

6. Which of the following Ig can cross the placenta?
 - A. Ig G
 - B. Ig E
 - C. Ig A
 - D. Ig D
7. Which of the following Blood Group is considered as "Universal Donor"?
 - A. Group B
 - B. Group AB
 - C. Group A
 - D. Group O
8. Which sequence is responsible to terminate the *E. coli* DNA replication?
 - A. Ter sequence
 - B. Stop sequence
 - C. Null sequence
 - D. None of the above
9. Which of the following is main replication enzyme in *E. coli*?
 - A. DNA polymerase I
 - B. DNA polymerase II
 - C. DNA polymerase III
 - D. DNA polymerase IV
10. Role of SSB during replication is...
 - A. To polymerize the DNA
 - B. To relax the supercoil
 - C. To unwind the DNA to create single stranded DNA
 - D. To protect single stranded DNA

Que-2 Give the Proper Answers In Short For The Following Questions. 12
(Attempt Any SIX; Each Question Carries 2 Marks)

1. Write few lines about Sn RNA.
2. Enlist the main properties of R plasmid.
3. What do you understand by 'Booster dose'?
4. Give significance of blood grouping.
5. Define: Antibody & Antigen.
6. What are Okazaki Fragments & their significance in DNA replication?
7. Write the role of DNA Ligase during *E. coli* DNA replication.
8. Write few lines about basic features of DNA Polymerase I.

Que-3 Explain Watson & Crick model of DNA in detail. 08

OR

- Que-3**
- A. Make a comparative account in a tabular form for B & Z forms of the DNA. **03**
 - B. Write a short note on different forms of RNA. **05**

- Que-4** Explain about basic properties & classification of plasmids. **08**
- OR**
- Que-4** A. Write a short note on Col E1 plasmid. **04**
 B. Explain Ti plasmid. **04**
- Que-5** Give a detailed account on Passive Immunity. **08**
- OR**
- Que-5** A. Differentiate between Adaptive & Innate Immunity. **04**
 B. Differentiate between Primary & Secondary immune response. **04**
- Que-6** A. Explain about basic properties of Ag. **04**
 B. Explain about ABO blood group system. **04**
- OR**
- Que-6** A. Explain about basic structure of Immunoglobulin. **04**
 B. Write the importance of haptens to study antigenicity. **04**
- Que-7** Explain in detail Initiation of DNA replication in prokaryotic cell. **08**
- OR**
- Que-7** A. Write a short note on Termination of DNA replication in *E. coli*. **04**
 B. Explain the experiment of Meselson-Stahl to prove that Replication is semi conservative process. **04**
- Que-8** Explain the role of the following proteins/enzymes used during *E. coli* DNA replication. **08**
 Topoisomerase
 Helicase
 Primase
 Dna A Protein
- OR**
- Que-8** A. Write a short note on DNA Polymerase III. **05**
 B. Write a brief note on rolling circle mode of replication. **03**

ALL THE BEST

[14]

SARDAR PATEL UNIVERSITY

S.Y. B. Sc. Examination

Third Semester

BIOTECHNOLOGY

Paper - US03CBIT02

9th November 2011

10.30 AM – 1.30 PM

Application of Biotechnology

Total Marks: 70

Note:

Total number of Printed Pages: 03

- 1) **Figures in the right indicate the marks**
- 2) **Draw diagrams whenever needed.**

Q-1 Select the Proper Option for the following MCQ's

10

- 1 Who 1st time developed haploid through anther & pollen culture?
A. Murashige & Skoog
B. White and Miller
C. Sipra Guha Mukherjee & S. C. Maheshwari
D. Panchanan Maheshwari & S. C. Mukherjee
- 2 Which one of the following is an auxin?
A. 2,4 D
B. GA₃
C. BAP
D. ABA
- 3 In the name Bt cotton, 'Bt' stands for...
A. *Bacillus thuringiensis*
B. Bio-Transformation
C. Biotechnology
D. None of above
- 4 Who coined the term "Totipotency"?
A. Murashige
B. White
C. Morgan
D. Haberlandt
- 5 Full form of VAM is _____
A. Variable arbuscular mycorrhizza
B. Vesicular arbuscular mycorrhizza
C. Variable abortive mycorrhizza
D. Viscus arbuscular mycorrhizza
- 6 The pink colour of the Rhizobium nodule is due to the presence of pigment
A. Hemoglobin
B. Haemocyanin
C. Leg Hemoglobin
D. Both A and B
- 7 Cry proteins have insectidal properties towards which insects
A. Lepidoptera
B. Cleopetra
C. Diptera
D. All of the above
- 8 Microbial iron chelating compounds are known as _____
A. Bacterial Rhodopsin
B. Siderophores
C. Rhodopsin
D. None of above
- 9 _____ is filter used in Laminar Air flow
A. HEPA
B. Simple filter
C. HPEA
D. None of above
- 10 In transgenic fish Gene is transferred into _____
A. Female Nuclei
B. Male Nuclei
C. Cytoplasm
D. All of the above

Q-2 Give the proper Answers In short for the following Questions 12
(attempt any 6; each Question carries 2 marks)

1. Explain the procedure of Explant sterilization for plant tissue culture
2. Mention advantages of PTC
3. Write about effect of Auxin & Cytokinin ratio on Somatic Organogenesis.
4. Why microorganisms are used for single cell protein production
5. Write down importance of composting for mushroom cultivation
6. Just draw the figure with proper nomenclature for "Schematic representation of the three sequential stages of somatic embryo development".
7. Define Cell Lines
8. "Transgenic animals are also used for molecular pharming" Comment on it

Q-3 Write a detail account on MS medium 08

OR

Q-3 Summarize the History of Plant Tissue Culture with the milestones achieved by 08
scientists.

Q-4 Define Transgenic Plant. Explain in detail about Bt Cotton as an insect resistant 08
transgenic plant.

OR

Q-4(a) Write a short note on: Somatic Embryogenesis 04

(b) Write a short note on: Totipotency 04

Q-5 Discuss laboratory requirements for an Animal Tissue culture Lab 08

OR

Q-5(a) Give a brief note on Serum free media for animal tissue culture 04

(b) Give account on Cell Lines 04

Q-6(a) Write a note on retrovirus method for Transgenic animal 04

(b) Write two points significance of Transgenic Mice 04

OR

- Q-6** In which animal gene is transfer in cytoplasm for production of transgenic animal? **08**
Write note on it.
- Q-7(a)** Mycorrhizial Fungi **04**
(b) Rhizobium inoculants **04**
- OR**
- Q-7** Give an detail account on process of mushroom cultivation **08**
- Q-8** Give a detail account on single cell protein production **08**
- OR**
- Q-8(a)** BT toxin **04**
(b) Mode of biocontrol **04**

BEST OF LUCK

[57]

No. of Printed Pages: 2

SARDAR PATEL UNIVERSITY

S.Y. B.Sc.

Third Semester Examination, 2011

Friday, 18th November

10.30 a.m. to 12.30 p.m.

BIOCHEMISTRY: US03EBCH01

(FUNDAMENTALS OF BIOCHEMISTRY)

Total Marks: 70

Note: Answers to all the questions (including multiple choice questions) should be written in the provided answer-book only

Q1. Choose the correct option & write it in the answer sheet:

[10]

- 1) In water molecule oxygen is _____
a) Electropositive b) Electronegative c) Neutral d) None of these
- 2) Hydrogen bond is _____ electrostatic
a) 60 % b) 70% c) 80% d) 90%
- 3) Non-Suprimposable mirror images of a compound are _____
a) Epimers b) Diastereomers c) Anomers d) Enantiomers
- 4) Storage carbohydrate in plants is _____
a) Starch b) Cellulose c) Glycogen d) Hemicellulose
- 5) The two units of Maltose are Glucose and _____
a) Glucose b) Fructose c) Galactose d) Raffinose
- 6) The three letter abbreviation "Asn" stands for _____
a) Alanine b) Aspartate c) Asparagine d) None of these
- 7) Isoelectric pH of Glycine is _____
a) 5.20 b) 5.00 c) 5.79 d) 5.97
- 8) Polymerisation of amino-acids results in _____
a) Lipids b) Carbohydrates c) Proteins d) Nucleic-acids
- 9) In the formula $F = w^2 r$, where r stands for _____
a) Radial velocity b) Radius of rotation c) Angular velocity d) Force
- 10) A solute with lowest affinity for mobile phase will move _____
a) Slowest b) Fastest c) Backward d) Not at all

Q2. Answer the following (any ten):

[20]

- 1) Discuss structure of water.
- 2) Write a short note on water intoxication.
- 3) Discuss role of Thirst mechanism in water regulation.
- 4) Define : (a) Asymmetric carbon (b) Epimers
- 5) Write Fischer projection & Haworth formula of β -L-glucofuranose.
- 6) Write biological importance of carbohydrates.
- 7) Discuss Optical-isomerism in Amino-acids.
- 8) How is Proline different from other amino-acids? Explain.
- 9) Give a brief note on Selenocysteine.
- 10) Briefly discuss Desk-top centrifuge.
- 11) Explain Ion-Exchange Chromatography.
- 12) Write a short note on Partition-Coefficient.

Q3. (a) Give distribution of electrolytes in body.

[05]

(b) Explain Pure water Dehydration.

[05]

OR

Q3. (a) Discuss distribution of Water in body.

[05]

(b) Explain Pure salt depletion.

[05]

Q4. (a) Define carbohydrates and discuss classification of Carbohydrates.

[05]

(b) Explain Mutarotation in carbohydrates.

[05]

OR

Q4. (a) Define Homopolysaccharides and write a note on Cellulose.

[05]

(b) Discuss Isomerism in carbohydrates.

[05]

Q5. (a) Discuss Amphoteric nature and Isoelectric pH of amino acids.

[05]

(b) Discuss classification of amino-acids based on polarity.

[05]

OR

Q5. (a) Draw titration curve of Glycine and briefly give its summary.

[05]

(b) Draw structure of : Serine ,Tryptophan , Histidine , Cysteine,

[05]

Tyrosine.

Q6. (a) Give methodology and application of Thin-Layer Chromatography

[10]

OR

(b) Write a detailed note on Ultracentrifuge.

[10]

$X = X = X$

(2)

SARDAR PATEL UNIVERSITY
S.Y. BSc. (CBCS) (THIRD SEM.) EXAMINATION

2011

Friday, 11th November

10.30 am to 1.30 pm

US03CBCH01 : BASIC BIOCHEMISTRY

Total Marks: 70

Note: Figures to the right indicate full marks.

Q.1 Select correct option for following MCQs.

[10]

- (1) Sucrose is not _____.
 (a) Cane Sugar (b) Table Sugar (c) Invest Sugar
 (d) Reducing Sugar
- (2) Which one is not shape of Lactosazone?
 (a) Powder-Puff (b) Flower of touch-me not
 (c) Hedg-Hog like (d) Petal of Sun-flower
- (3) Which one is the Sweet amino acid?
 (a) Glycine (b) Leucine (c) Arginine (d) Isoleucine
- (4) Which amino acid is basic amino acid?
 (a) Lysine (b) Leucine (c) Isoleucine (d) Non of these
- (5) DNA is form by polymer of _____.
 (a) Nucleotide (b) Peptide (c) Saccharide (d) Glyceride
- (6) Which bond is not present in DNA?
 (a) Peptide (b) Phosphodiester (c) glycosidic (d) Hydrogen
- (7) _____ is considered as energy currency of body.
 (a) ATP (b) UTP (c) CTP (d) TTP
- (8) Cyanocobalamine is the chemical name of _____ Vitamin.
 (a) B₁₂ (b) B₂ (c) B₃ (d) B₁
- (9) Which mineral is not essential for acid-base balance?
 (a) Na⁺ (b) Cl⁻ (c) mn (d) K⁺
- (10) Which mineral plays important role as second messenger?
 (a) PhO₄ (b) K⁺ (c) Na⁺ (d) Calcium

Q.2 Answer in short (Any six)

[12]

- (1) Explain "Glucose and Manose are not epimeric pair".
- (2) Draw the structure of α -D galactofurnose and D-erythrose.
- (3) Define with example Essential amino-acids.
- (4) Draw the Structure of ATP and dAmp.
- (5) Define Nucleic acid and Nucleotides.
- (6) Define enthalpy and entropy.
- (7) Write Biochemical functions of Vit B₁.
- (8) Write dietary sources and RDA value for sodium.

Q.3 Explain in detail- Functions of Carbohydrates.

[08]

OR

Q.3 Write short note on (a) Maltose (b) Sucrose.

[08]

- Q.4 Explain in detail:
(a) Zwitter ion [04]
(b) Ninhydrin reaction for amino acids [04]
OR
- Q.4 Write short note on:
(a) Titration Curve of Glycine [04]
(b) Stereo-specificity [04]
- Q.5 Explain in detail 'Physical Properties of DNA'. [08]
OR
- Q.5 Explain in detail 'Secondary structure of DNA'. [08]
- Q.6 Explain the Function of
(a) ATP in cell as bioenergetics [04]
(b) Acetyl CoA [04]
OR
- Q.6 How metabolic reactions are interdependent as interconnected? [08]
- Q.7 (a) Explain Characteristics of Vitamins. [04]
(b) Write biochemical function of Vit. A. [04]
OR
- Q.7 Do as directed:
(a) Difference between Water soluble and Fat soluble vitamins. [04]
(b) Write Biochemical function of Vit. C. [04]
- Q.8 (a) List out Various biochemical functions of Calcium. [04]
(b) Write sources of Calcium. [04]
OR
- Q.8 List out Various biochemical functions of following:
(a) Iodine [04]
(b) Iron [04]



SARDAR PATEL UNIVERSITY**S.Y. B. Sc. Examination****Third Semester****BIOTECHNOLOGY****Paper - US03EMIC01**21st November 2011

10.30 AM – 1.30 PM

Total Marks: 70**Note:****Total number of Printed Pages: 02**

- 1) Figures in the right indicate the marks
- 2) Draw diagrams whenever needed.

Q-1 Select the Proper Option for the following MCQ's**40**

- 1 _____ was the person to report the accurate observation of microorganisms

A. Joseph Lister	C. Antony Von Leeuwenhoek
B. Paul Erlich	D. Louis Pasteur
- 2 At _____ °C temperature pasteurization process works

A. 52.8°C	C. 72.6°C
B. 62.8 °C	D. 62.6°C
- 3 Bacterial Flagella is composed of _____

A. Protein	C. Carbohydrate
B. Lipid	D. Fat
- 4 Rabies disease is transmitted to people by bite of _____ animal

A. Dog	C. Horse
B. Cat	D. Mice
- 5 What dye can be used to stain nucleus of acidic cell

A. Acidic	C. Neutral
B. Basic	D. None of above
- 6 Which oil gives best resolution in compound microscope

A. Cederwood Oil	C. Paraffin Oil
B. Balsam Oil	D. Coconut Oil
- 7 What acts as a mordant in gram's staining

A. Alcohol	C. Iodine
B. Crystal Violet	D. Saffranin
- 8 Organisms that uses sunlight as their sole source of energy are called

A. Autotroph	C. Phototroph
B. Hetrotroph	D. Lithotroph
- 9 What is example of Selective media

A. <u>Eosin Methylene Blue agar</u>	C. <u>Mac-conkey agar</u>
B. Nutrient agar	D. None of above
- 10 In what phase of growth curve cells are seen in dividing stage

A. <u>Lag</u>	C. <u>Exponential</u>
B. <u>Log</u>	D. Decline

Q-2 Give the proper Answers In short for the following Questions
(attempt any 10 each Question carries 2 marks)

20

1. Define Pasteurization
2. Define Microbiology
3. Give two points of importance of microbiology in field of Molecular Biology
4. Define Vaccine
5. Define Flagella
6. Define Chemotaxis
7. Define Dye
8. Define Mordants
9. Define Microscope
10. What are Chemotrophs
11. Enlist phases of Growth Curve
12. Define Enumeration media

Q-3 Give an account on Agricultural Microbiology

10

OR

Q-3(a) Describe Germ Theory of Disease

05

(b) Give an account on Koch's Postulate

05

Q-4(a) With a help of neat and labeled diagram explain the process of Sporulation

07

(b) Give a brief note on cytoplasmic inclusion bodies

03

OR

Q-4(a) Sketch ultra structure of Flagella and describe various forms of Flagella

06

(b) Give functional characteristics of Capsules

04

Q-5 Describe parts of a compound microscope with the help of neat and labeled diagram

10

OR

Q-5(a) Discuss Gram's Staining in detail

05

(b) Discuss the role of fixative with examples

05

Q-6(a) Discuss techniques used in isolation of pure culture

05

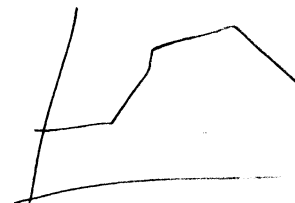
(b) Describe types of media

05

OR

Q-6 Discuss growth curve of *E. coli*

BEST OF LUCK



SARDAR PATEL UNIVERSITY
SY BSc EXAMINATION
Monday, 10th October
2011
2.30 - 5.30 pm
BT-201 BIOTECHNOLOGY
[FUNDAMENTALS OF BIOTECHNOLOGY]

NOTE- Figures in the right indicate full marks.

Maximum Marks-80

- Q-1 (a)** Describe significance of medical biotechnology and its contributions. **07**
- (b)** Write short notes on.
- i) Biological Databases. **03**
- ii) Application of biotechnology in pollution control. **03**
- OR**
- Q-1 (a)** Define Bioinformatics and explain its applications in various fields. **07**
- (b)** Define Biotechnology. Describe various contributions of animal biotechnology for cattle improvement. **06**
- Q-2 (a)** What is plasmid? Describe the salient feature of PUC8. **07**
- (b)** Discuss the Watson model of DNA double helix model. **07**
- OR**
- Q-2 (a)** What are different steps required for isolation of chromosomal DNA from bacterial cell. **07**
- (b)** Describe the basic properties and classification of plasmid. **07**
- Q-3 (a)** Restriction enzymes are site specific endonuclease, justify. **06**
- (b)** What is recombinant screening? Explain the process of visual selection by antibiotic. **07**
- OR**
- Q-3 (a)** With the help of labeled diagram explain the method for construction of recombinant. **07**
- (b)** Describe the preparation of competent cell and transformation with its application. **06**

PTO

- Q4. a. Explain the method of rolling circle model of replication. 7
b. Explain in detail the termination process of prokaryotic replication. 6

OR

- Q4. a. Discuss the bidirectional mode of replication in prokaryotes. 7
b. Define DNA replication. Explain the features of prokaryotic DNA replication. 6

- Q5. a. Write a note on trp operon. 7
b. Define gene. Also explain the concept of gene using a model example. 6

OR

- Q5. a. Explain the termination and anti-termination of transcription in prokaryotes. 7
b. Give an overview of the translation process in prokaryotes. 6

- Q6. a. Write a detail on ABO blood grouping and Rh system. 8
b. What is an antigen? Explain the properties and classification of antigens. 6

OR

- Q6. a. Explain in detail the structure of antibody. 6
b. Differentiate the following in tabular form. 8
1. Innate and acquired immunity
2. Primary and secondary immune response

~~OR~~

SARDAR PATEL UNIVERSITY
S.Y.B.Sc. EXAMINATION
2011

Tuesday, 11th October
2.30 p.m. to 5.30 p.m.

BIOTECHNOLOGY

Total marks-80

APPLICATIONS OF BIOTECHNOLOGY BT:202

- Q1a.** Define and discuss totipotency in plants. [04]
Q1b Enlist various nutrients in plant tissue culture, discuss their role. [09]

OR

- Q1a** Define and explain batch culture and continuous culture in detail. [09]
Q1b Discuss the role of light on the plants growing under in vitro. [04]

- Q2a.** What is somatic hybrid? Explain the techniques used to obtain them. [09]
Q2b Discuss meristem culture and its significance. [04]

OR

- Q2a** Define androgenic haploids? Discuss the pollen culture techniques of getting haploids. [07]
Q2b Explain the methods of obtaining protoplasts. [06]

- Q3a** Define biofertilizers and briefly explain their types, source and significance. Explain BGA cultivation in detail [09]
Q3b Describe the significance of mushroom. [05]

OR

- Q3** Write Short notes on:
a) Bacterial fertilizers [06]
b) Bioinsecticides and biopesticides [05]
c) Spore formation [03]

Q.4 (a) What are **Embryonic stem cell** and its transfer technology for the production of **transgenic mice** and discuss its various advantages and limitations. (10)

(b) Write a short note about **immobilized culture**. (04)

OR

Q.4 (a) Briefly describe the origin, characteristics and maintenance of **Continuous cell lines**. (07)

(b) Write short notes on:

i) Targetted gene transfer (04)

ii) Gene Disruption (03)

Q.5 (a) What are **Germplasm**? Write down different **collection methods** used for germplasm conservation. (08)

(b) Give a detail account about the **Somaclonal variations**. (05)

OR

Q.5 (a) Explain **Desiccated somatic embryos** and the production of **synthetic seed** and explain the importance. (08)

(b) Write a short note on **Ex-situ** and **In-situ** conservation. (05)

Q.6 (a) Discuss the role of enzymes in **food** and **pharmaceutical industries**. (07)

(b) Define and explain about **sources** and **applications** of following enzymes. (06)

i) Lipase

ii) Cellulase

OR

Q.6 (a) Write down about the **production** of new compounds using **enzymes**. (07)

(b) Role of different enzymes in **disease diagnosis** and **therapeutics**. (06)

—*—

SARDAR PATEL UNIVERSITY
S.Y. B.Sc. EXAMINATION
2011
Saturday, 15th October
2.30 pm to 5.30 pm
MI - 211: MICROBIOLOGY
(Fundamentals of Microbiology)

Total Marks: 80

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

Q-1 A Explain in detail with neat and labeled diagram disapproval of spontaneous generation theory. **13**

OR

A Give a brief account on main group of microorganisms. **07**
B Give contribution of: **06**

1. Antony Von Leeuwenhoek
2. Ignaz Philipp Semmlweis
3. Edward Jenner
4. Joseph Lister
5. Theodor Schwann
6. Francesco Redi

Q-2 A Give in detail general methods for classifying bacteria. **06**
B Define bacterial Spore. Draw a neat diagram with description of process of sporogenesis. **08**

OR

A Compare and Contrast eukaryote and prokaryote. **06**
B Give principle, construction, working and application of phase contrast microscopy. **08**

Q-3 A Describe various techniques used for isolation of anaerobic bacteria. **06**
B Discuss in detail role of nutritional component in growth of microorganisms. **07**

OR

A Explain growth curve of *E. coli*. **06**
B Define pure culture. Give in detail techniques used for isolation of pure culture. **07**

- Q-4**
- (A) Define following terms: [03]
(i) Decimal reduction time (ii) Antiseptic (iii) Bactericide
- (B) Discuss the various physical agents used to remove microorganisms from liquid and gases. [11]

OR

- Q-4**
- (A) Enlist ideal characteristics of an antimicrobial agent and discuss any three characteristics in detail. [08]
- (B) Discuss the mode of action of following:
- (i) Phenolic compounds [02]
(ii) Heavy metals [02]
(iii) Quaternary Ammonium compounds [02]

- Q-5**
- (A) Write a detail account on the transmission of disease. [08]
- (B) Write a short note on microbial virulence factor [05]

OR

- Q-5**
- (A) Explain Vaccines in detail. [08]
- (B) Write a short note on normal flora of skin. [05]

- Q-6**
- Define coliforms. Explain qualitative and quantitative bacteriological analysis of water [13]

OR

- Q-6**
- Write notes on the following:
- (A) Methylene blue reduction time (MBRT) test [05]
(B) Alcohol fermentation [08]

~~_____ X _____ X _____~~