

[27]

SEAT No. _____

SARDAR PATEL UNIVERSITY

M. Sc Integrated Biotechnology (IGBT) – Semester-I

Subject Code & Subject: PS01AIGB21-English-1(Soft Skill Communication)

Date: 09-11-2017, Thursday Time: 10: 00 A.M. TO 12: 00 P.M Total Marks: 35

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

Q-1. Answer the following objective questions. 1x5= 05

1. Enthalpy is.....
(A) Total heat (B) Incomplete heat (C) Total absorbance heat (D) Total temperature
2. Metamorphosis is.....
(A) Unchanged nature (B) Change in nature (C) Absorbance water (D) Change in cell
3. Lamella is.....
(A) Thin layer (B) Thick layer (C) Membrane layer (D) Cell layer
4. Dehiscence is.....
(A) Splitting at young stage (B) Splitting at maturity (C) Seed germination (D) Seed break
5. Luminiferous is
(A) Transmitting light (B) Transfer of energy (C) Blocking the light (D) Light absorbance

Q-2. Explanation of terminology of the following in brief. (Any Three) 02X03=06

1. Imbibition 2. Cytotaxonomy 3. Covalent bond
4. Electro-osmosis 5. Centripetal

Q-3. (A) What is communication cycle? Explain in detail with the help of diagram. (06)

(B) We "Communication just by being"—Explain the statement with reference to "Kinesics". (06)

OR

(B) What is Paralinguistics? Explain all the features in detail

Q-4. (A) Explain organizational barriers in detail. (06)

(B) Which are the different forms of group communication? Provide brief information about each. (06)

OR

(B) Proxemics is the study of physical space in interpersonal relations- Explain four zones with the help of examples.

[34]

SARDAR PATEL UNIVERSITY

M.Sc. Integrated Biotechnology Examination, First Semester

Day & Date : 01-November-2017, Wednesday

Time : 10:00 A.M. TO 01:00 P.M.

Subject : Physics - I

Subject Code : PS01CIGB01

Instructions :

[a] Figure to the right indicates full marks.

Total Marks : 70

[b] All questions are compulsory.

Q-1 Choose the correct answers**[08]**

- 1 The uncertainly principle was stated by _____.
[a] Heisenberg [b] Bragg [c] De-Broglie [d] Laue
- 2 The range of Visible ray is _____ A.
[a] 400 - 1000 [b] 100 - 4000 [c] 700 - 4000 [d] 4000 - 7000
- 3 Which of the following is not the property of LASER?
[a] coherence [b] polychromaticity [c] high directionality [d] extreme brightness
- 4 In optical fiber outer cladding is _____ the inner core.
[a] less dense than [b] denser than [c] same density as [d] unpredictable
- 5 Total number of electrons in M – Shell _____.
[a] 2 [b] 8 [c] 18 [d] 32
- 6 The X – radiation were discovered by _____.
[a] P.Villard [b] J.W.Ritter [c] W. Roentgen [d] M. Herschel
- 7 A convex lens is called _____.
[a] converging lens [b] diverging lens [c] both a and b [d] refracting lens
- 8 Prism is used to study the spectra by the process of _____.
[a] Diffraction [b] Reflection [c] Refraction [d] Interference

Q-2 Attempt Any Seven out of the followings**[14]**

1. What is Rayleigh's criterion?
2. What is L-S and j-j- coupling?
3. State the properties of LASER.
4. State Pauli's exclusion principle.
5. Give the application of X-rays.
6. Write application of optical fiber communication
7. State the types of diffraction.
8. State Brewster's law.
9. Write a note on power lens.

Q-3 [a] Write a short note on polarization of light.**[06]****[b] Discuss the construction and working of Fresnel's biprism experiment.****[06]****OR****[b] State and derive Brewster's law in detail.****[06]****P.T.O**

- Q-4 [a] Derive the expression for the deviation produced by thin lens. [06]
[b] What are aberrations? Discuss the chromatic aberration in detail. [06]

OR

- [b] Write a note on a cardinal point of an optical system of lenses [06]
Q-5 [a] Discuss the classification of optical fiber. [06]
[b] Describe the formation of hologram and reconstruction of image from it. [06]

OR

- [b] What is optical fibre? Describe its structure with necessary diagram. [06]
Q-6 [a] Explain the characteristics of photoelectric effect in detail. [06]
[b] Explain the modern Coolidge tube method for the production of X-rays. [06]

OR

- [b] State and explain Pauli's exclusion principle. [06]

----- ALL THE BEST -----

[8 8]

SEAT No. _____

No. of printed pages: 02

Sardar Patel University
M.Sc. (Integrated) Biotechnology
External Theory Examination
PS01CIGB03 – Introduction to computers
07th November, 2017 (Tuesday)
Time: 10:00 a.m. to 01:00 p.m.

Total Marks: 70

[08]

Q 1

Multiple Choice Questions.

1. In ASCII-8 first _____ bits are known as zone bits.
a) 8
b) 3
c) 4
d) None of these
2. _____ is the father of computer.
a) Charles Babbage
b) Anton von
c) Vinton Gray
d) Robert koch
3. _____ is the father of Internet.
a) Vinton Gray
b) Charles Babbage
c) JCR Licklider
d) None of these
4. E – mail means _____.
a) Electronic mail
b) Electric mail
c) Emergency mail
d) All of these
5. _____ tool is very helpful to select the object partially in random shape.
a) Subselect
b) Lasso
c) Arrow
d) None of these
6. _____ is the extension of MS Excel file.
a) .xsl
b) .xls
c) .xlr
d) .slx
7. User can provide title of HTML page upto _____ characters.
a) 50
b) 16
c) 60
d) None of these
8. _____ is the tool for making animated graphics.
a) MS word
b) MS excel
c) FLASH
d) MS Access

- Q 2 Short Questions (Attempt any seven).** [14]
1. Write down 2's complement method.
 2. Give the types of number systems.
 3. Differentiate volatile memory vs non volatile memory.
 4. Enlist the applications of internet for education.
 5. Write down any two arithmetic functions of MS Excel.
 6. How to create and save a file in MS word?
 7. Write strong and U tag of HTML.
 8. What is frame and key frame in FLASH?
 9. Give the basic tags of HTML frame.
- Q 3 A.** Discuss a detailed note on third generation of computers. [06]
- Q 3 B.** Do following conversions: [06]
- 1) $(1245)_{10}$ to $(?)_2$
 - 2) $(111000011.11001)_2$ to $(?)_{10}$
 - 3) $(450)_8$ to $(?)_{10}$
- OR**
- Q 3 B.** Give an account on the applications of computer in various field. [06]
- Q 4 A.** Describe any two input devices in detail. [06]
- Q 4 B.** Enlist the types of printers and explain laser printer with its features. [06]
- OR**
- Q 4 B.** Write down the types of monitor and explain the working of CRT monitor in detail. [06]
- Q 5 A.** Write a note on paragraph formatting in MS Word. [06]
- Q 5 B.** How to prepare different types of charts in MS Excel? [06]
- OR**
- Q 5 B.** Discuss in detail HTML lists and its types. [06]
- Q 6 A.** Enlist and explain tools available for drawing and painting in Flash. [06]
- Q 6 B.** Write a brief note on shape tween with example. [06]
- OR**
- Q 6 B.** Write down the HTML tags for the following table. [06]

Sr. No.	Name	Address	Contact
1	Azhar	Anand	6464654
2	Ritesh	Nadiad	9879879
3	Jeet		5455556
4	Sanjay	Vadodara	6546546

— X —

(104)

SEAT No. _____

No. of Printed Pages: 02

Sc

Sardar Patel University

M. Sc. (Integrated) Biotechnology Examination, First Semester

Thursday, 09th November, 2017

10:00 a.m. to 01:00 p.m.

PS01CIGB04: Animal Sciences

Total Marks: 70

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

Q.1 Choose the Correct Answers of the Following.

[08]

- Amoeba is classified in _____ phylum.
(a) Mollusca (b) Echinoderm (c) Arthropod (d) Protozoa
- Clairellum is present in animals belonging to the phylum _____.
(a) coelenterata (b) mollusca (c) annelida (d) Arthropod
- Cardiac muscles are _____.
(a) Syncytial and voluntary (b) Involuntary and striped
(c) Striped and voluntary (d) Unstriped and voluntary
- Goblet cells secrete _____.
(a) mucine (b) gelatine (c) glycoprotein (d) keratin
- Mode of nutrition in plasmodium is _____.
(a) autotrophic (b) symbiotic (c) parasitic (d) none of these
- Osmolarity of blood _____ mosm/L.
(a) 350 (b) 300 (c) 250 (d) 200
- Ascariasis is caused by _____.
(a) nemathelminthes (b) viral (c) protozoan (d) bacterial
- Mule is an example of _____.
(a) Inter-specific hybridization (b) Inbreeding (c) Cross breeding (d) None

Q.2 Answer the following in short. (Attempt Any Seven)

[14]

- Give the characters of Phylum platyhelminthes.
- Outline the distinguishing characters of Phylum mollusca.
- Narrate the characters of class Crustacea.
- Classify Connective tissue in form of flowchart.
- Draw a labeled diagram of Mammalian Bone.
- Narrate about Ammonotelism.
- Give the difference between Symbiotic and Parasitic modes of nutrition.
- Mention the Prevention and Control for ADIS.
- Define: Sanctuaries and National Park.

- Q.3 (A) Mention the general characters of phylum Arthropoda and classify it upto classes giving examples. [06]
- (B) Describe the general characters of Phylum Porifera with examples. [06]
- OR
- (B) Describe the general characters of class Mammalia with examples. [06]
- Q.4 (A) What is tissue? Describe squamous, columnar and ciliated simple epithelial tissues with suitable diagram. [06]
- (B) Give the morphological and physiological difference between muscles with suitable diagram. [06]
- OR
- (B) Explain the structural features of adipose connective tissue and areolar connective tissue with suitable diagram. [06]
- Q.5 (A) What is Asexual reproduction? Explain any two types of asexual reproduction in animals with suitable diagram. [06]
- (B) Describe steps involve in the Holozoic nutrition. [06]
- OR
- (B) What is osmoregulation? Explain osmoregulation in marine animals. [06]
- Q.6 (A) Describe different methods for wildlife conservation. [06]
- (B) Write a note on Economic importance of Mammals. [06]
- OR
- (B) Mention the symptoms, prevention and control measures of Malaria. [06]

— — —

(2)

(104)

SEAT No. _____

No. of Printed Pages: 02

Sc

Sardar Patel University

M. Sc. (Integrated) Biotechnology Examination, First Semester

Thursday, 09th November, 2017

10:00 a.m. to 01:00 p.m.

PS01CIGB04: Animal Sciences

Total Marks: 70

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

Q.1 Choose the Correct Answers of the Following.

[08]

- Amoeba is classified in _____ phylum.
(a) Mollusca (b) Echinoderm (c) Arthropod (d) Protozoa
- Claitellum is present in animals belonging to the phylum _____.
(a) coelenterata (b) mollusca (c) annelida (d) Arthropod
- Cardiac muscles are _____.
(a) Syncytial and voluntary (b) Involuntary and striped
(c) Striped and voluntary (d) Unstriped and voluntary
- Goblet cells secrete _____.
(a) mucine (b) gelatine (c) glycoprotein (d) keratin
- Mode of nutrition in plasmodium is _____.
(a) autotrophic (b) symbiotic (c) parasitic (d) none of these
- Osmolarity of blood _____ mosm/L.
(a) 350 (b) 300 (c) 250 (d) 200
- Ascariasis is caused by _____.
(a) nemathelminthes (b) viral (c) protozoan (d) bacterial
- Mule is an example of _____.
(a) Inter-specific hybridization (b) Inbreeding (c) Cross breeding (d) None

Q.2 Answer the following in short. (Attempt Any Seven)

[14]

- Give the characters of Phylum platyhelminthes.
- Outline the distinguishing characters of Phylum mollusca.
- Narrate the characters of class Crustacea.
- Classify Connective tissue in form of flowchart.
- Draw a labeled diagram of Mammalian Bone.
- Narrate about Ammonotelism.
- Give the difference between Symbiotic and Parasitic modes of nutrition.
- Mention the Prevention and Control for ADIS.
- Define: Sanctuaries and National Park.

- Q.3 (A) Mention the general characters of phylum Arthropoda and classify it upto classes giving examples. [06]
- (B) Describe the general characters of Phylum Porifera with examples. [06]
- OR
- (B) Describe the general characters of class Mammalia with examples. [06]
- Q.4 (A) What is tissue? Describe squamous, columnar and ciliated simple epithelial tissues with suitable diagram. [06]
- (B) Give the morphological and physiological difference between muscles with suitable diagram. [06]
- OR
- (B) Explain the structural features of adipose connective tissue and areolar connective tissue with suitable diagram. [06]
- Q.5 (A) What is Asexual reproduction? Explain any two types of asexual reproduction in animals with suitable diagram. [06]
- (B) Describe steps involved in the Holozoic nutrition. [06]
- OR
- (B) What is osmoregulation? Explain osmoregulation in marine animals. [06]
- Q.6 (A) Describe different methods for wildlife conservation. [06]
- (B) Write a note on Economic importance of Mammals. [06]
- OR
- (B) Mention the symptoms, prevention and control measures of Malaria. [06]

— x —

(2)

SEAT No. _____

No. of Printed Pages: 02

[29]

SARDAR PATEL UNIVERSITY
M. Sc. Integrated Biotechnology
First Semester

Subject: Biomathematics (PS01CIGB06)

Time: 10.00 am to 1.00 pm 3rd November, 2017

Total Marks: 70

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

Q-1 Choose the most appropriate alternative for the following:

[08]

- (1) Partial derivative of xy with respect to x is _____.
(a) x (b) y (c) 0 (d) none of these
- (2) $\lim_{x \rightarrow 0} \frac{\sin x}{x} =$ _____.
(a) 1 (b) -1 (c) 0 (d) none of these
- (3) The matrix $\begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}$ is a ____ matrix.
(a) symmetric (b) skew symmetric (c) identity (d) upper triangular
- (4) If A is of order 3×5 then the order of A^T is
(a) 3×5 (b) 5×3 (c) 1×5 (d) 5×1
- (5) Derivative of $\tan x =$ _____.
(a) $\sec^2 x$ (b) $\cot x$ (c) $\sin x / \cos x$ (d) None of these
- (6) $\int 2 dx =$ _____.
(a) $x+c$ (b) $2x+c$ (c) $2x$ (d) 0
- (7) If $f: A \rightarrow B$ is a function then B is called
(a) domain (b) inverse (c) co-domain (d) None of these
- (8) The smallest set A such that $A \cup \{1,3\} = \{1,2,3,5,9\}$ is
(a) $\{2,3,5\}$ (b) $\{2,5,9\}$ (c) $\{1,2,3,5\}$ (d) None of these

Q-2 Attempt any SEVEN of the following:

[14]

- (1) Find $\frac{d}{dx}(3x+2)$
- (2) Evaluate $\lim_{x \rightarrow 0} \frac{1-\cos x}{\sin x}$
- (3) Evaluate $\int (x+2)^2 dx$
- (4) If $z=x^2+y^2+2x$ then find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$.
- (5) Solve $\log x - \log 2 - \log 8 + \log x = 0$.
- (6) Find equation of a line having slope 2 and passes through the point (3,4).
- (7) If $A = \begin{bmatrix} 1 & 9 \\ 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ -2 & 3 \end{bmatrix}$ then find $2A+3B$.
- (8) If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then find A^{-1} .
- (9) Find $\frac{dy}{dx}$ for $y = \sin(x^2)$.

- Q-3 (A) (i) Prove that $1 + \tan^2 x = \sec^2 x$ [03]
(ii) Find domain and range of the function $f(x) = \frac{2x-1}{x-5}$ [03]

- (B) (i) Simplify $(\log_b a^2)(\log_c b^2)(\log_a c^2)$. [03]
(ii) Give an equation of a straight line passing through (1,5) and (2,4). [03]
OR

- Q-3 (B) (i) Prove that $(1 + \cot \theta - \operatorname{cosec} \theta)(1 + \tan \theta + \sec \theta) = 2$ [03]
(ii) Draw shapes of power function $y = ax^n$ for different values of a and n. [03]

- Q-4 (A) (i) Evaluate $\lim_{x \rightarrow 3} \frac{x^2 - 9}{15(x-3)}$ (ii) Evaluate $\lim_{n \rightarrow \infty} \frac{3n^5 + 2n^3 + 9n^2 + 7}{17n^5 + 3n^3 + 2n^2 - 9}$ [06]

- (B) (i) Evaluate $\frac{d}{dx}(x^2 + e^x)$ (ii) Evaluate $\frac{9^{3/2} \times 8^{2/3}}{3^3 \times 2^2}$ [06]
OR

- Q-4 (B) Define local maxima and minima for a function of a single variable. Find local minimum and maximum value for $f(x) = 6x^2 - 2x + 7$. [06]

- Q-5 (A) (i) If $z = \tan^{-1}(y/x)$, show that $\frac{\partial^2 z}{\partial x \partial y} = \frac{\partial^2 z}{\partial y \partial x}$ (ii) Solve $y dy = x dx$. [06]

- (B) (i) Solve $x^2 dx + e^y dy = 0$ (ii) Evaluate $\int e^x (x+3) dx$. [06]
OR

- Q-5 (B) Find local maximum and minimum values of $f(x,y) = x+y + \frac{1}{x} + \frac{1}{y}$. [06]

- Q-6 (A) (i) If $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 6 & 9 \end{bmatrix}$ then find $A + A^T$ and $A - A^T$. [03]

- (ii) If $A = \begin{bmatrix} a & b-2 \\ c+1 & d \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix}$ and $A = B$, then find a, b, c, d. [03]

- (B) Solve $x+2y-z=2$ [06]
 $x-y+z=4$
 $2x+y-z=2$

OR

- Q-6 (B) Find eigen value and verify Cayley Hamilton theorem for the matrix $\begin{bmatrix} 5 & 3 \\ 1 & 3 \end{bmatrix}$ [06]

— X —

(40)

SEAT No. _____

No. of printed pages : 02

SARDAR PATEL UNIVERSITY

M.Sc. (Integrated) Biotechnology, First Semester Examination

Tuesday, 14th November,

2017

10.00 a.m. to 1.00 p.m.

Organic Chemistry: PS01CIGB02

Total Marks : 70

Note : (i) All questions are to be attempted. (ii) Figures to the right indicate marks.

Q.1 Choose the correct option for the following : [8]

- (i) Molecular formula for benzene is
(a) C_6H_6 (b) $C_{10}H_8$ (c) C_8H_8O (d) $C_{10}H_8O$
- (ii) A secondary carbon is bonded directly to carbons.
(a) 2 (b) 1 (c) 3 (d) 4
- (iii) A chiral carbon is in nature.
(a) optical active (b) optical inactive (c) linear (d) pyramidal
- (iv) Free radical produced by fission.
(a) heterolytic (b) homolytic (c) both "a" & "b" (d) None
- (v) Carbon is sp^3 hybridized in
(a) $CH_2 = CH_2$ (b) CH_4 (c) C_6H_6 (d) None.
- (vi) Cyclohexane shows which conformational isomers ?
(a) Twist boat (b) Chair (c) Boat (d) All.
- (vii) Pyrrole is an example of
(a) aliphatic (b) aromatic (c) heterocyclic (d) carbocyclic
- (viii) Amines can be analyzed using test.
(a) Iodoform (b) Hinsberg (c) Bayer (d) None

Q.2 Answer the following (Attempt any seven) : [14]

- (i) Write the structural formula and IUPAC name for :
(a) Benzoic acid & (b) Salicylic acid.
- (ii) Discuss the structure of carbanion in terms of hybridization and bond angle.
- (iii) Write the limitation of Wurtz reaction.
- (iv) Distinguish between: Homolysis and Heterolysis.
- (v) Explain : Physical properties of alkenes.
- (vi) Define conjugated diene and isolated diene with an example.
- (vii) Draw the structure of thiophene and furan.
- (viii) Identify the product in the following reaction :
 $Succinic\ acid + cold\ KMnO_4 \longrightarrow \dots\dots\dots$
- (ix) Define the terms : (a) Optical activity (b) Conformers.

Q.3 Do as directed:

- [A] (i) For the given below structural formula's write correct IUPAC name. [6]
(a) $CH_3 - CH(CH_3)CH_2CH_2CH_3$ (b) $CH_3 - C \equiv C - C_2H_5$

(PTO)

- (ii) Write reaction mechanism for chain reaction.
- [B] Draw the structure for the following : [6]
- (i) toluene (ii) butyl alcohol (iii) methanol
(iv) benzamide (v) propene (vi) phenol

OR

- [B] Identify the intermediate formed in the Claisen condensation reaction. Also write its reaction mechanism. [6]

Q.4

- [A] Write main postulates of Bayer's angle strain theory. Also discuss its limitations. [6]
- [B] Define enantiomers. Draw conformational isomers of ethane. [6]

OR

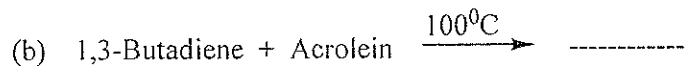
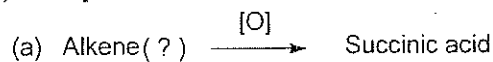
- [B] Answer the following : [6]
- (i) Write any two preparation method of alkanes.
(ii) Write a note on : optical isomerism.

Q.5

- [A] State and explain Markovnikov's and anti-Markovnikov's rule giving two illustrations for each. [6]
- [B] Write reaction mechanism for the Ozonolysis and hydroboration reaction of alkene. [6]

OR

- [B] (i) Write reaction mechanism for the addition of HBr to 1,3-butadiene. [6]
(ii) Complete and rewrite the following reaction :



Q.6 Answer the following :

- [A] Draw all possible isomers for the compound having molecular formula $\text{C}_5\text{H}_{11}\text{Cl}$. [6]
- [B] Write reaction mechanism for the alkaline hydrolysis of esters. [6]

OR

- [B] Do as Directed: [6]
- (i) Give structural formula for the following :
(a) Quinoline (b) Pyrole
- (ii) Explain : Basicity of aromatic amines and aliphatic amines.

----- ⊙ ----- ⊙ ----- ⊙ -----

②

SEAT No. _____

No. of printed pages : 02

[35]

SARDAR PATEL UNIVERSITY

M.Sc. Integrated Biotechnology, First Semester Examination

Wednesday, 1st November,
2017

10.00 a.m. to 1.00 p.m.

Chemistry of life: PS01CIGB21

Total Marks : 70

Note : (i) All questions are to be attempted. (ii) Figures to the right indicate marks.

- Q.1 Choose the correct option for the following :** [08]
- (i) Which sugar is known as milk sugar ?
(a) glucose (b) mannose (c) galactose (d) lactose
 - (ii) Which of these is an example of polysaccharide ?
(a) starch (b) glucose (c) galactose (d) fructose
 - (iii) Which is an example of glycolipid ?
(a) cerebrosides (b) lecithin (c) cephalin (d) All
 - (iv) Guanine is an example of
(a) amino acid (b) lipid (c) purine (d) pyrimidins
 - (v) Identify the optical active amino acid.
(a) fatty acid (b) triglycerides (c) sphingopid (d) cholesterol
 - (vi) Which amino acid gives yellow coloration upon treatment with ninhydrin ?
(a) histidine (b) proline (c) lysine (d) glycine
 - (vii) The bond in protein structure that are not broken in denaturation.
(a) ionic (b) H-bond (c) peptide (d) di sulfide
 - (viii) Which nitrogen base is absent in DNA ?
(a) Adenine (b) guanine (c) uracil (d) thymine

- Q.2 Answer the following (Attempt any seven):** [14]
- (i) Define biomolecules with examples.
 - (ii) Write main function of carbohydrates.
 - (iii) Distinguish between : Aldose and Ketose sugars.
 - (iv) Explain the term : Rencidity.
 - (v) Write main function of triglycerol.
 - (vi) Enlist rare amino acids of protein.
 - (vii) Draw the structure of nitrogen base pair.
 - (viii) What is meant by denaturation of DNA ?
 - (ix) Explain the term nucleotide and nucleoside.

- Q.3 Answer the following:**
- [A] Discuss the biological importance of biomolecules. [06]
 - [B] Give an account on disaccharide carbohydrates. [06]
- OR**
- [B] Explain cyclization of monosaccharides. [06]

PTO

Q.4 Answer the following:

[A] Give classification of lipids with suitable illustration. [06]

[B] Discuss about the identification of fats and oils. [06]

OR

[B] Explain about structure and occurrence of cholesterol. [06]

Q.5 Answer the following:

[A] Define essential amino acids. Give classification of amino acid based on the structure with suitable example. [06]

[B] Discuss the secondary structure of protein in detail. [06]

OR

[B] Discuss the physical properties of protein. [06]

Q.6 Answer the following:

[A] Discuss various component and structure of ribose nucleic acid. [06]

[B] Discuss important function of mRNA and tRNA. [06]

OR

[B] Explain : Watson and Crick model for DNA. [06]

----- ☺ ☺ ☺ -----

[30]

Sc

SARDAR PATEL UNIVERSITY
M. Sc. Integrated Biotechnology ,First Semester
Subject:PS01CIGB25 – Biomathematics
Friday,3rd November, 2017
Time:10:00a.m. to 1:00p.m.

Total Marks: 70

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

Q-1. Choose the most appropriate alternative for the following: [08]

- (1) is not equivalent to 24 μm ?
 (a) 0.00024 cm (b) 0.024 mm (c) 24,000 nm (d) 240,000 \AA
- (2) The scientific notation of 12 pmol is.....
 (a) 12×10^{-12} mol (b) 12×10^{-11} mol (c) 12×10^{-10} mol (d) 12×10^{-15} mol
- (3) Why different biomolecules are estimated at different wavelengths of light by spectrophotometer?
 (a) Because biomolecules absorb maximum light of specific wavelength.
 (b) Because other light waves won't be absorbed by biomolecules to be estimated.
 (c) Because biomolecules face maximum transmission of light at particular wavelength
 (d) None of the above
- (4) Which equation represents a line parallel to the Y-axis?
 (a) $x = \frac{1}{3}y$ (b) $y = 10$ (c) $y = 5x + 17$ (d) $x = 5$
- (5) If a line is vertical, its slope is.....
 (a) 1 (b) 0 (c) undefined (d) negative
- (6) If $[\text{H}^+] = 10^{-8}$ M, then pH of the solution is.....
 (a) 0 (b) 8 (c) 6 (d) -8
- (7) is known as the father of biostatistics.
 (a) Francis Galton (b) Robert Fisher (c) Quetlet (d) Charles Darwin
- (8) The mean is 12 and number of observations are 20 then sum of all the values is.....
 (a) 8 (b) 32 (c) 64 (d) 240

Q-2. Attempt any Seven of the following: [14]

- (1) Write 3.3×10^{-11} M scientific notation to appropriate prefix.
- (2) Solve $\frac{5 \times 10^9}{2 \times 10^4}$.
- (3) If 20g adrenaline dissolved in 1000 ml of water, what is the concentration in M?
 [Molar mass of adrenaline = 183.2 g mol^{-1}]
- (4) What volume of water do you need to make 1.5mM solution of 51 mg of sodium chloride? [Molar mass of NaCl = 58.44 g mol^{-1}]
- (5) Write the following as a simple fraction: $\frac{2}{x} - \frac{1}{2x}$.
- (6) Give advantages of use of Lineweaver Burke plot over Michaelis-Menten plot.
- (7) The number of blood LDL (in mg/dl) present in the blood samples of 11 patients are: 5, 19, 42, 11, 50, 30, 21, 0, 52, 36, 27. Find the median.
- (8) Define median for both ungrouped and grouped data.
- (9) Write merits and demerits of mean.

- Q-3 (A) Calculate $\{[(4.16 \times 10^{-4}) \times (3.57 \times 10^8)] \div [(9.65 \times 10^{-8})] + (7.68 \times 10^{12})\}$. [06]
 (B) (i) The dimensions of a rectangular cell are width = 1 μm and length 10 μm . Express the area in scientific notation with m^2 as the units. [03]

(ii) Solve the problem using correct order $(-3b)^3 - 3b^3$ [03]

OR

- Q-3 (B) What is the concentration in % (w/v) of a 1M solution of KCl? [formula weight of KCl = 74.55 $\text{g}\cdot\text{mol}^{-1}$] [06]

- Q-4 (A) List the application of spectroscopy in biotechnology. Derive Beer Lambert law for spectrophotometer. [06]

- (B) (i) If the formula for the perimeter of a rectangle is $s = ut + \frac{1}{2}at^2$, rearrange the equation to make 'a' as subject. [03]

(ii) If the two points on straight line are (2, 4) and (8, 6). Find the slope and equation of the line. [03]

OR

- Q-4 (B) Derive Lineweaver-Burke equation from Michaelis-Menten equation and give its plot [06]

- Q-5 (A) State and derive the Henderson-Hasselbalch Equation. [06]

- (B) Simplify the given expression: $A = \log 2 + 16 \log \frac{16}{15} + 12 \log \frac{25}{24} + 7 \log \frac{81}{80}$. [06]

OR

- Q-5 (B) Find the value of (i) $\log_{1/3} 243$ [03]

(ii) $\log_{\left(\frac{3}{2}\right)} 2$ [03]

- Q-6 (A) Given below is the data of height of plants grown under normal condition. Calculate its mean and median. [06]

Height	0-10	10-20	20-30	30-40	40-50	50-60
No. of plants	42	44	58	35	26	15

- (B) A fertilizer mixing machine is set to give 20kg of Phosphate for every quintal bag of fertilizer. Ten 100 kg bags are examined the percentage of phosphate are as follows [06]

11, 14, 13, 12, 13, 12, 13, 14, 11, 12

Is there reason to believe that the machine is defective [value of t for 9 degree of freedom is 2.262]

OR

- Q-6 (B) The average potentials of tablets in 10 bottles were recorded as follows: 312, 309, 310, 307, 309, 306, 300, 311, 308, 305. Find mean, median, mode and standard deviation of the data. [06]

— X —

[89]

SEAT No. _____

No. of Printed Pages: 02

Sardar Patel University

M. Sc. Integrated Biotechnology, First Semester Examination

Tuesday, 07th November, 2017

10:00 a.m. – 01:00 p.m.

PS01CIGB27: Microbiology

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. In 1665, ____ description of cells in piece of cork established the fact the bodies of animals and plants are composed of a few elementary parts frequently repeated.
a) Robert Hook b) Leuwenhoek c) Black d) Tyndall
2. In greek mythology goddess ____ is able to create people from stones.
a) Laxmi b) Gaea c) Saraswati d) Parvati
3. ____ is not true for eukaryotic cell.
a) Presence of mitochondria b) Presence of Golgi
c) Cell wall made up of peptidoglycan d) Zygote is diploid
4. ____ is obtained from algae used primarily for filters or filter aid.
a) Carrageenan b) Alginate c) Agar d) Diatomaceous earth
5. The icosahedron is a regular polyhedron with ____ equilateral triangle.
a) 20 b) 18 c) 12 d) 16
6. Viral genome that are complementary rather than identical to viral mRNA are called ____.
a) Positive strand b) Negative strand c) Both d) None
7. Following is NOT true for Mycoplasmas.
a) Penicillin resistance b) Pleomorphic
c) Susceptible to osmotic shock d) Susceptible to detergents
8. ____ strain of *Clostridium* is used for production of butanol.
a) *C. titani* b) *C. perfringens*
c) *C. acetobutylicum* d) *C. botulinum*

Q-2 Answer the following questions (Any seven).

[07 X 02 = 14]

1. Give Theory of Biogenesis.
2. What is attenuation?
3. What is dimorphism in fungi?
4. Draw a labeled diagram of bacterial cell.
5. What is phagocytosis?
6. What is the role of Edward Jenner in development of microbiology?
7. Give full form of ICTV.
8. Briefly explain the properties of mycoplasmas.
9. Enlist two clostridia pathogens and disease caused by them.

Q-3 (A) Write a note on efforts made by scientists to disprove the spontaneous generation theory. [06]

(B) Write a note on contributions made by Robert Koch in the field of microbiology. [06]

①

(P.T.O.)

- OR**
- (B) Write a note on contributions made by Louis Pasteur in the field of microbiology. [06]
- Q-4 (A) Write a note on shape size and arrangement of bacterial cell. [06]
(B) Explain the principle and kingdoms proposed by Whitakker. [06]
- OR**
- (B) Write a note on sexual reproduction in fungi. [06]
- Q5 (A) Draw a labeled diagram of One-Step Growth Curve and explain in detail. [06]
(B) Explain the Baltimore system of classification. [06]
- OR**
- (B) What are Temperate phages? Give suitable examples. Explain the decision-making process for establishing lysogeny or lytic pathway schematically. [06]
- Q6 (A) Write a short note on structure and chemical composition of walls of Gram-negative Eubacteria. [06]
(B) Narrate the scope of Microbiology. [06]
- OR**
- (B) Give comparative account on Eubacteria and Archaea [06]

— x —
②