E8-AJ SEAT No._____ No. of printed pages: 02

SARDAR PATEL UNIVERSITY

M. Sc Integrated Biotechnology (ENVIRONMENTAL BIOTECHNOLOGY)-TEN (10) Semester Examination

Monday, 10 - 04 - 2017, Time: 10:00 am to 01:00 pm

COURSE NUMBER-PS10CIGEB01

NAME OF COURSE – ENVIRONMENTAL CONSERVATION AND SUSTAINABLE DEVELOPMENT

Maximum Marks: 70

Note: (1) All questions are compulsory. (2)Figure to right indicate marks.

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

1. The Indian forest Act, 1927 law related to forest transit of.....

   (A) Forest Product (B) Forest Cover (C) Non-timber Product (D) Wood Product

2. Air prevention and control of pollution act in trust the power of in forcing this act in the .....

   (A) NPCB (B) CPCB (C) SPCB (D) DPCB

3. Rapid forest assessment of forest land can provide a compressive picture of current.....

   (A) Forest condition (B) Wildlife status (C) Species status (D) Forest management

4. National parks in India are IUCN category .....protected areas.

   (A) I (B) II (C) III (D) IV

5. Neoclassical economics, an important measure of .....is consumption.

   (A)Growth and wealth(B)Capitals and resources(C)Capital and material(D)Business and Growth

6. The "Sur Plus" population is forced to migrate to cities in search of.....

   (A)Good services (B) Jobs (C) Product (D) Raw material

7. Industrial ecology is the study of .....flows through industrial systems.

   (A)material and energy(B)market and energy(C)competition and energy(D)product and energy

8. Dow Jones sustainable development index has outperformed the.....

   (A) Material (B) Market (C) Energy (D) Services

Q.2 Answer the following (Any Seven). **[14]**

1. Write the objective of Wetland Rules, 2009.
2. What are the salient features of the Municipal Solid Waste, 2000?
3. Why necessary to reintroduction of wolves to park?
4. Write the application of rapid forest assessment.
5. What are the causes of Urban growth?
6. Define the Neoclassical economics.
7. Write the principles of sustainable business.
8. What are the steps involves in Clean Development Mechanism (CDM) project cycle.
9. Writ the application of cleaner production.

P.T.O

Q.3 A. Write the brief note on Biodiversity Act, 2002. [6]

B. Write the salient features of the Coastal Regulation Zones (CRZ), Rules, 2011. [6]

OR

B. Write a short note on Forest Conservation Act, 1980. [6]

Q.4 A. Enlist the different types of world forest. Discuss ant two forests. [6]

B. What are the problems of nature park? Give your idea and suggestion for solving the problems of nature park. [6]

OR

B. Write a short note on General account on Ecotourism. [6]

Q.5 A. Define sustainable development. Enlist the causes of urban growth. Discuss any three causes. [6]

B. Write a short note on classical economics and ecological economics. [6]

OR

B. Discuss the different parameter of development of model of sustainable city. [6]

Q.6 A. Enlist the Indicator of sustainability. Discuss any five indicators. [6]

B. What are the different cleaner production practices? Discuss any four practices with benefits of cleaner production. [6]

OR

B. Write a short note on Industrial Ecology. [6]

---X---

SEAT No._____

No. of Printed Pages: 02

(5-A)

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Tenth Semester Examination

Saturday , 15 **April 2017**

Time: 10:00 am to 01:00 pm

PS10CIGEB3: Environmental Engineering

Total Marks – 70

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

1. In flotation sludge thickening process sludge volume index is _____.
   a. >200 **b.** <200 **c.** >150 **d.** <150 **e.** a & c both **f.** None of these
2. Which of the following biological process can produce alkalinity?
   a. CBOD removal **b.** NH_3 to NO_3 conversion **c.** PO_4^{-3} removal **d.** NO_3 to N_2 removal
3. The settling velocity of a particle in a sedimentation tank depends on _____.
   a. Depth of tank **b.** Shape of tank **c.** Surface area of tank **d.** Location of tank
4. Nitrification process is controlled by temperature and what other factor?
   a. SRT **b.** Sludge settling rate **c.** Phosphorus removal **d.** HRT **e.** a & d **f.** b & d
5. From the following which characteristic matches with ClO_2?
   a. Generates 14.3mg/l alkalinity **c.** Available in crystal form
   b. 16.7% solution stored at 26.7°C **d.** Inactivation of critical enzymes
6. From the following which is NOT related to pulsed-bed filters.
   a. Up flow gravity filter **c.** Use of intermittent air to disturb suspended solids
   b. Porosity can be modify **d.** Breaking of surface mat of solids
7. The amount of coagulant needed for coagulation of water increase with: **i)** Increase in turbidity, **ii)** Decrease in turbidity, **iii)** Increase in temperature, **iv)** Decrease in temperature of water.
   a. (i) & (ii) are correct **c.** (i) & (iv) are correct
   b. (ii) & (iii) are correct **d.** (ii) & (iv) are correct
8. Chlorine demand of water is equal to _____.
   a. Applied Cl_2 **b.** Residual Cl_2 **c.** Applied + residual Cl_2 **d.** Applied - residual Cl_2

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

1. Differentiate active biomass and net biomass yield.
2. Explain effect of continuous addition of alum on the destabilization and flocculation of colloidal particles.
3. Write stoichiometry of biological nitrification in brief.
4. Discuss various mechanisms of depth filtration processes.
5. Explain hydrograph of flow equalization.
6. Enlist examples of physical unit processes and write objectives of it.
7. Describe mechanism of disc-filter device of surface filtration process.
8. What are the advantages & disadvantages of fixed volume recessed plate filter process?
9. Write mode of action and examples of chemical compounds used for disinfection process.

Q.3 A. Illustrate different processes of aerobic and anaerobic zones of biological phosphorus removal. [06]

B. Calculate COD balance and determine the amount of O_2 used per unit of COD removal. In complete mix aerobic treatment process of paper pulp industry, the influent bsCOD is 520g/m^3 & flow rate is 740 m^3/d, reactor effluent bsCOD & VSS concentrations are 50000mg/m^3 & 180g/m^3 respectively. [06]

OR

B. In textile industry, the activated sludge reactor has flow rate of 80m^3, volume of tank is 100m^3 and *bsCOD* concentration of reactor is 120g/m^3. *MLVSS* concentration is 2200g/m^3 & influent *nbVSS* is 6000mg/m^3. Calculate net biomass and observed yield of the reactor and write your comments on plant performance. [06]
[Cell debris fraction f_d and k_d is 0.10gVSS/gVSS, Y, k and K_s are 0.40gVSS/gCOD, 5g bsCOD/gVSS and 40g /m^3 respectively. Write your comments on performance of ETP]

Q.4 A. Write process, problems, advantages and disadvantages of electrodialysis used for wastewater treatment processes. [06]

B. Outline each point of fundamentals of coagulation process. [06]

OR

B. What is the need of advanced wastewater treatment? Give a detailed note on advanced oxidation process. [06]

Q.5 A. Write notes on: 1) Micro-filtration & Ultra-filtration [06]
2) Reverse osmosis & Nano-filtration

B. Discuss components, process and feeding system of multi effect evaporator. [06]

OR

B. Which factors affect disinfection of chlorine? Outline disinfection process of sodium and calcium hypochlorite. [06]

Q.6 A. Describe any three processes of sludge thickening. [06]

B. Explain centrifugation, sludge drying beds and belt-filter press dewatering processes of sludge management. [06]

OR

B. Summarize heat drying processes of sludge. [06]

----------x----------

[6-A] SEAT No._____ No. of Printed Pages: 02

Sardar Patel University

M. Sc. Int. Biotechnology, Tenth Semester Examination

Monday, 10th April, 2017

10:00 a.m. – 01:00 p.m.

***PS10CIGGB1*: Microbial Genetics**

Note:

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

Q-1 Attempt the followings [08 X 01 =08]

1. Frame shift mutation may occur as a result of
   a) Deamination of cytosine to uracil b) Formation of a thymine-dimer
   c) Conversion of guanine to xanthine d) None of the above
2. Which one of the following is essential for bacteria for DNA repair and recombination?
   a) DNA protein b) Rec A protein
   c) Thymidine kinase d) Chaperone proteins
3. Enzymes that catalyse strand transfer step during recombination are called
   a) Recombinases b) Transferases c) Helicase d) Gyrase
4. Bacterial plasmid contains
   a) RNA b) RNA + Protein c) DNA d) Photosynthetic structures
5. The T-DNA region of all Ti & Ri plasmids are flanked by direct repeat sequence
   a) 15bp b) 20 bp c) 25 bp d) 35 bp
6. Specialized transduction is mediated by
   a) Lytic phages b) Lysogenic phase c) Both a & b d) T4 phages
7. Restriction enzymes are enzyme
   a) Capable of cutting DNA molecule
   b) Capable of adding nucleotide to the 3'OH end
   c) Capable of restricting protein synthesise
   d) Capable of joining DNA moleucle
8. Enzymes are released during necrosis from
   a) Lysosomes b) Vacuoles c) Cytoplasm d) Golgi bodies

Q-2 Answer the following questions (**Any seven**). [07 X 02 = 14]

1. Discuss the mutation rate.
2. What is oxidation of bases?
3. Write down the functions of *RecBCD* gene.
4. Explain partial diploid.
5. Write down the features of plasmids.
6. Describe the abortive transduction in brief.
7. What is secretion system IV?
8. Differentiate between apoptosis and necrosis.
9. What is integron?

Q-3 (A) Describe the mechanism of mismatch repair system in *E. coli.* [06]

(B) "SOS response in *E. coli* is regulated by *LexA* & *RecA*" Explain in detail. [06]

OR

(B) Discuss the mechanism involved in regulating the control of copy number in plasmids. [06]

Q-4 (A) Explain the various events takes place during specialized transduction. [06]

(B) Explain the molecular mechanism of recombination with the help of Holliday model. [06]

OR

(B) Write short note on [06]

a) Male specific phase 2) Triparental mating

Q5 (A) Discuss the salient features of different types of restriction modification systems in brief. [06]

(B) Explain the mechanism of Hfr (High frequency recombination) conjugation in detail. [06]

OR

(B) Explain Leaf disc *Agrobacterium* mediated transformation method in detail along with its application. [06]

Q6 (A) Discuss various ways by which a proto-oncogene would get converted to an oncogene [06]

(B) Write a note on mitotic recombination of fungi. [06]

OR

(B) Discuss genetic organization and mechanisms of transposition for non-composite transposons with example. [06]

****

SEAT No._____ No. of Printed Pages : 2

[3-A]

Sardar Patel University
MSc Integrated Biotechnology Examination -Semester 10
PS10CIGGB3: Nanobiotechnology and Application
Saturday 15th April, 2017
10:00 am to 1:00 pm

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

Total Marks: 70

Q.1 Multiple choice questions [08]

1 Bulk material convert to nano material resulted in
a) increase of surface area to volume ratio b) decrease in surface area to volume ratio c) surface area to volume ratio remains constant d) none of these

2 _____ is remain functional only if correct structure retain.
a) protein b) Lipid c) DNA d) carbohydrate

3 In experiment for preparation of carbon nanotubes rolling vector was (10:7). These CNT belongs to _____ type of nanotube.
a) Zigzag b) Chiral c) Armchair d) MWNT

4 Material is converted to ionized gas in _____ method.
a) plasma arcing b) CVD c) ball milling d) none of these

5 _____ is used as a targeted delivery drug delivery vehicle.
a) micelles b) liposome c) liposome with antibody d) DNA

6 _____ is used for preparing SAM on gold electrode.
a) Lipid b) thioalkenoates c) proteins d) DNA

7 Following is not true for Actin filaments
a) associates to form a directional helical structure with two different ends. When b) monomers add to one end 10 times faster than the other end
c) highly dynamic in living cells, d) support and connect cells into tissues

8 Following is not true for Carbon a key raw material to bionanotechnology.
a) providing a wide range of design options b) The diverse & stable bonding
c) allow additional molecular properties and functionalities by incorporating atoms like oxygen and nitrogen d) can form hydrogen bonds easily

Q.2 Attempt any seven [14]

1 Define nanoparticle and nanopowder.

2 Define magic number.

3 Briefly describe principle of dual pulse laser-beam method.

4 Schematically present SEM.

5 Why lipid can be used as bricks in a nano machinery?

6 Briefly describe flagella as nanomoter.

7 Briefly narrate the role of chaperone in protein folding.

8 Role of nano material in cosmetics.

9 Raw materials used in natural nano machinery.

Q.3 A Why chemical transformation process lead by enzyme is specific? Explain using appropriate example. [06]

B Write a note on the natural information derived nanomachinary using appropriate example. [06]

OR

B "The reduction in the dimension improves properties of material" justify using appropriate example. [06]

Q.4 A Write a short note on deep UV lithography. [06]

B What are rolling vectors? How they produce different types of carbon nanotubes? Briefly describe the properties of carbon nanotubes? [06]

OR

B Give detailed account on the plasma arcing method. [06]

Q.5 A What is the importance of data storage device? Narrate the functioning of 3D memory using bacteriorhodopsin protein. Describe its advantages over conventional storage. [06]

B Narrate the construction and functioning of gramicidine based ion channel sensor. [06]

OR

B What is critical packing parameter? How lipids can be self assembles in various shapes? [06]

Q.6 A What are biomaterials? Describe properties of biomaterials for their application in implants and prosthesis. [06]

B Describe forces play a role in protein folding. [06]

OR

B Enlist types of microarray. Give comparative account on DNA microarray and protein microarray. [06]

——— x — x ———

Number of printed pages: 02

[7A] SEAT No._____

SARDAR PATEL UNIVERSITY

M. Sc. Integrated Biotechnology (Semester-X) Examination

Thursday, 10/04/2017; Time-10:00 AM to 01:00 PM

SUBJECT CODE: PS10CIGIB1

SUBJECT TITLE: Biopharmaceuticals and Bio-therapeutics

Maximum Marks: 70

Note: (1) All questions are compulsory.
(2) Figure to right indicates total marks of question.

Q-1 **Choose the correct option for the following:** **1× 8**

1. Androgens are produced by:
   a. Leydig cells of the testes b. Liver
   c. Pancreas d. Brain
2. Post-translational modification is often necessary to obtain:
   a. Functional protein b. Non-functional protein
   c. Inert protein d. Can't say
3. Phase I and phase II reaction converts drug molecule to more:
   a. Non-polar b. Lipophilic
   c. Hydrophobic d. Polar
4. First-pass metabolism by the liver is avoided by:
   a. Oral dosage form b. Intramuscular Injection
   c. Gelatin capsule d. None
5. Glucagon is a single-chain polypeptide of:
   a. 29 amino acid residues b. 290 amino acid residues
   c. 209 amino acid residues d. Can't say
6. TNF-a is also known as:
   a. Cachectin b. Macrophage cytotoxic factor
   c. Both a & b is correct d. Only b is correct
7. The enzyme capable of catalysing the hydrolysis of L-asparagine, yielding aspartic acid and ammonia is:
   a. Protiase b. Asparaginase
   c. galactosidases d. None
8. For therapeutic use the whole blood is withdrawn:
   a. Aseptically from human b. From human and bovine
   c. Animal's blood can be used d. None

Q-2 Answer the following (Any Seven). **2 × 7**

1. Highlight the issues unique to biotechnology derived drugs.
2. Give the difference between Biologic and Biotechnology medicine
3. Describe the Gene therapy.
4. Elaborate the therapeutic equivalence.
5. Define the term Efficacy.
6. What are the major aims of generating engineered insulin analogues?
7. Describe the inhibition of INTERLEUKIN-2 (IL-2).

PTO.....

8. Give the uses of DNase.

9. Define tissue plasminogen activator (tPA).

Q-3 A. Describe the methods of post-translational modification of protein products. 6

B. Write a note on the pharmaceutical substances of animal origin. 6

OR

B. Write a note on the safety issues for biotechnology-derived drugs. 6

Q-4 A. What is pharmacokinetics? Define ADME 6

B. Write a note on manufacture of drugs using r-DNA technology. 6

OR

B. Describe different properties of drugs that affect its mode of action. 6

Q-5 A. Elaborate Human growth hormone (hGH) and also give the biological effect and therapeutic use of GH. 6

B. Write a note on Interferon. 6

OR

B. Describe the regulation of gonadotropin production. Give the application of gonadotropin. 6

Q-6 A. Describe the physicochemical and biological factors influencing design and performance of controlled - release formulations 6

B. Elaborate the factors influencing oral controlled - release dosage forms. 6

OR

B. Write a note on Factor VIII and hemophilia. 6

****

[4-A] SEAT No._____ No. of Printed Pages : 2

Sardar Patel University
MSc Integrated Biotechnology Examination -Semester 10
PS10CIGIB3: Nanobiotechnology and Applications
Saturday 15th 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 Bulk material convert to nano material resulted in
a) increase of surface area to volume ratio b) decrease in surface area to volume ratio c) surface area to volume ratio remains constant d) none of these

2 _____ is remain functional only if correct structure retain.
a) protein b) Lipid c) DNA d) carbohydrate

3 In experiment for preparation of carbon nanotubes rolling vector was (10:7). These CNT belongs to _____ type of nanotube.
a) Zigzag b) Chiral c) Armchair d) MWNT

4 Material is converted to ionized gas in _____ method.
a) plasma arcing b) CVD c) ball milling d) none of these

5 _____ is used as a targeted delivery drug delivery vehicle.
a) micelles b) liposome c) liposome with antibody d) DNA

6 _____ is used for preparing SAM on gold electrode.
a) Lipid b) thioalkenoates c) proteins d) DNA

7 Following is not true for Actin filaments
a) associates to form a directional helical structure with two different ends. When b) monomers add to one end 10 times faster than the other end
c) highly dynamic in living cells, d) support and connect cells into tissues

8 Following is not true for Carbon a key raw material to bionanotechnology.
a) providing a wide range of design options b) The diverse & stable bonding c) allow additional molecular properties and functionalities by incorporating atoms like oxygen and nitrogen d) can form hydrogen bonds easily

Q.2 Attempt any seven [14]

1 Define nanoparticle and nanopowder.

2 Define magic number.

3 Briefly describe principle of dual pulse laser-beam method.

4 Schematically present SEM.

5 Why lipid can be used as bricks in a nano machinery?

6 Briefly describe flagella as nanomoter.

7 Briefly narrate the role of chaperone in protein folding.

8 Role of nano material in cosmetics.

9 Raw materials used in natural nano machinery.

Q.3 A Why chemical transformation process lead by enzyme is specific? Explain using appropriate example. [06]

B Write a note on the natural information derived nanomachinary using appropriate example. [06]

OR

B "The reduction in the dimension improves properties of material" justify using appropriate example. [06]

Q.4 A Write a short note on deep UV lithography. [06]

B What are rolling vectors? How they produce different types of carbon nanotubes? Briefly describe the properties of carbon nanotubes? [06]

OR

B Give detailed account on the plasma arcing method. [06]

Q.5 A What is the importance of data storage device? Narrate the functioning of 3D memory using bacteriorhodopsin protein. Describe its advantages over conventional storage. [06]

B Narrate the construction and functioning of gramicidine based ion channel sensor. [06]

OR

B What is critical packing parameter? How lipids can be self assembles in various shapes? [06]

Q.6 A What are biomaterials? Describe properties of biomaterials for their application in implants and prosthesis. [06]

B Describe forces play a role in protein folding. [06]

OR

B Enlist types of microarray. Give comparative account on DNA microarray and protein microarray. [06]

SEAT No._____ No. of Printed Pages: 2

[3-A/4-A/5-A/6-A]

( ) Sardar Patel University

M.Sc. Integrated Biotechnology (IGIBT/IGMBT/IGEBT/IGGBT)
Tenth semester Examination
Tuesday, 18th April 2017
10:00 A.M. to 01:00 P.M.
PS10CIGIB4/ PS10CIGMB4 / PS10CIGEB4 / PS10CIGGB4
(Biosafety Bioethics and IPR)

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 Clinical trials should be conducted in accordance with the ethical principles that have their origin in the_____.
a) Declaration of Doha
b) Declaration of Helsinki
c) Declaration of Germany
d) Declaration of Annecy

2 Any research using the human beings as participants shall follow the _____ principles.
a) Non-exploitation
b) Professional competence
c) Essentiality
d) all of the above

3 Large scale imports for industrial use are regulated by _____.
a) RCGM
b) GEAC
c) OECD
d) IBSC

4 _____ is any imaginable adverse effect that can be identified and measures.
a) Hazard
b) Risk
c) Threat
d) Danger

5 In patent filling procedure form no. 18 is filled for _____.
a) Details of inventor
b) Details of invention
c) Examination
d) Specification

6 Life forms are not patentable in India under the provision of _____.
a) Protection of Invention Act, 1983
b) Indian Patent Act, 1970
c) The Utility Patent Act, 1985
d) The Utility Patent Act, 1972

7 Paris convention is signed for_____.
a) Industrial application
b) Microorganism
c) Plant variety
d) Animal breeds

8 Budapest Treaty is an international treaty signed in Budapest, Hungary, on_____.
a) September 26, 1980
b) August 9, 1980
c) March 20, 1883
d) April 28, 1977

Q.II **Answer the following (Any seven)** **(14)**

1. Write down the general principle of bioethics.
2. Enlist ethical conflicts in transgenic crop plants.
3. Define : r-DNA and Biosafety.
4. Classify risk group on the basis of Biosafety level.
5. Enlist the points taken into consideration in planned release of GMO.
6. Define IPR and enlist the types of IPR.
7. What is tangible and intangible property?
8. Write down the goal of National Biodiversity Authority.
9. What is bio-piracy? How India is facing bio-piracy?

Q.III **(a)** Discuss about ethical conflicts in human genome project. **(06)**

(b) Write a note on Good clinical practice for clinical research. **(06)**

OR

(b) Describe different ethical conflicts of stem cell research. **(06)**

Q.IV **(a)** Discuss the role of GEAC, OECD and RCGM. **(06)**

(b) Write down the guidelines for rDNA research activities. **(06)**

OR

(b) Give detail note on types and elements of containment. **(06)**

Q.V **(a)** Write a note on patent infringement with examples. **(06)**

(b) Discuss the procedure and forms for patent applications. **(06)**

OR

(b) Give detail account on basic requirement of patentability. **(06)**

Q.VI **(a)** Describe in detail about The Protection of Plant Varieties and Farmers Rights act, 2001. **(06)**

(b) Write a note on WIPO. **(06)**

OR

(b) Discuss the role of WTO with respect to biotechnological affairs. **(06)**

----------X----------

SEAT No._____ No. of Printed Pages: 02

(9-A)

SARDAR PATEL UNIVERSITY

M. Sc. (Integrated Biotechnology) – Tenth Semester Examination (CBCS)

(Medical Biotechnology)

Monday, 10th April, 2017

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

PS10CIGMB1: Human Genetics

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:** [08]

1. **_____ is a unit of genetic map.**

   (a) Centimorgan (b) Milimeter (c) Centimeter (d) Both (a) and (c)

2. **Genetic maps are based on recombination frequencies between genetic marker at _____.**

   (a) Mitosis (b) Meiosis (c) Cytokinesis (d) All of these

3. **Lisch nodule is typical symptom found in a patient with_____.**

   (a) Neurofibromatosis (b) Cystic fibrosis

   (c) Hemophilia A (d) Huntington's chorea

4. **MODY is an example of _____.**

   (a) IDDM (b) Monogenic diabetes (c) Diabetes incipidus (d) Gestational Diabetes

5. **Which of the following inherited as X linked fashion?**

   (a) MPS type I (b) MPS type II (c) MPS type III (d) MPS type IV

6. **Which of one the following is not a part of typical phase II conjugation reactions?**

   (a) Acetylation (b) Glucuronidation (c) Methylation (d) Hydroxylation

7. **Drug induced hemolytic anemia in African males are due to deficiency of _____.**

   (a) NADPH DH (b) Glutathione reductase (c) G6PDH (d) TPMT

8. **Match the following and choose correct answer from the codes given below:**

A. Farbers disease	1. Alpha iduronidase
B. Metachromatic leukodystrophy	2. Heparan sulfatase
C. Herler syndrome	3. Arylsulfatase
D. Sanfilippo syndrome type III - A	4. Ceraminidase

	A	B	C	D
(a)	1	2	3	4
(b)	2	4	1	3
(c)	3	5	4	1
(d)	4	3	1	2

P.T.O.

Q.2 **Answer any SEVEN from the following:** [14]

1. What does LOD stand for? Write its significance.
2. What do you mean by synteny of genes?
3. Enlist and explain any 6 factors influencing on genetic susceptibility to common diseases.
4. Write atleast 4 examples of tumor suppressor genes and its associated cancer.
5. Give an overview of human mitochondrial syndrome.
6. Enlist types of sphingolipidosis arise when there is a defects in ganglioside metabolism.
7. Differentiate between hemophilia A and hemophilia B.
8. Write full names of TPMT and VKORC1.
9. Enlist techniques used for scanning the genes for known mutation.

Q.3(a) Enlist various position-independent strategies for the identification of disease genes. How the knowledge of protein products used to identify the disease genes? [6]

(b) Enlist various markers for gene mapping. Discuss importance of STS marker in the gene mapping. [6]

OR

(b) 1. Give an overview of pyrosequencing. [3]

2. Write applications of PFGE in genome mapping. [3]

Q.4(a) Write examples of triple repeat disorders involving exon, intron and UTR region. Explain Huntington chorea in detail. [6]

(b) "Obesity is a polygenic disorder" - Justify the statement. [6]

OR

(b) Write short notes on the following:
i. Genetic aspects of cystic fibrosis ii. Oncogenes [3+3]

Q.5(a) Describe molecular and biochemical aspects in PKU and alkaptonuria. [6]

(b) Describe glycogen storage disorders. [6]

OR

(b) Write short notes on the following:
i. MSUD ii. Albinism [3+3]

Q.6(a) Describe atleast 2 methods for the screening of unknown mutation. [6]

(b) With the help of suitable example explain individual genetic variation affecting both pharmacodynamic and pharmacokinetic action of a drug. [6]

OR

(b) Discuss major ethical issues in medical genetics. [6]

****

SEAT No._____ No. of Printed Pages: 2

[6-A]

{ } SARDAR PATEL UNIVERSITY

M.Sc. (Integrated) Biotechnology (IGMBT), 10th Semester Examination

Saturday, 15th April 2017

10:00 A.M to 1:00 P.M

PS10CIGMB3: Drug design and development

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) **Caco-2 cell monolayer absorption model is used to assess :**
(a) absorption of drug from liver (b)) absorption of drug from GI tract
(c)) distribution of drug to liver (d) all of the above

(2) **High though put screening involves the automated testing of several thousand compound at once in :**
(a) 10- 30 biochemical tests (b) 300- 500 biochemical tests (c) 30- 50 biochemical tests (d) none of the above

(3) **Which interaction is formed between two hydrophobic regions of the proteins:**
(a) Hydrogen (b) Van der Waals (c) Ionic (d) Covalent bonds

(4) **Which of the following drug use to treat rheumatoid arthritis :**
(a) teriparatide (b) cislosporin (c) etanercept (d) all of the above

(5) **Which of the following prodrug used to prolong activity ?**
(a) Levodopa (b) Hexobarbitone (c) Candoxatrils (d) none of them

(6) **The activity of drug can be prolonged by using:**
(a) Sentry drug (b)) Pro drug (c) Metabolic blockers (d) Endogenous compound

(7) **Full name of IPER is:**
(a) International periodic examination report (b) International preliminary examination report (c) International previous examination report (d) none of the above

(8) **Which of the following clinical trial is carried out on patients to check drug effectiveness, dose regimen and to identify side effects?**
(a)) Phase I (b) Phase II (c) Phase III (d) Phase IV

[14]

Q-2 Answer any <u>SEVEN</u> from the following:

(1) Surface Plasmon Resonance (SPR)
(2) Isothermal Titration calorimetry (ITC)
(3) Define Transition state analogues
(4) Explain Trojan house approach for carrier proteins in brief.
(5) Define metabolic blockers
(6) Enlist methods used to increase solubility and membrane permeability.
(7) How steric shields process helps in drug optimization?
(8) What is a good manufacturing practice of drug?
(9) What is orphan drug?

PTO

Q.3 (a) How do bioassay helps in identifying the lead molecule. What is meant by target specificity and selectivity why it is important? [6]

(b) Why choosing a right bioassay is important in drug discovery? [6]

OR

(b) Describe characteristics of a good target of a drug. [6]

Q.4 (a) Explain drug action at structural protein with suitable examples. [6]

(b) Discuss role of monoclonal antibodies in medicinal chemistry in brief. [6]

OR

(b) Explain antagonism by umbrella effect with suitable example. [6]

Q.5 (a) How drug can be made more resistant to chemical and enzymatic degradation? [6]

(b) Write a detail account on sentry drugs and synergism [6]

OR

(b) How drugs can be made less toxic? [6]

Q.6 (a) What is patent? Explain roles of different agency involve in regulatory affairs. [6]

(b) Give detail account on phase I and phase II clinical trial. [6]

OR

(b) Write detail account on toxicity testing for new drug. [6]

----------x----------