

# Narshinbhai Patel Dental college & Hospital, Visnagar

BDS- 1<sup>st</sup> Year- EXAMINATION- 1st Internal Examination -2023-24

Subject Name: Human Physiology and Biochemistry, Nutrition and Dietetics

Date: 5/01/24

Total Marks: 50

Time: 2 Hrs.

- Instructions:**
1. Use separate answer book for each section.
  2. Attempt all questions
  3. Draw diagrams wherever necessary.
  4. Figure to the right indicate marks.

## SECTION-A

- Q.1 Answer Structured Long Essay** 07 Marks
- A) Describe mechanism of coagulation 12 Marks
- Q.2 Write Short Essay (Any 3 out of 5)**
- A) Erythropoiesis
- B) Feedback mechanism
- C) Functions of Growth hormone
- D) Erythroblastosis fetalis
- E) Properties of skeletal muscle 06 Marks
- Q.3 Answer Following short question.**
- A) Heparin
- B) Sarcomere
- C) Acromegaly
- D) Apoptosis
- E) Myasthenia gravis
- F) Helper T cells

## SECTION-B

- Q.4 Answer Structured Long Essay** 07 Marks
- A) Define Protein with Classification and Biological Significance. 12 Marks
- Q.5 Write Short Essay (Any 3 out of 5)**
- A) Vitamin D
- B) Stereoisomerism in Monosaccharides
- C) Structural organization of Protein
- D) Phospholipids
- E) Essential of Amino Acids 6 Marks
- Q.6 Answer following MCQ's**
- 1) Neutral amino acid is
- a) Leucine b) Lysin
- c) Aspartic acid d) Histidine
- 2) In mammals, the major fat in adipose tissues is
- a) Phospholipid b) Cholesterol
- c) Sphingolipids d) Triacylglycerol
- 3) A positive Benedict's test is not given by
- a) sucrose b) Maltose
- c) Glucose d) Lactose
- 4) Peptone is ..... type of protein.
- a) Conjugated b) not a protein
- c) Simple d) Derived
- 5) Retinal is a component of.....
- a) Iodopsin b) Rhodopsin
- c) Cardiolipin d) Glycoproteins
- 6) The imino acid present in protein structure is.....
- a) Lysine b) Arginine
- c) Proline d) Histidine

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**SANKALCHAND PATEL UNIVERSITY**BDS – 1<sup>st</sup> Year – EXAMINATION, JAN -FEB - 2024

Subject Code: 1DS1010102

Date: 20/02/2024

Subject Name: General Human Physiology &amp; Biochemistry, Nutrition &amp; Dietics

Time: 3HR

Total Marks: 70

**Instructions:**

1. Use separate answer book for each section.
2. Attempt all questions.
3. Draw diagrams wherever necessary.
4. Figures to the right indicate marks.

**SECTION – A (Physiology)**

- Q.1** Structured Long Essay with options (1 out of 2) 10
- A Define cardiac output. Describe factors regulating cardiac output. Add a note on any one method of measurement of cardiac output.
- B Define Erythropoiesis. Describe various stages in the development of RBC. Mention the factors regulating erythropoiesis.
- Q.2** Short Essay with options (3 out of 5) 15
- A Functions of Hypothalamus.
- B Functions of Cortisol.
- C Ovulation.
- D Vital capacity.
- E Composition and functions of Saliva.
- Q.3** Objective type Without options 5
- A What is the cause of plateau recorded in cardiac muscle action potential?
- B Enumerate sensations carried by spinothalamic tracts.
- C Define Glomerular Filtration Rate.
- D Functions of Chromosomes.
- E "Lack of iodine leads to Goitre." Explain.
- Q.4** MCQ's Without options 5
- A The Basal Ganglia does not contain
- a. Caudate Nucleus
  - b. Globus Pallidus
  - c. Subthalamic Nucleus
  - d. Red Nucleus
- B Extrinsic pathway of coagulation start with activation of
- a. Tissue factor
  - b. Labile factor
  - c. Stuart prower factor
  - d. Hagman factor
- C The segment of nephrone impermeable to water is
- a. Thin descending limb of loop of Henle
  - b. Thick ascending limb of loop of Henle
  - c. Late distal convoluted tubule
  - d. Collecting tubules

- D** Structure of heart with highest number of Impulse generation is
- S.A. node
  - A.V. node
  - Bundle of His
  - Purkinje fibers
- E** Normal tidal volume in adult person is
- 150 ml
  - 500 ml
  - 1000 ml
  - 4000 ml

## SECTION – B (Biochemistry, Nutrition & Dietics)

- Q.5** Structured Long Essay with options (1 out of 2) 10
- Define Transamination and Deamination. Describe urea cycle and its regulation.
  - Describe the functions, regulation & deficiency of serum calcium level.
- Q.6** Short Essay with options (3 out of 5) 15
- Hormonal regulation of blood glucose level.
  - Glycolysis in RBC.
  - Ascorbic acid.
  - Gout.
  - Enzyme classification.
- Q.7** Objective type Without options 5
- Define Ketoacidosis.
  - Why muscle glycogen cannot contribute to blood glucose level?
  - What is importance of fluorine in our body?
  - Name the plasma protein.
  - What are essential amino acids?
- Q.8** MCQ's Without options 5
- Which is bile salt? (a) Bilirubin (2) Sodium glycocholate (3) Sodium chloride (4) Potassium chloride.
  - Which is good cholesterol in our body? (a) HDL (b) LDL (c) VLDL (d) Chylomicron
  - Multiple forms of an enzyme is known as (a) Coenzyme (b) Cofactor (c) Isoenzyme (d) Allosteric enzyme
  - Immunoglobulin which can pass placenta (a) IgA (b) IgM (c) IgG (d) IgD
  - Chargaff's rule is followed by (a) tRNA (b) DNA (c) m-RNA (d) Purine

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Date: 2/08/ 2022

Instructions:

[Marks:-25]

- 1) Write to the point.
- 2) Draw diagrams wherever necessary.

Section-II

25

1. Write how various factors affect enzyme action. (7)
2. Write short notes on any Three. (3x4= 12)

- a. Vitamin D
- b. Hetero-polysaccharides
- c. Calcium
- d. Enzyme Inhibition
- e. Essential of Amino Acids

3. Multiple Choice Questions. (6X1=6)

I. Name of the vitamin whose deficiency cause Pernicious Anaemia is

- 1) Vitamin B<sub>12</sub>
- 2) Vitamin B<sub>5</sub>
- 3) Vitamin B<sub>1</sub>
- 4) Vitamin B<sub>2</sub>

II. Which proteins are Biocatalysts?

- 1) Antibodies
- 2) Hormones
- 3) Enzymes
- 4) None of the above

III. Which of the following is the richest source of Vitamin-C?

- 1) Beetroot
- 2) Amla
- 3) Orange
- 4) Grapes

IV. The imino acid present in protein structure is?

- 1) Arginine
- 2) Proline
- 3) Histidine
- 4) Lysine

V. Peptone is \_\_\_\_\_ type of protein.

- 1) Simple
- 2) Conjugated
- 3) Derived
- 4) not a protein

VI. Pepsin is an example for the class of enzyme namely

- 1) Oxidoreductase
- 2) Transferase
- 3)Hydrolase
- 4) Ligase

Date: Time: 2hrs.

Instructions:

[Marks:-25]

- 1) Write to the point.
- 2) Draw diagrams wherever necessary.
- 3) Separate answer for each section.
- 4) Figures to the right indicate full marks.

Section -I

1. Mechanisms of coagulation. (7)
2. Short Notes any Three. ( Three out of Five) (12)
  - A. Neuromuscular junction.
  - B. Blood transfusion.
  - C. Active transport.
  - D. Hypoxia.
  - E. Myasthenia gravis.
3. Answer in one line (Attempt all) (6)
  - A. Any two functions of plasma protein.
  - B. What is Bohr effect?
  - C. Erythroblastosis foetalis.
  - D. Sarcomere.
  - E. Surfactant.
  - F. Mitochondria.

**Narshinbhai Patel Dental college & Hospital, Visnagar**BDS First Year 2022 EXAMINATION 2<sup>nd</sup> Internal Examination -2022**Subject Name:** General Human Physiology & Biochemistry**Date:** 14/10/2022**Time:** 2 Hrs.**Total Marks:** 50**Instructions:**

1. Use separate answer book for each section.
2. Attempt all questions.
3. Draw diagrams wherever necessary.
4. Figures to the right indicate marks.

**SECTION – A**

- Q.1 Answer Structured Long Essay** **07 Marks**
- A) Explain transport of O<sub>2</sub> & CO<sub>2</sub>.
- Q.2 Write Short Essay (Any 3 out of 5)** **12 Marks**
- A) Hypoxia  
 B) Saliva secretion  
 C) Synapse  
 D) Posterior pituitary hormones.  
 E) Functions of Testosterone.
- Q.3 Answer Following short question.** **06 Marks**
- A) Dead space.  
 B) Parathormone  
 C) Ectopic pregnancy.  
 D) Neuroglia  
 E) Acromegaly  
 F) Name two GIT hormones.

**SECTION – B**

<b>Q.5</b>	<b>Answer Structured Long Essay</b>	<b>07 Marks</b>
A)	Explain Glycolysis in terms of chemical reactions, Net energy yield a Regulation.	
<b>Q.6</b>	<b>Write Short Essay (Any 3 out of 5)</b>	<b>12 Marks</b>
A)	Significance of NADPH	
B)	Gluconeogenesis	
C)	Digestion and Absorption of Carbohydrate	
D)	Cori Cycle	
E)	Thyroid Function Test	
<b>Q.7</b>	<b>Answer following MCQ's</b>	<b>6 Marks</b>
1)	Which of the following compound is not a substrate for Gluconeogenesis pathway?	
	A. Glycerol	B. Lactate
	C. Oxaloacetate	D. Glycogen

2)	Which of the following is required as a reductant in fatty acid synthesis?	
	A. NADH	B. NADPH
	C. FADH <sub>2</sub>	D. FMNH <sub>2</sub>
3)	Which of the following hormone decreases blood glucose and increases the uptake of glucose in various tissues like skeletal muscle, adipose tissues?	
	A. Glucagon	B. Epinephrine
	C. Insulin	D. Cortisol
4)	Disease of the _____ is a common cause of obstructive jaundice.	
	A. Liver	B. Gallbladder
	C. Heart	D. Pancreas
5)	Substrate-linked phosphorylation occurs in:	
	A. Glycolysis pathway	B. Citric acid cycle
	C. Both of the above	D. none of the above
6)	The enzyme involved in the conversion of glutamate to Ammonia is	
	A. Glutamase dehydrogenase	B. Glutamase
	C. Glumase decarboxylase	D. Glutamic oxidase

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**Narsinhbhai Patel Dental college & Hospital, Visnagar**

BDS- \_\_ Year- EXAMINATION- Preliminary -2022

Subject Name: Physiology &amp; Biochemistry

Date:23/12/22

Time:3Hrs.

TotalMarks: 70

**Instructions:**Use separate answer book for each section.  
Draw diagrams wherever necessary.Attempt all questions.  
Figure to the right indicate marks.**SECTION-A**

- Q.1 Answer Structured Long Essay (Any 1 out of 2) 10  
 A Define arterial blood pressure. Describe nervous regulation of blood pressure.  
 B Describe neural regulation of respiration.
- Q.2 Write Short Essay (Any 3 out of 5) 15  
 A Neuromuscular junction.  
 B Functions of plasma protein.  
 C Functions of bile.  
 D Reflex arch.  
 E Homeostasis.
- Q.3 Answer following short question. 5  
 A Surfactant.  
 B Endoplasmic reticulum.  
 C Phases of menstrual cycle.  
 D Functions of oxytocin.  
 E Action potential
- Q.4 Answer following MCQ's 5 Marks
- 1) Deficiency of growth hormone in childhood causes
 

A) Cretinism	B) Juvenile diabetes
C) Dwarfism	D) All of them
  - 2) The time required in one cardiac cycle is
 

A) 8 seconds	B) 0.8 seconds
C) 0.08 seconds	D) None of the above
  - 3) Absorption of vitamin B12 occurs in
 

A) Stomach	B) Duodenum
C) Jejunum	D) Ilium
  - 4) The type of hypoxia occurs at high altitude
 

A) Anemic hypoxia	B) Stagnant hypoxia
C) Hypoxic hypoxia	D) All of the above
  - 5) Which organelle is known as suicidal bag of cells?
 

A) Golgi body	B) Endoplasmic reticulum
C) Lysozyme	D) Mitochondria



**SECTION-B**

- Q.5 Answer Structured Long Essay (Any 1 out of 2) 10**  
 A Describe the metabolic changes during starvation in detail. Add a note on protein energy malnutrition.  
 B Describe in detail biochemical functions and deficiencies of Vitamin B12.
- Q.6 Write Short Essay (Any 3 out of 5) 15**  
 A Wald's Visual Cycle.  
 B BMR definition and factors.  
 C Digestion and Absorption of Lipid.  
 D Enzyme and Isoenzyme in Myocardial infarction.  
 E Biological importance of peptides
- Q.7 Answer Following short question. 5**  
 A What is an active site.  
 B What do you mean by activation energy.  
 C What is the chemistry of Biotin.  
 D Significance of glycemic index.  
 E What is Glycogenin.
- Q.8 Answer following MCQ's 5**
- The following is metalloprotein
 

A) Haemoglobin	B) Myoglobin
C) Ferritin	D) All of the above
  - Sanger's reagent contains:
 

A) Phenylisothiocyanate	B) Dansyl chloride
C) 1-fluoro-2, 4-dinitrobenzene	D) Ninhydrin
  - After calculating the energy requirement of a person
 

A) 10% kcal are subtracted on account of SDA	B) 10% Kcal are added on account of SDA
C) 20% kcal are subtracted on account of SDA	D) 20% Kcal are added on account of SDA
  - Glycemic index of the following is less than that of glucose:
 

A) Fructose	B) Lactose
C) Galactose	D) Maltose
  - The most powerful thyroid hormone is:
 

A) Reverse T3	B) DIT
C) T3	D) T4

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- 3 First appearance of hemoglobin is seen in which phase of erythropoiesis
  - a) Early normoblast
  - b) Intermediate normoblast
  - c) Late normoblast
  - d) Reticulocyte
- 4 Which of the following is the source of estrogen during the first two months of pregnancy:
  - a) Ovary
  - b) Placenta
  - c) Corpus luteum
  - d) Anterior pituitary
- 5 Which of the following cranial nerve carry taste sensation from posterior 1/3 of the tongue?
  - a) Fifth (5<sup>th</sup>)
  - b) Seventh (7<sup>th</sup>)
  - c) Ninth (9<sup>th</sup>)
  - d) Tenth (10<sup>th</sup>)

### SECTION – B (Biochemistry)

- |     |  |    |
|-----|--|----|
| Q.5 | Answer following Structured Long Essay questions (1 out of 2)  | 10 |
|     | <ol style="list-style-type: none"> <li>A Explain Glycolysis in terms of chemical reactions, Net energy yield and Regulation.</li> <li>B Explain Factors affecting enzyme activity in detail with required graphs.</li> </ol>   |    |
| Q.6 | Answer following Short Essay questions (3 out of 5)  | 15 |
|     | <ol style="list-style-type: none"> <li>A Congenital Disorder of Urea Cycle</li> <li>B Vitamin A</li> <li>C Diabetes Mellitus</li> <li>D Ca Metabolism</li> <li>E Malnutrition</li> </ol>   |    |
| Q.7 | Answer following short/ Objective type questions.  | 5  |
|     | <ol style="list-style-type: none"> <li>A What is SDA?</li> <li>B What is coenzyme?</li> <li>C Give name of Essential Fatty Acids?</li> <li>D Give name of ketogenic amino acids?</li> <li>E Define isoelectric point</li> </ol>  |    |
| Q.8 | Answer following MCQ's   | 5  |
|     | <ol style="list-style-type: none"> <li>1 The optically inactive amino acid is<br/>(a) Glycine (b) Serine (c) Threonine (d) Valine</li> <li>2 A dietary deficiency of tryptophan and nicotinate leads to<br/>(a) Beri Beri (b) Xerophthalmia (c) Anemia (d) Pellegra</li> <li>3 Sulphur containing amino acid is<br/>(a) Methionine (b) Leucine (c) Valine (d) Asparagine</li> <li>4 Vitamin synthesized by bacterial in the intestine is<br/>(a) A (b) C (c) D (d) K</li> <li>5 Ketone bodies are formed in<br/>(a) Kidney (b) Liver (c) Heart (d) Intestines</li> </ol> |    |

**SANKALCHAND PATEL UNIVERSITY**  
**BDS – (1<sup>st</sup>) Year – EXAMINATION – NOV-DEC 2021**

**Subject Code: 1DS1010102****Date: 07/12/ 2021****Subject Name: General Human Physiology & Biochem., Nutrition & Dietics.****Time: 3 Hrs.****Total Marks: 70****Instructions:**

1. Use separate answer book for each section.
2. Attempt all questions.
3. Draw diagrams wherever necessary.
4. Figures to the right indicate marks.

**SECTION – A (Physiology)**

- Q.1 Answer Structured Long Essay (1 out of 2) 10
- A Describe the structure, functions & fate of hemoglobin
- B Define blood pressure. Describe in detail regulation of blood pressure
- Q.2 Answer Short Essay (3 out of 5) 15
- A Neuromuscular junction
- B Origin and conduction of cardiac impulse
- C Functions of skin
- D Describe carbon dioxide carriage in blood
- E Growth Hormone
- Q.3 Answer following Objective type /short questions 5
- A What is homeostasis?
- B Name the photoreceptors and write their functions.
- C What is synapse?
- D Define GFR and write its normal value.
- E What is an action potential?
- Q.4 Answer following. 5
- 1 Hemophilia A is caused by deficiency of \_\_\_\_\_
- 2 Surfactant is secreted by \_\_\_\_\_
- 3 Name the site where digestion of the protein starts.
- 4 What is the cause of first heart sound?
- 5 Diabetes insipidus occurs due to insufficient release of \_\_\_\_\_

## SECTION – B (Biochemistry)

- Q.5 Answer Structured Long Essay (1 out of 2) 10
- A Write in detail about Urea cycle and its disorders.
  - B Write in detail about Glycolysis.
- Q.6 Answer Short Essay (3 out of 5) 15
- A PEM
  - B Vitamin A
  - C Liver Function Test
  - D Prostaglandins
  - E Beta-Oxidation of Fatty Acids
- Q.7 Answer following Objective type /short questions 5
- A Write definition of Gluconeogenesis.
  - B Write four names of essential amino acids.
  - C Write name of PUFA(Polyunsaturated Fatty Acid)
  - D Write name of Bile Pigment.
  - E Write two examples of competitive inhibitors of enzyme activity.
- Q.8 Answer following MCQ's 5
- 1 The sugar found in milk is :  
(A)Galactose (B)Lactose (C)Maltose (D)Sucrose
  - 2 At isoelectric pH, the amino acids and proteins show :  
(A) Maximum precipitability (B)Maximum net charge  
(C)Maximum Mobility in electric field (D)Maximum buffering action
  - 3 Name the defective enzyme in Phenylketonuria:  
(A)Tyrosinase (B)Para hydroxy phenylpyuvate oxidase  
(C) Homogentisite oxidase (D)Phenylalanine hydroxylase
  - 4 Pellagra is due to deficiency of :  
(A)Thiamine (B)Biotin (C)Riboflavin (D)Niacin
  - 5 Sphingomyelin on hydrolysis yields all the following except :  
(A)Choline (B)Glucose (C)Phosphate (D)Sphingosine

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**SANKALCHAND PATEL UNIVERSITY****BDS – (1<sup>st</sup>) Year – EXAMINATION – July-August – 2020****Subject Code: 1DS1010102****Date: 12/10/ 2020****Subject Name: General Human Physiology & Biochemistry, Nutrition & Dietics.****Time: 3 Hrs.****Total Marks: 70****Instructions:**

1. Use separate answer book for each section.
2. Attempt all questions.
3. Draw diagrams wherever necessary.
4. Figures to the right indicate marks.

**SECTION – A (Physiology)**

- Q.1 Answer Structured Long Essay (Any 1 out of 2) 10
- A Define cardiac cycle. Describe events & pressure changes of cardiac cycle.
- B Functions of cerebellum. Write a note on cerebellar dysfunction.
- Q.2 Write Short Essay (Any 3 out of 5) 15
- A Steps of erythropoiesis
- B Functions of saliva
- C Functions of glucocorticoids
- D Vital capacity
- E Glomerular filtration rate
- Q.3 Answer Following short question. 5
- A What is leucocytosis? Give it's two causes.
- B Define stroke volume.
- C What is Bohr effect?
- D Name the receptor & tract for pain sensation.
- E Define fatigue in skeletal muscle
- Q.4 Answer following MCQ's 5
- 1 Intrinsic pathway of coagulation starts with activation of:  
(A) Factor III (B) Factor VII (C) Factor X (D) Factor XII
- 2 Normal value of Tidal Volume is:  
(A) 500 ml (B) 1500 ml (C) 2500 ml (D) 5000 ml
- 3 Which of the following is not an extrapyramidal tract:  
(A) Reticulospinal (B) Rubrospinal  
(C) Corticospinal (D) Vestibulospinal
- 4 HCL & intrinsic factor in stomach secreted by:  
(A) Chief cell (B) Parietal cell (C) Mucus neck cell (D) 'G' cell
- 5 T wave in ECG showing:  
(A) Atrial depolarization  
(B) Atrial repolarisation  
(C) Ventricular depolarization  
(D) Ventricular repolarization

## SECTION – B (Biochemistry)

- Q.5 Answer Structured Long Essay (Any 1 out of 2) 10
- A Chemistry, sources, RDA, biochemical functions and deficiency manifestation of Vitamin D.
  - B Describe TCA cycle along with regulation and it's energetic.
- Q.6 Write Short Essay (Any 3 out of 5) 15
- A Give an account of  $\beta$  – oxidation of Fatty Acids
  - B Malnutrition
  - C Diagrammatic representation of ETC and sites of ATP production.
  - D Give the functional classification of proteins.
  - E Competitive and non competitive inhibitions.
- Q.7 Answer Following short question. 5
- A Give Examples of Sugars As Epimers.
  - B Name The Important Color Reaction Of Cholesterol.
  - C Give Name of The Imino Acids.
  - D What Are The Sources of the Vitamin A?
  - E What Is Lactose Intolerance?
- Q.8 Answer following MCQ's 5
- 1 The number of isomers of glucose is  
(A) 2 (B) 4 (C) 8 (D) 16
  - 2 The sugar found in DNA is  
(A) Xylose (B) Ribose (C) Deoxyribose (D) Ribulose
  - 3 An essential amino acid in man is  
(A) Aspartate (B) Tyrosine (C) Methionine (D) Serine
  - 4 Ketosis reflects  
(A) Increased hepatic glucose liberation (B) Increased fatty acid oxidation  
(C) Increased carbohydrate utilisation (D) Increased Gluconeogenesis
  - 5 Chemiosmotic theory for oxidative phosphorylation has been proposed by  
(A) Chance and Williams (B) Pauling and Corey  
(C) S. Waugh (D) P. Mitchell

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Seat No.: \_\_\_\_\_

PR No.: \_\_\_\_\_

**SANKALCHAND PATEL UNIVERSITY**

**BDS – (1<sup>st</sup>) Year – EXAMINATION – December – 2020**

**Subject Code: 1DS1010102**

**Date: 23/12/ 2020**

**Subject Name: General human physiology and biochemistry, nutrition and dietetics**

**Time: 3 Hrs.**

**Total Marks: 70**

**Instructions:**

1. Use separate answer book for each section.
2. Attempt all questions.
3. Draw diagrams wherever necessary.
4. Figures to the right indicate marks.

**SECTION – A (Physiology)**

- Q.1 Write Structured Long Essay (1 out of 2) 10
- A Describe the different stages of erythropoiesis and explain the factors that control erythropoiesis
- B Define arterial blood pressure. Describe the nervous regulation of arterial blood pressure
- Q.2 Write Short Essay (3 out of 5) 15
- A Functions of Bile salts
- B Functions of plasma proteins
- C Neuromuscular Junction
- D Describe the functions of thalamus
- E Taste Pathway
- Q.3 Answer following short objective questions. 5
- A Heparin
- B Sertoli cells
- C Glomerular filtration rate (GFR)
- D Surfactant
- E Peristalsis
- Q.4 Answer following MCQ's 5
- 1 Intrinsic factor, which helps in absorption of Vit. B12 is produced by:  
(A) Goblet cells  
(B) Chief cells of stomach  
(C) Beta cells of pancreas  
(D) Parietal cells of stomach
- 2 The male sex hormone testosterone is produced by  
(A) Sertoli cells  
(B) Epithelial cells  
(C) Interstitial cells of Leydig  
(D) Primitive germ cells



- 3 Functional unit of kidney is  
(A) Glomerulus  
(B) Nephron  
(C) Collecting ducts  
(D) Loop of Henle
- 4 Plasma  $\text{Na}^{++}$  level is mainly influenced by  
(A) Aldosterone  
(B) Cortisol  
(C) Noradrenaline  
(D) Vasopressin
- 5 Resting Cardiac output in human is  
(A) 5 L  
(B) 2 L  
(C) 8 L  
(D) 10 L

### SECTION – B (Biochemistry)

- Q.5 Write Structured Long Essay (1 out of 2) 10
- A Describe sources, daily requirements, functions and deficiency manifestations of Vitamin D  
B Define enzymes. Explain clinical applications of enzymes with suitable examples
- Q.6 Write Short Essay (3 out of 5) 15
- A Functions of Proteins  
B Oxidative Phosphorylation.  
C Balanced diet  
D Hormonal regulation of blood glucose  
E A 50-year-old female patient presented with frequent urination and excessive thirst. Laboratory investigations showed Blood Glucose level: 210 mg/dl  
i) Name the probable diagnosis?  
ii) What is the normal value of Blood Glucose?  
iii) What is the biochemical basis for frequent urination?
- Q.7 Answer following short objective questions. 5
- A Write normal serum Iron level.  
B State genetic defect in sickle cell anemia.  
C Name the vitamin which prevents beri beri.  
D Enlist essential amino acids.  
E Name the disorder of inborn error of amino acid metabolism in which urine of patient turns black on standing.

Q.8 Answer following MCQ's

5

- 1 The chain composition of Fetal Hemoglobin is
  - A.  $\alpha\alpha\beta\beta$
  - B.  $\alpha\alpha\delta\delta$
  - C.  $\alpha\alpha\gamma\gamma$
  - D.  $\alpha\alpha\epsilon\epsilon$
- 2 Deficiency of vitamin B<sub>12</sub> causes:
  - A. Cheilosis.
  - B. Beriberi.
  - C. Pernicious anemia.
  - D. Scurvy.
- 3 Which is NOT an essential nutrient?
  - A. Linoleic Acid
  - B. Tryptophan
  - C. Ascorbic Acid
  - D. Tyrosine
- 4 A The nucleotide present at the 3' end of t-RNA is
  - A. uridylate
  - B. cytidylate
  - C. thymidylate
  - D. adenylate
- 5 If BMR is decreased in all the following EXCEPT
  - A. Fever
  - B. Addison's disease
  - C. Starvation
  - D. Hypothyroidism

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Internship

Narshinbhai Patel Dental College & Hospital, Visnagar

Sub: General Human Physiology & Biochemistry  
First internal examination (JAN 2019)  
First Year B.D.S

Date: 08/01/2019

Instructions:

- 1) Write to the point.
- 2) Draw diagrams wherever necessary.

Time: - 2 hrs.  
[Marks:-25]

Section II-Biochemistry (25 Marks)

Q. 1. Discuss the following:

1×7=7

1. Describe sources, chemistry, functions, RDA and deficiency manifestation of Vitamin D

Q. 2. Write short notes: (any three)

3×4=12

1. Role of Enzymes in clinical diagnosis
2. Classification of Lipids with suitable examples
3. Mucopolysaccharides
4. Functions of Vitamin E and Vitamin K
5. Structure and functions of Mitochondria

Q. 3. MCQs

6×1=6

- a. We cannot digest the Cellulose due to deficiency of \_\_\_\_\_ enzyme in human?  
(a)  $\alpha$  (1-4) Glycosidase (b)  $\beta$  (1-4) Glycosidase (c)  $\alpha$  (1-6) Glycosidase (d) none
- b. Which one is not a non covalent interaction?  
(a) Hydrogen bond (b) vanderwalls interaction (c) Hydrophobic interaction (d) peptide bond
- c. Pepsin is an example for the class of enzyme namely  
(a) Oxidoreductase (b) transferase (c) Hydrolase (d) ligase
- d. The group of enzymes involved in joining two molecule with chemical bond is known as  
(a) Lyase (b) Synthase (c) ligase (d) kinase
- e.  $\beta$  carotene has \_\_\_\_\_ like activity.  
(a) Vitamin E (b) vitamin C (c) vitamin A (d) vitamin B1
- f. \_\_\_\_\_ is a constituent of cane sugar and most commonly known as "Table sugar"  
(a) Lactose (b) Maltose (c) Sucrose (d) Glucose.

**1<sup>st</sup> year BDS Internal Examination  
Paper Set 3**

**Q-1: Long Question.**

- 1) Describe in detail Regulation of Blood Pressure

1x7 Marks (7 Marks)

**Q-2: Short Notes. (3 out of 5)**

- 1) Regulation of Cardiac Output
- 2) Active Transport
- 3) Layers of Gastrointestinal Tract
- 4) Functions of Plasma proteins
- 5) Membrane proteins

3x4 Marks (12 Marks)

**Q-3: One Liner.**

- 1) Composition of Gastric Juice
- 2) Function of RBC
- 3) Bradycardia
- 4) Ejection Fraction
- 5) Macrophage
- 6) Dysphagia

6x1 Marks (6 Marks)



**DEPARTMENT OF BIOCHEMISTRY**  
**Narsinhbhai Patel Dental College and Hospital, Visnagar**  
**1<sup>st</sup>BDS 2<sup>nd</sup> Internal Examination (2018-2019 Batch)**  
**THEORY Question Paper SET III**

Date: 28/2/2019

Time: 10.30 a.m. to 12.30 p.m.

Marks: 60

**Instructions**

1. The number to the right indicates full marks
2. Draw diagrams wherever necessary
3. Do not write anything on the blank portion of the question paper. If anything is written, such type of act will be considered as attempt to resort to unfair means.

**Section B (Biochemistry)**

**Question 4: Describe TCA cycle with energetics. Why it is called amphibolic pathway 1 X 7 (7 marks)**

**Question 5: Write short notes on any THREE 3 X 4 (12 Marks)**

- a) Decarboxylation reactions and their biological importance.
- b) Differentiate between aerobic and anaerobic glycolysis
- c) How is ammonia formed in the body? Describe signs and symptoms of hyperammonaemia.
- d) Outline the formation of biologically important products formed from tyrosine
- e) Describe regulation of Calcium levels in the body

**Question 6 : MCQs All Questions are COMPULSARY 6 X 1 (6Marks)**

- 1) Which statement concerning gluconeogenesis and glycolysis is correct?
  - b) Gluconeogenesis is catabolic and glycolysis is anabolic
  - c) Both are anabolic
  - d) Gluconeogenesis is anabolic and glycolysis is catabolic
  - e) Both are catabolic.
- 2) Epinephrine is derived from
  - a) Tyrosine b) Tryptophan c) Histidine d) Glycine
- 3) HMP pathway is essential for all EXCEPT
  - a) Transparency of lens b) Integrity of RBC membrane
  - c) Reduce Methaemoglobin level d) Provide 2, 3 BPG for RBCs
- 4) Albinism is due to deficiency of enzyme
  - a) Phenylalanine hydroxylase b) Tyrosinase
  - c) Para Hydroxyphenylpyruvate Oxidase d) Tyrosine Dehydrogenase
- 5) von Gierke's disease is caused due to deficiency of
  - a) Glucose-6-phosphatase b) Glucose-6-phosphate dehydrogenase
  - c) Muscle Glycogen phosphorylase d) Debranching enzyme
- 6) During Urea cycle, the two nitrogen atoms are derived from Ammonia and
  - a) arginine b) aspartic acid c) ornithine d) glutamine

# physiology & Biochemistry

## 1<sup>st</sup> year BDS Internal Examination

~~Paper Set 1~~  
Section - I

Q-1: Long Question.

1x7 Marks (7 Marks)

- 1) Describe in detail Structure of Cell Membrane. Give brief detail of Membrane Proteins.

Q-2: Short Notes. (3 out of 5)

3x4 Marks (12 Marks)

- 1) Properties of Cardiac Muscle.
- 2) Passive Transport
- 3) Function of Saliva
- 4) Humoral Immunity
- 5) Mechanism of HCL Production

Q-3: One Liner.

6x1 Marks (6 Marks)

- 1) Intrinsic Factor
- 2) Peptic Ulcer
- 3) Tachycardia
- 4) Ejection Fraction
- 5) Landstiener law
- 6) Dysphagia

Narsinhbhai Patel Dental College & Hospital, Visnagar  
Sub: General Human Physiology & Biochemistry  
Preliminary Examination (May 2019)  
First Year B.D.S

Date: 21/5/2019

Time: - 3 hrs.

**Instructions:**

- 1) Write to the point.
- 2) Draw diagrams wherever necessary.
- 3) Separate answer for each section.

**Section -II [Marks:-35]**

Q-5: State Normal Blood Glucose level. Describe how insulin and glucagon regulate glucose levels. Between meals and overnight the insulin level in the blood falls. If this did not happen, what would be the effect on the blood glucose level, and why? (10)

OR

Q-5: What is the normal serum calcium level? Elaborate on the maintenance of calcium homeostasis. (10)

Q-6: Write notes on: (Three out of five) (15)

1. Characteristics of Genetic code.
2. Specialized products formed from Tyrosine.
3. Competitive enzyme Inhibition.
4. Jaundice.
5. Deficiency manifestation of Vitamin A.

Q-7: Answer in one-line: (five) (5)

1. Which chemical bond forms the backbone of protein structure?
2. Which mineral is present in hemoglobin?
3. How many molecules of acetyl-CoA are produced in oxidation of palmitic acid (C<sub>16</sub>)?
4. What is the accepted hypothesis for DNA replication?
5. Reactions of TCA cycle and electron transport system occurs in which organelle?

(5)

Total Marks : 35  
Instruction : 1)

Q-8:MCQs: (five)

1. Adding \_\_\_\_\_ to a breakfast of cereal will help your body absorb iron.
  - a. milk
  - b. orange juice
  - c. coffee
  - d. water
2. The nitrogen atoms of urea produced in the urea cycle are derived from
  - a. nitrate
  - b. ammonia and aspartic
  - c. nitrite
  - d. ammonia
3. Vitamin C or ascorbic acid prevents
  - a. Scurvy
  - b. Rickets
  - c. Pellagra
  - d. Night Blindness
4. Sickle cell disease is due to
  - a. a mutation in the beta chain of Hb
  - b. a mutation in the alpha chain of Hb
  - c. infection with a parasite
  - d. lack of synthesis of beta chain
5. Nucleotides in DNA and RNA are strongly connected by
  - a. Glycosidic bonds
  - b. Phosphodiester linkages
  - c. Hydrogen bonds
  - d. Purine – pyrimidine interactions



Narsinhbhai Patel Dental College and Hospital, Visnagar

1<sup>ST</sup> YEAR BDS, Prelim Examination, Physiology

Total Marks : 35

Date: 21/05/19

Time : 11 to 02 pm

Instruction : 1) Write to the Point

- 2) Draw diagram wherever necessary
- 3) Separate answer book for each section
- 4) Figures to the right indicate full marks.

SECTION -1

Q-1 Long Question (Answer Any One)

1. Describe Blood pressure and its Regulation
2. Describe Functions of THALAMUS and HypoTHALAMUS

Q-2 Short Question (Answer Any Three)

1. Hypoxia
2. Errors of Refraction
3. Actions of Thyroid hormone
4. Functions of Saliva
5. Excitation contraction coupling

Q-3 Answer in One Line

1. Testosterone
2. GFR
3. Pinocytosis
4. Surfactant
5. Hemophilia

Q-4 MCQS

1. What is the normal Tidal volume?  
A) 2500 ml      B) 500ml      C) 1000 ml      D) 1250 ml
2. Which coagulation pathway begins with tissue thromboplastin?  
A) Extrinsic pathway      B) Intrinsic pathway      C) Common pathway      D) Fibrin stabilization
3. Which of the following is an encapsulated receptor that detects indentation of the skin (pressure) and movement across the surface (vibration)?  
A) Pacinian corpuscle      B) Meissner's corpuscle      C) Free nerve endings      D) Ruffini endings
4. Which of the following is the middle ear ossicle that is attached to the tympanic membrane?  
A) Columella      B) Incus      C) Malleus      D) Stapes
5. Estrogen is mainly secreted by  
A) Theca interna cell      B) Corpus luteum      C) Anterior Pituitary      D) Uterus

**SANKALCHAND PATEL UNIVERSITY**BDS - 1<sup>st</sup> Year - EXAMINATION - NOV/DEC - 2019

Subject Code: 1DS1010102

Date: 11/12/2019

Subject Name: General Human Physiology and Biochemistry, Nutrition and Dietetics

Time: 3 hours

Total Marks: 70

Instructions:

Seat No.: \_\_\_\_\_

PR No.: \_\_\_\_\_

**SANKALCHAND PATEL UNIVERSITY**BDS - 1<sup>st</sup> Year - EXAMINATION - Jun-July - 2019

Subject Code : 1DS1010102

Date: 17/07/2019

Subject Name: General Human Physiology &amp; Biochemistry, Nutrition &amp; Dietics

Time: 3 hours

Total Marks: 70

Instructions:

1. Use separate answer book for each section.
2. Attempt all questions.
3. Draw diagrams wherever necessary.
4. Figures to the right indicate marks.

**SECTION - A**

- |     |  |   |    |    |
|-----|--|---|----|----|
| Q.1 | Answer following Structured Long Essay     | (1 out of 2)  | 10 | 10 |
|     | A  | Define cardiac cycle. Describe in detail with the help of a diagram. The mechanical changes during cardiac cycle.                   |    |    |
|     | B  | Define haemostasis. Describe in detail about Extrinsic and Intrinsic mechanism of clotting?   |    |    |
| Q.2 | Write Short Essay on following             | (3 out of 5)  | 15 | 5  |
|     | A  | Functions of hypothalamus   |    |    |
|     | B  | Explain components and functions of bile  |    |    |
|     | C  | Micturition reflex  |    |    |
|     | D  | Explain the different types of Hypoxia  |    |    |
|     | E  | Write the features of Acromegaly  |    |    |
| Q.3 | Answer following short/Objective questions |   | 5  | 5  |
|     | A  | Name the phases of menstrual cycle  |    |    |
|     | B  | Myopia  |    |    |
|     | C  | Homoeostasis  |    |    |
|     | D  | Sarcomere   |    |    |
|     | E  | Gap junctions   |    |    |
| Q.4 | Answer following MCQ's Without options     |   | 5  | 1  |
|     | 1  | The maximum volume of air that can be released from the lungs by forceful expiration after deepest inspiration is called the _____. |    |    |
|     |  | (A) Vital capacity  |    |    |
|     |  | (B) Total lung capacity   |    |    |
|     |  | (C) Tidal volume  |    |    |
|     |  | (D) Residual volume   |    |    |
|     | 2  | The total volume of CSF is  |    |    |
|     |  | (A) 50 ml   |    |    |
|     |  | (B) 100 ml  |    |    |
|     |  | (C) 150 ml  |    |    |
|     |  | (D) 275 ml  |    |    |

- 3 Normal Glomerular filtration rate (GFR)  
 (A) 60 ml/ min  
 (B) 180 ml/min  
 (C) 125 ml/min  
 (D) 200 ml/min
- 4 The first heart sound is produced by the  
 (A) Closure of the aortic and pulmonary valves  
 (B) Opening of the aortic and pulmonary valves  
 (C) Closure of the mitral and tricuspid valves  
 (D) Opening of the mitral and tricuspid valves
- 5 Functional unit of kidney is  
 (A) Nephron  
 (B) Glomerulus  
 (C) Collecting ducts  
 (D) Loop of Henle

### SECTION – B

- Q.5 Answer following Structured Long Essay (1 out of 2) 10  
 A Definition, Classification, RDA source, Function and Deficiency Symptoms of Fat soluble Vitamins.  
 B Definition, Biological Importance and Classification of Carbohydrates.
- Q.6 Write following Short Essay (3 out of 5) 15  
 A Renal Function Test  
 B Beta-oxidation  
 C Malnutrition Disorders  
 D Inborn Errors of Amino Acid Metabolism  
 E Urea Cycle
- Q.7 Answer following short/Objective questions 5  
 A SDA acronym stands for what.  
 B Give the name of Essential Fatty Acids.  
 C Definition of Isoenzymes  
 D Role of Thiamine in carbohydrate metabolism  
 E Define haematuria.
- Q.8 Answer following MCQ's 5
- 1 Sulphur containing amino acid is  
 (A) Methionine (B) Leucine (C) Valine (D) Asparagine
  - 2 Glycogenesis requires  
 (A) GTP (B) CTP (C) UTP (D) None of these
  - 3 All are useful substances produced from cholesterol except?  
 (A) Vitamin D (B) Bile Salts (C) Bile pigments (D) Cortisol
  - 4 The optically inactive amino acid is  
 (A) Glycine (B) Serine (C) Threonine (D) Valine
  - 5 A lipoprotein inversely related to the incidence of coronary atherosclerosis is  
 (A) VLDL (B) IDL (C) LDL (D) HDL

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**SANKALCHAND PATEL UNIVERSITY**BDS – 1<sup>st</sup> Year – EXAMINATION – NOV/DEC – 2019

Subject Code:IDS1010102

Date:11/12/ 2019

Subject Name: General Human Physiology and Biochemistry, Nutrition and Dietetics

Time: 3 hours

Total Marks: 70

**Instructions:**

1. Use separate answer book for each section.
2. Attempt all questions.
3. Draw diagrams wherever necessary.
4. Figures to the right indicate marks.

**SECTION – A**

- Q.1** Structured Long Essay (1 out of 2) 10
- A Describe cardiac cycle in detail.  
B Describe regulation of respiration in detail.
- Q.2** Answer following Short Essay (3 out of 5) 15
- A Deglutition  
B Hypoxia  
C Menstrual cycle  
D Neuromuscular Junction  
E Anemia
- Q.3** Answer following short/Objective type questions. 5
- A Normal Tidal volume is.....  
B Landsteiner Law  
C Blind Spot  
D Defination of cardiac output  
E Normal Cardiac Output is.....
- Q.4** Answer following MCQ's 5
- A Pacemaker of Respiratory System is.....  
A) Medulla B) Pons C) Cerebellum D) Hypothalamus  
B Value of  $V_A/Q$  is.....  
A) 0.8 Sec B) 0.8 C) 0.8 minute D) 0.08  
C Which is the neurotransmitter released at neuromuscular junction?  
A) Acetyl Co A B) Adrenaline C) Nor adrenaline D) Acetyl choline  
D Normal Value of Glomerular Filtration Rate is  
A) 125 ml/min B) 180 ml/min C) 125 L/day D) 120 ml/min  
E Normal serum bilirubin level is.....  
A) 0.5 to 1.5 mg/dl B) 0.4 mg/dl C) 0.4 gm D) 0.1 mg/dl

## SECTION – B

- Q.5** Structured Long Essay (1 out of 2) 10
- A Describe sources, daily requirements, functions and deficiency manifestations of Vitamin A
  - B Define enzymes. Explain clinical applications of enzymes with suitable examples
- Q.6** Answer following Short Essay (3 out of 5) 15
- A Functions of proteins
  - B Electron transport chain
  - C Balanced diet
  - D Hormonal regulation of blood glucose
  - E A 50-year-old female patient complains of painful swollen joints and shows hyperuricemia.
    - i) Name the probable disease
    - ii) What is the normal value of serum Uric Acid?
    - iii) What is the biochemical basis for swollen joints?
- Q.7** Answer following short/Objective type questions. 5
- A Write normal serum calcium level
  - B Which globin chain of hemoglobin is mutated in sickle cell anemia
  - C Name the vitamin which prevents pellagra
  - D Enlist chemical bonds involved in protein structure
  - E Name the disorder of inborn error of metabolism in which the pigment melanin is not synthesized.
- Q.8** Answer following MCQ's 5
- A The protein present in hair is
    - a) Elastin b) Prolamin c) Keratin d) Gliadin
  - B In a 30-year old jaundiced patient, investigations show reticulocytosis, absence of urinary bilirubin with normal liver function tests. The most likely diagnosis is
    - a) Hemolytic jaundice
    - b) Hepatic jaundice
    - c) Obstructive jaundice
    - d) Physiologic jaundice
  - C Which is NOT an essential nutrient?
    - a) Linoleic Acid b) Tryptophan c) Ascorbic Acid d) Tyrosine
  - D A student is extremely nervous before appearing for final examination and is breathing rapidly. What do you expect out of the following?
    - a) Metabolic Acidosis
    - b) Metabolic Alkalosis
    - c) Respiratory Acidosis
    - d) Respiratory Alkalosis
  - E If double stranded DNA has 14 % guanine. What is the percentage of adenine?
    - a) 36%
    - b) 14%
    - c) 28%
    - d) 72%

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