B_{12}.

A) Hydroxycobalamine C) Cyanocobalamine

B) 5`-deoxyadenosylcobalmine D) Chlorocobalamine

7 The following is not an example of flavoring compound

A) Diacetyl C) Acetaldehyde

B) Acetoin D) Citrate

8 _____ bacteria is used to produce yogurt from milk.

A) *Streptococcus thermophilus* C) *Lactobacillus delbrueckii*

B) *Lactobacillus bulgaricus* D) All of above

Q.II		**Answer the following (Any seven)**	**(14)**
	1.	Define : Bioplastic and exopolysaccharides	
	2.	Write the reaction glycerol formation	
	3.	What is Green malt?	
	4.	Write the advantage of SCP.	
	5.	Write down the economic significance of $B_{2.}$	
	6.	What are the therapeutic uses of ergot alkaloids?	
	7.	Enlist the sources of microorganism in milk.	
	8.	What are Psychrotropic and Thermoduric bacteria?	
	9.	What is the basic difference between Prebiotic and Probiotic foods?	
Q.III	**(A)**	Give a detail account on mushroom production.	**(06)**
	(B)	Describe in detail microbial production of PHA	**(06)**
		OR	
	(B)	Describe in detail fermentative production of xanthan.	**(06)**
Q.IV	**(A)**	Write about wine production in detail. Mention the parameters included for wine evaluation.	**(06)**
	(B)	Discuss various substrates used for the production of bacterial SCP.	**(06)**
		OR	
	(B)	What is MEOR? Explain it in detail.	**(06)**
Q.V	**(A)**	Discuss in detail biosynthesis of Vitamin $B_{12.}$	**(06)**
	(B)	Write a note on industrial production of ergot alkaloids.	**(06)**
		OR	
	(B)	Describe in detail the production of Riboflavin by microbial fermentation.	**(06)**
Q.VI	**(A)**	Describe different preventative measures to control microorganisms in milk.	**(06)**
	(B)	Write a note on starter culture.	**(06)**
		OR	
	(B)	Discuss in detail industrial production of Cheese.	**(06)**

SEAT No._____ No. of Printed Pages: 02

(A-15)

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eight Semester Examination
Wednesday, 19th April 2017
Time: 10:00 am to 01:00 pm
PS08CIGIB4: Biodegradation and Bioremediation

Total Marks – 70

Q.1 Mark the right answer of following questions. **[08]**

1. Filter bed medium of bio-filter is made up of_____.
   a. Compost **b.** Peat **c.** Soil **d.** All of these
2. Which of the gas is generated during incineration of waste gas?
   a. Dioxins **b.** SO_x **c.** Dioxenins **d.** NO_x **e.** CO_x **f.** None of these
3. In anaerobic biodegradation of aromatic compounds the added oxygen is from _____.
   a. CO_2 **b.** NO_2 **c.** H_2O **d.** NO_X **e.** O_2 **f.** None of these
4. Which compounds degrade faster than alkane?
   a. Alkene & alkynes **b.** Chlorinated aromatic **c.** PAHs **d.** Alkenes & aromatic
5. What happens at each chlorination step?
   a. Chlorine not released, H^+ & protons required **c.** Chlorine released, H^+ & protons required
   b. Chlorine released, H^+ & electrons required **d.** None of these
6. What do you consider to be the most important factor affecting bioremediation?
   a. pH **b.** Oxygen **c.** Nutrients **d.** Microorganisms **e.** Temperature
7. β – oxidation of fatty acids _____.
   a. Involves production of acetyl coA **c.** Feeds in to the TCA cycle
   b. Does not produce ATP **d.** All of this
8. Which of the following is the non-ionic surfactant?
   a. Lecithin **b.** Triton X-100 **c.** SDS **d.** Quaternary ammonium salt

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) **[14]**

1. Write cyclohexane degradation pathway.
2. Write advantages and disadvantages of bioremediation.
3. Write examples of microbes and different anaerobic conditions for toluene degradation.
4. Discuss types and role of bio-surfactants in bioremediation.
5. Explain bio-augmentation with suitable examples
6. What are the applications of chlorinated alkanes?
7. What do you understand by microbial community of bio-filter?
8. What are the applications of chlorinated alkanes?
9. Define xenobiotic compounds. Write typical features recalcitrance compound.

Q.3	**A.**	Give an account on factors affecting biodegradation process.	**[06]**
	B.	Write notes on: 1) Determination of biodegradability 2) Pathway of n-alkane degradation	**[06]**
		OR	
	B.	Which organic pollutants do produce catechol as one of the intermediate? Outline the steps of catechol degradation pathway.	**[06]**
Q.4	**A.**	Illustrate microbial transformation processes of pesticides by oxidative dealkylation and hydrolysis.	**[06]**
	B.	What is 2,4,5-T? Discuss various steps of 2,4,5-T degradation.	**[06]**
		OR	
	B.	Write notes on: 1) β – oxidation process 2) Different degradation pathways of carbon tetrachloride	**[06]**
Q.5	**A.**	Explain the *Ex-Situ* bioremediation techniques in detail.	**[06]**
	B.	Describe the advantages and disadvantages of *in-situ* bioremediation processes.	**[06]**
		OR	
	B.	What is bio-reactor? Discuss the role of aqueous reactors used in bioremediation with suitable example.	**[06]**
Q.6	**A.**	Discuss the role of molecular techniques used in bioremediation of branched aromatic hydrocarbons.	**[06]**
	B.	How contaminants in gas phase is degraded by bio-scrubber and membrane bioreactor.	**[06]**
		OR	
	B.	Write a note on microbial ecology of bio-filters.	**[06]**

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[A-17/A-19] SEAT No._____ No. of Printed Pages : 2

Sardar Patel University

MSc Integrated Biotechnology Examination -Semester 8

PS08CIGI/MB3: Omics

Monday 17th April, 2017

10:00 am to 1:00 pm

Note: **Total Marks: 70**

1. Figures to the right indicate marks.
2. Draw neat and labelled diagram, wherever necessary.

Q.1 **Multiple choice questions** [08]

1 Most introns starts with _____ and ends with _____ pair of nucleotide in RNA,serve as site to identify intron-exon boundaries.
a) AG - GU b) GU - AG c) AG -GT d) GT - AG

2 Following is not true for pyro sequencing.
a) ddNTPs added to all the reaction mixture
b) Pyro phosphate produce proportional signal
c) luciferase is present in beads
d) it falls under category sequencing with synthesis

3 Which of these genetic markers is most likely to be highly polymorphic (have many different alleles)?
a) An RFLP b)A microsatellite c)An SNP d)All of these are equally polymorphic

4 Which of these is a key characteristic of a molecular marker?
a)It is a known gene.
b)It is located at a known site on the chromosome.
c)It is only useful for linkage and physical mapping studies.
d)None of these

5 In isoelectric focusing, proteins are separated on the basis of their_____
a) relative content of positively charged residue only
b) relative content of negatively charged residue only
c) size
d) relative content of positively and negatively charged residue

6 _____ is NOT the method used for protein-protein interaction study.
a) Far- western analysis b) Solid-phase ELISA
c) Yeast 2-hybrid system d) yeast 1-hybrid system

7 _____ is used for metabolome analysis.
a) GC b) LC-MS-MS c) UV VIS Spectrophotometer d) HPLC

8 _____ is used to construct cDNA probe for transcriptome analysis.
a) PCR b) RT-PCR c) SAGE d) DD-PCR

Q.2 **Attempt any Seven** [14]

1 What is ORF? How to find the ORF in the DNA sequence?

2 What is cDNA? Why cDNA synthesis is required?

3 Why *C. elegans* was selected as a model organism?

4 The goals of human genome project.

5 Narrate the role of components of rehydration buffer in IEF gel.

6 Write principle of ionization in ESI.

7 What is phage display library?

8 Briefly describe probe immobilization chemistry on microarray chip.

9 What is differential gene expression analysis.

Q.3 A What is C-value paradox? Give detailed account on Cot curve analysis to study the complexity of DNA. [06]

B What is genetic code? what is codon bias? Give detail account on codon bias and its benifits. [06]

OR

B What is the next generation sequencing? Enlist various NGS platforms and explain any one in detail. [06]

Q.4 A Narrate the strategy adopted in initial phase of the human genome sequencing project. [06]

B Write a detailed note on restriction mapping. [06]

OR

B Enlist types of maps representing genome. Describe the importance of SSR markers in aligning various maps. [06]

Q.5 A Give significance of study of protein-protein interaction. Explain yeast-two-hybrid system. [06]

B Explain MALDI-TOF in detail. [06]

OR

B Write a detailed note on 2D gel electrophoresis. [06]

Q.6 A Define transcriptomics. Enlist techniques use to study transcriptomics. Describe the principle of SAGE. [06]

B What is metabolomics? Write a note on importance of studying metabolomics and give overview of Human metabolome project. [06]

OR

B Schematically present steps of DNA microarray. Write a note on DNA microarray data analysis. [06]

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SEAT No._____

[A-26]

SARDAR PATEL UNIVERSITY
M. Sc. Integrated Biotechnology
Medical Biotechnology, Eight Semester Examination
Tuesday, 11th April 2017
PS08CIGMB1: Medical Microbiology

TIME: 10:00 am to 1:00 pm **Maximum Marks: 70**

Q.1 **Answer the following Multiple Choice Questions. All are compulsory.** **1x6=06**

(i) The morphological form(s) of *Entamoeba* observed during life cycle is/are
(a) Trophozoite (b) precystic stage (c) cyst (d) all the three

(ii) *Trichomonas vaginalis* possesses.....
(a) pseudopodia (b) flagella (c) cilia (d) None of these

(iii) Toxins or enzymes which are not produced by *Streptococcus pyrogens*
(a) Hyaluronidase (b) Phosphate (c) Hemolysin (d) Streptokinase

(iv) The molecule of DNA introduced into the recipient is called .....to distinguish it from the cell's own original chromosome.
(a) exogenote (b) endogenote (c) plasmid (d) naked DNA

(v) Tuberculosis is transmitted through.....
(a) Blood (b) Water (c) Food (d)Respiratory secretions

(vi) Infection with ..... is usually "below the waist".
(a) HSV-1 (b) HSV-2 (c) VZV (d) EBV

(vii) Tinea nigra is caused by .....
(a) *Malasezzia* (b)*Piedraia hortae* (c) *Microsporum canis*
(d) *Exophila werinckii*

(viii) Brown colored sclerotic bodies are formed in
(a) Sporothrichosis (b) Pityriasis versicolor (c) Chromoblastomycosis
(d) Mycetoma

Q.2 **Answer the following questions. (ANY FIVE)** **2x5=10**

(i) Explain the morphological forms of *Leishmania donovani*.
(ii) What is sleeping sickness?
(iii) Differentiate between different types of helminthes.
(iv) What are Acid fast bacteria?
(v) Briefly explain the toxins produced by pathogenic strains of *Escherichia coli*.
(vi) Give relationship between throat infection and myocardial infarction.
(vii) Write morphological features of Herpes Simplex virus.
(viii) Define opportunistic mycosis. Give examples.
(ix) What is hair perforation test?

Q.3 A Discuss various morphological forms of *Plasmodium* observed during its **06**

life cycle.

	B	Discuss the morphology and life cycle of *Taenia saginata*.	06
		OR	
	B	Describe morphology and life cycle of *Entamoeba histolytica*.	06
Q.4	A	Briefly explain the modes of genetic exchange prevailing among bacteria. Compare generalized and specialized transduction processes.	06
	B	Discuss clinical manifestation and diagnosis of *Mycobacterium tuberculosis* infection.	06
		OR	
	B	Explain morphology and culture method for *Staphylococcus aureus*.	06
Q.5.	A	What is virion? Write a detailed note on virion size and design found in nature.	
	B	Discuss structure and laboratory diagnosis of Hepatitis B virus.	06
		OR	
	B	Enlist the members of Herpes virus family. Write a detailed note on HSV2 infection, treatment and preventive action.	06
Q.6	A	Explain important features of dermatophytes using examples.	06
	B	Discuss characteristic features and pathogenesis of : (i) Sporotrichosis **OR** (ii) Cadidiasis	06

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SEAT No._____ No. of Printed Pages : 02

EA347

SARDAR PATEL UNIVERSITY

M.Sc. (Integrated) Biotechnology (IGMBT), Eight Semester Examination

Thursday, 13th April 2017

10:00 p.m. to 1:00 p.m.

PS08CIGMB2: Molecular Medicine 1

TOTAL MARKS: 70

Q.1 Tick mark / select the correct answer for the following (***Students need to write both correct option as well as correct answer / answers for MCQ's in their answer sheet***) **(08 Marks)**

1. The main cause of liver fibrosis include :
   a. chronic HCV infection
   b. alcohol abuse
   c. non alcoholic steatohepatitis (NASH)
   d. all of them

2. Serum alanine aminotransferase level rise in
   a. Jaundice
   b. fibrosis of liver
   c. cirrhosis of liver
   d. all of the above

3. Which of the following is an inhibitor of calcium stone
   a. Oxalate
   b. Citrate
   c. Tyrosine
   d. Glycine

4. Which of the following is consider one of class of diuretics as
   a. Thiazide
   b. Sodium
   c. Potassium
   d. none of the above

5. Pernicious Anemia is due to the deficiency of :
   a. Folic acid
   b. Vit B_{12}
   c. Iron
   d. Vit C

6. In pressure overload state of heart, change in mass of contractile tissue known as
   a. Hypertrophy
   b. Congestive heart failure
   c. Fibrillation
   d. Dyspnea

7. Rheumatic fever caused by antibody cross reactivity of:
   a. Group B Streptococcal infection
   b. Group A Streptococcal infection
   c. Group C Streptococcal infection
   d. all of the above

8. Which of the following gene is not considered in Tumor suppressor gene
   a. P53
   b. APC
   c. BRCA1
   d. RAF

Q.2 Answer **any seven** from the following: 14

a) What are antacids? Give their types
b) Write brief account on Protective factors for GI tract.
c) Write brief account on noninvasive blood test to assess liver functions
d) How GFR is calculated?
e) What are plasma expanders?
f) Define Rheumatic fever
g) Enlist functions of plasma protein
h) Enlist symptoms of anemia
i) What do you mean by ischemia?

Q.3 (A) Describe pathophysiology of liver necrosis 6

(B) Write note on pathophysiology of peptic ulcer 6

OR

(B) Classify drugs used in peptic ulcer. Write brief account on anti secretory drug. 6

Q.4 (A) Discuss pathophysiology of kidney diseases in brief 6

(B) Write short note on renal stones. 6

OR

(B) List the various types of diuretics and briefly describe mechanism of action of any two potassium sparing diuretics 6

Q.5 (A) What is anemia? List the various types of anemia and add a note on macrocytic anemia. 6

(B) Write brief account on plasma protein abnormalities. 6

OR

(B) Write brief account on antiplatelet drug. 6

Q.6 (A) Discuss causes, signs and symptom and treatment of atherosclerosis. 6

(B) Write pathogenesis and clinical manifestation of acute rheumatic fever. 6

OR

(B) Discuss, causes and symptoms of cancer in brief 6

SEAT No._____

No. of Printed Pages: 2

[A-17]

{ } SARDAR PATEL UNIVERSITY

M.Sc. (Integrated) Biotechnology (IGMBT), Eight Semester Examination

Wednesday, 19th April 2017

10:00 a.m. to 1:00 p.m

PS08CIGMB4: Essentials of Pharmacology.

Total Marks: 70

Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labeled diagram, wherever necessary.

Q. 1 Choose the most appropriate answer from the four alternatives given: **[8]**

(1) **Acetylation reactions includes in:** (a) Phase 1 reactions (b) Phase 2 reactions (c) both of them (d) none of them

(2) **In Intra venticular route of drug administration the drug is given in:** (a) Brain (b) Liver (c) Kidney (d) eye

(3) **Barbiturates are drug that acts as:** (a) CNS stimulant (b) Does not affect CNS (c) CNS depressant (d) Affects cardiovascular system

(4) **Which of the following is example of NMJ Blocker:** (a) levodopa (b) tubocurarine (c) a and b both (d) none of the above

(5) **One of the following property of Levosalbutamol indicates its usage in COPD:** (a) Bronchoconstrictor (b) Antiarrhythmic (c) Bronchodilator (d) CNS depressant

(6) **Which of the following drug is improve sensitivity to insulin** : (a) glitazone (b) Sulphonylureas (c) repaglinide (d) all of them

(7) **One of the following drug is commonly used for the treatment of tapeworm infection:** (a) Furazolidone (b) Niclosamide (c) Nitrofurantoin (d) Azathioprine

(8) **Which of following is example of Antimetabolite :** (a) Folic acid antagonist (b) Pyrimidine analogus (c) a and b both (d) none of the above

Q.2 Answer any <u>SEVEN</u> from the following: **[14]**

(1) Briefly discuss the advantages and disadvantages of parentral route of drug administration
(2) Define Clinical pharmacology.
(3) What are neuromuscular junction (NMJ) blockers? Give an example of NMJ blocker
(4) What are parasympatholytics?
(5) Differentiate between primary and secondary hypertension.
(6) Give a list of pharmacological agents used to treat angina pectoris
(7) Briefly explain the mechanism of action of Alkylating agents
(8) Enlist antiviral drugs used to treat HIV patients
(9) Briefly discuss mechanism of rifamycins.

PTO

Q.3 (a) Enlist various mode of action of drug. Write detail account on mode of action based on physical changes. [6]

(b) List the different routes of drug administration and explain systemic route in detail [6]

OR

(b) Why insulin cannot be taken through oral route? Discuss the factors affecting absorption of oral drug in detail. [6]

Q.4 (a) Write brief account on classification and mechanism of local anesthetic drug. [6]

(b) Write a brief overview on cholinergic neurotransmission and the drugs affecting cholinergic neurotransmission. [6]

OR

(b) Give classification of the NMJ blocking drugs. Write brief account on *Leptocurares* [6]

Q.5 (a) List the various classes of drugs used in the treatment of hypertension and add a note on the mechanism of action of thiazide diuretics and beta-blockers in management of hypertension. [6]

(b) Explain the pharmacology of various pharmaceutical agents used to treat bronchial asthma. [6]

OR

(b) Write a short note on oral hypoglycemic agents. [6]

Q.6 (a) Write detail on drugs which inhibit protein synthesis in microbes. [6]

(b) What are antimetabolites? Explain mechanism of action of antimetabolites . [6]

OR

(b) Write detail account on drugs used to treat Nematodes. [6]

(2)

SEAT No._____

( )

[A-23]

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Eight Semester Examination

Tuesday, 11th April 2017

Time: 10:00 am to 01:00 pm

PS08CIGGB1: Applied Environmental Biotechnology

Total Marks – 70

Q.1 Mark the right answer of following questions. **[08]**

1. Micronucleus test is an example of _____ bioassay of environmental monitoring.
   a. Biotechnology **b.** Cytogenic **c.** Cell biology **d.** All of these **e.** None of these
2. Calculate MLSS of ASP using given data: flow rate =40m^3, F/M=0.8 and BOD is 1600g/m^3 and volume of the reactor is 400m^3.
   a. 2000g/m^3 **b.** 200g/m^3 **c.** 12.5g/m^3 **d.** 0.08g/m^3 **e.** 128g/m^3
3. The correct relation between ThOD, BOD and COD in wastewater treatment is given by ____.
   a. COD >ThOD >BOD **c.** ThOD > BOD > COD
   b. ThOD >COD >BOD **d.** BOD > ThOD > COD
4. The process of composting _____.
   a. Uses synthetic materials **c.** Has little potential to conserve landfill space
   b. Could effectively handle variety of wastes **d.** Always carried out in city run facilities
5. _____ advanced polymeric flocculent is used in the treatment of paper pulp industry.
   a. Metallic hydroxide **b.** Sulfonated compounds **c.** Acrylamide **d.** Activated silica
6. Pure biodiesel does not emit what pollutant from the following?
   a. CO **b.** Particulate matter **c.** SO_2 **d.** NO_x **e.** All of these
7. Why calcium hypochlorite and chlorine dioxide are not widely used as sanitizer in dairy industry?
   a. Leads to eutrophication **c.** Affects cation exchange capacity of soil
   b. Produce carcinogen **d.** Affects Na^+ adsorption ratio of soil
8. Find out dilution factor of aeration tank when flow rate is 80m^3, volume=400 & HRT is 24h
   a. 1280 **b.** 0.5 **c.** 5 **d.** 0.2 **e.** None of these

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE) **[14]**

1. Explain different types of composting processes.
2. Differentiate single and two stage digestion process of anaerobic decomposition.
3. What are the effects of pollutants and industrialization on environment?
4. What are the limitations of BOD?
5. Differentiate chromium and vegetable tanning processes.
6. What are the impacts of untreated tannery industrial wastewater?
7. Write objectives and examples of waste reduction processes for solid waste management.
8. Enlist examples of biological treatment processes.
9. Explain the role protozoa in activated sludge process.

Q.3 **A.** What are the different types of pond treatment process? Write a detailed note on biology of facultative pond. **[06]**

B. What are the disadvantages of attached growth treatment process? Discuss process and biology of trickling filter. **[06]**

OR

B. Write short notes on: **A)** Rotating biological contactors **B)** Septic tank **[06]**

Q.4 **A.** What are advantages of bio-monitoring of pollution? Outline the general and cell biological assays used for monitoring of pollution. **[06]**

B. Discuss various biotechnological methods used to detect pathogens in wastewater management by municipal corporation. **[06]**

OR

B. Write a note on water pollution. **[06]**

Q.5 **A.** Define anaerobic digestion. Give a note on factors affecting anaerobic digestion process. **[06]**

B. Which worms are commonly used in India in vermicomposting process? Outline the process of vermicomposting. **[06]**

OR

B. Mention advantages & disadvantages of bio-fertilizers and bio-fuel. **[06]**

Q.6 **A.** What is "clean in place" cycle? Give an account on biomarkers used in dairy industry and impacts of dairy wastewater. **[06]**

B. What are the impacts of paper pulp industrial wastewater? Summarize the treatment processes used for paper pulp industrial wastewater. **[06]**

OR

B. Illustrate various treatment process used for the management of dye industrial effluent. **[06]**

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