

4TH YEAR BSc. MLT

BIOCHEMISTRY-IV

MINERAL METABOLISM

ESSAY-10MARKS

1. Describe the metabolism of calcium and Phosphorus?
 - Source
 - Requirement
 - Absorption
 - Function
 - Reregulation
 - Clinical significance
2. Discuss the maintenance of serum calcium level?
 - Hormonal regulation-parathyroid hr and calcitonin, vit D)
3. Describe the factors which favors the absorption of iron from the intestine
 - Mechanism,
 - Factors causing increased and decreased absorption
4. Describe the metabolism of calcium?
 - Source
 - Requirement
 - Absorption
 - Function
 - Regulation
 - clinical condition
5. Describe the iron absorption in the intestinal tract?
 - Factors influencing,
 - Mucosal block theory
6. Give an account of the dietary sources, absorption and utilization of iron?
 - source

- Requirement
 - Absorption
 - Function
 - Regulation
 - Clinical condition
7. Describe iron metabolism
- Source
 - Requirement
 - Absorption
 - Function
 - Regulation
 - Clinical condition
8. Describe the absorption, transport and method of iron?
- Source
 - Requirement
 - Absorption
 - Function
 - Regulation
 - Clinical condition
9. Enumerate the factors that influence the absorption of calcium. Give briefly how blood calcium levels are regulated?
- PTH
 - Calcitonin
 - Vit.D
 - Calcium homeostasis
 - Amino acids
 - Acidity
10. Describe iron metabolism in the body. Explain estimation of serum iron
- Source
 - Requirement
 - Absorption

- Function
- Regulation
- Clinical condition
- Estimation methods

11. Describe the regulation of blood calcium . what are the methods for the estimation of blood calcium

- Metabolism
- Regulation
- Estimation methods

SHORT NOTES -5 MARKS

1. Calcium estimation and metabolism?

- Method
- Principle
- Procedure
- Interpretation
- Metabolism

2. Phosphorus

- Requirement
- Source
- Function
- Normal range
- Clinical significance

3. Regulation of blood calcium level

- Vit.D
- PTH
- Calcitonine
- Paracalcitonine

4. Factors affecting absorption of calcium

- Vit.D

- PTH
 - Acids
 - Acidity
5. Trace elements
- Source
 - Requirement
 - Functions
 - Normal range
 - Clinical conditions
6. Homoeostatic mechanism of calcium?
- Vit.D
 - PTH,
 - Calcitonine
 - Paracalcitonine
7. Iron absorption
- Factors influencing absorption
 - Mucosal block theory
8. Ferritin
- Define
 - Action
 - Importance)
9. Tranferrin
- Define
 - Action
 - Importance
10. Iron metabolism
- Source
 - Requirement
 - Absorption
 - Function

- Regulation
 - Clinical condition
11. Metabolic role of copper and zinc
- Functions
12. Metabolic role of Na,Ca and Fe in human body
- Functions
13. Metabolic role of zinc and selenium
- Functions
14. Iron containing compound in the human body
- Hb
 - Mb
 - Cyt
 - Catalase et
15. Estimation of Phosphorus
- Method name
 - Principle procedure
 - Interpretation
 - Metabolism
16. Estimation of calcium
- Method name
 - Principle
 - Procedure
 - Interpretation
 - Metabolism
17. Sodium
- Functions
 - Importance
 - Normal level
 - Clinical conditions

18. Pottassium

- Functions
- Importance
- Normal level
- Clinical condition

19. Wilsons Disease

- Define
- Causes
- Features
- Lab investigation

20. Hypothyroidism

- Define
- Causes
- Features
- Lab investigation

21. Estimations and clinical significance of serum phosphorus

- Introduction
- Different methods
- Principle
- Procedure
- Significance

22. Copper metabolism and disorders associated with it

- Source
- Requirement
- Absorption
- Function
- Regulation
- Clinical condition

23. Estimation of serum electrolytes

- Serum electrolytes
- Estimation methods

24. Estimation of serum sodium
 - Sodium introduction
 - Estimation methods
25. Regulation of iron absorption
 - Iron introduction
 - Regulation mechanisms
26. Estimation of serum potassium
 - Method name
 - Principle
 - Procedure
 - Interpretation
 - Metabolism

ANSWER BRIEFLY -3 MARKS

1. Zinc
2. Copper
3. Iodine
4. Magnesium
5. Sodium
6. Potassium
7. Fiske and Subbarow method
8. OCPC method
9. Hyperkalemia
10. Addison's Disease
11. Chlorine
12. Hypercalcemia
13. Hypocalcemia
14. Hormonal regulation of Calcium
15. Hyperphosphataemia
16. Hypophosphataemia
17. Role of Sulphur

18. Storage of iron
19. TIBC
20. Ferritin
21. Haemosiderin
22. Transferrin
23. Haemoprotein
24. Dietary source Of iron and its role
25. Mucosal block theory
26. Iron deficiency Anaemia
27. Functions of Copper
28. Functions of magnesium
29. Flourosis
30. Sources and role of zinc
31. Selenium toxicity
32. Test meals
33. Hyper chlorhydria
34. Achlorhydria
35. Achlia gastric
36. Histamine stimulation tests
37. Hollanders tests
38. Phosphate buffer
39. Chloride estimation
40. Estimation of Zn
41. Estimation of iodine
42. Estimation of copper
43. Biochemical role of copper
44. Biochemical role of iodine
45. Estimation of iron
46. Biochemical role of magnesium
47. What is normal potassium level and mention two features of hypokalemia
48. What is the normal level in serum 1.sodium2. potassium 3.calcium
49. Biochemical role of Zn

FUNCTION TESTS

ESSAYS-10MARKS

1. Classify kidney function tests, Describe the urea clearance test in details
 - Explain with classification
 - Clearance-define
 - Method,
 - Procedure,
 - Normal range,
 - Clinical importance
2. Describe the Renal function tests
 - Explain with classification
3. Define clearance and Describe the urea clearance
 - Define
 - Method
 - Procedure,
 - Normal range
 - Clinical importance
4. Describe Gastric function tests
 - Explain with classification
 - Collection
 - Clinical significance
5. Discuss about collection of gastric juice. Add a note about fractional test meal
 - Method name
 - Procedure
 - Requirements
 - Explain with types of fractional test meal
6. Describe the liver function tests
 - Introduction
 - Classification
 - Explanations and interpretations

- Clinical significance
7. Enumerate the various Liver function tests.add a notes on liver specific enzymes
 - Introduction
 - Classification
 - explanations and interpretations
 - Clinical significance
 8. Enumerate the various Liver function tests.add a note on detoxification functions of liver
 - Introduction
 - Classification
 - Explanations and interpretations
 - Clinical significance
 9. Describe about thyroid function tests.add a notes on Thyroid hormones
 - Introduction
 - Classification
 - Synthesis
 - Interpretations
 - Clinical significance
 10. Discuss in detail the test to assess glomerular function of the kidney
 - Classify and explain
 - Clinical significance
 11. Enumerathe the liver function tests and explain their clinical significance
 - Introduction
 - Classification
 - Explanations and interpretations
 - Clinical significance
 12. Describe TFT and the diseases associated with its dysfunction
 - Introduction
 - Classification
 - Explanations and interpretations
 - Clinical significance

13. Describe TFT

- Introduction
- Classification
- Explanations and interpretations
- Clinical significance

SHORT NOTES-5MARKS

1. Chronic hepatitis

- Classification
- Causes
- Lab investigation
- Clinical manifestations

2. Liver Cirrhosis

- Causes
- Lab investigation
- Clinical manifestations

3. Cholestasis

- Types
- Causes
- Lab investigation
- Clinical manifestations

4. Vanden Bergh Test

- Direct & indirect test - principle
- Reagents
- Procedure
- Interpretations

5. Hippuric acid test

- Types
- Method
- Interpretations

6. Detoxification Functions of liver

- Types
- Method
- Interpretations

7. BSP retention test

- Principle
- Method
- Interpretation

8. Direct and indirect vandenBergh test

- Direct& indirect test - principle
- Reagents
- Procedure
- Interpretations

9. Liver Enzymes

- Names
- Significance
- Normal range
- Clinical conditions

10. Jaundice

- Types
- Causes
- Lab investigation
- Clinical manifestations

11. SGOT

- Role
- Clinical significance
- Normal level
- Estimation

12. Estimation of Liver Enzymes

- Method name

- Principle
 - Procedure
 - Clinical significance
13. Renal function test
- Classifications
 - Principle
 - Method
 - Interpretation
14. Urea clearance
- Principle
 - Method
 - Normal range
 - Interpretation
15. Creatinin clearance
- Principle
 - Method
 - Normal range
 - Interpretation
16. GFR
- Define
 - Normal range
 - Importance
17. Tubular function test
- Define
 - Types
 - Methods
 - Interpretations
18. Inulin clearance test
- Importance and procedure
 - Interpretations

19. Endogenous clearance test

- Types
- Importance and procedure
- Interpretations

20. Test for Renal blood flow

- Types
- Importance and procedure
- Interpretations

21. Test for tubular function

- Types
- Importance and procedure
- Interpretations

22. Concentration and Dilution test

- Types
- Importance and procedure
- Interpretations

23. PSP test

- Importance and procedure
- interpretations

24. Gastric function test

- Type
- Importance and procedure
- Interpretations

25. Malabsorption

- Define
- Causes
- Clinical significance
- Tests

26. Test for occult blood in Faeces

- Types
 - Method
 - Principle
 - Procedure
 - Interpretations
27. Schilling test
- Types
 - Method
 - Principle
 - Procedure
 - Interpretations
28. D-xylose absorption test
- Types
 - Method
 - Principle
 - Procedure
 - Interpretations
29. Faecal fat estimation
- Types
 - Method
 - Principle
 - Procedure
 - Interpretations
30. Examination of resting content
- Procedure
 - Interpretations
31. Free and total acidity
- Define
 - Estimations
 - Graph
 - Interpretation

32. Stimulation test
 - Types
 - Method
 - Principle
 - Procedure
 - Interpretations
33. Histamine stimulation test
 - Principle
 - Procedure
 - Interpretations
34. Augmented stimulation testtest
 - Principle
 - Procedure
 - Interpretations
35. Pentagastrin test
 - Principle
 - Procedure
 - Interpretations
36. Tubeless Gastric analysis
 - Types
 - Principle
 - Procedure
 - Interpretations
37. Alcohol Fractional Test mealtest
 - Principle
 - Procedure
 - Interpretations
38. Test for adrenal disfunction
 - Introduction
 - Different test

- Procedure
 - Principle
 - Significance
39. Test for endocrine pancreatic function
- Introduction
 - Function tests
 - Significance
40. Gonadal function tests
- Introduction
 - Function tests
 - Significance
41. Test for gastric function
- Introduction
 - Function tests
 - Significance
42. Liver enzyme profile in obstructive jaundice
- Enzymes
 - Clinical significance
43. Pancreatic digestive enzymes
- Enzymes
 - Clinical significance
44. Estimation of total acidity and titrable acidity
- Introduction
 - Estimation methods
 - Clinical significance
45. Biochemical assay of lung maturity
- Tests classification and explanation
46. HDN
- Introduction

- Causes
 - Symptoms
 - Tests
 - Treatment
47. TFT
- Introduction
 - Function tests
 - Significance
48. Enzyme profile for liver function
- Enzymes
 - Clinical significance
49. Laboratory investigations of jaundice
- Tests
 - Clinical significance
50. Laboratory investigations of thyroid dysfunction
- Tests
 - Clinical significance
51. Collection of gastric juice
- Introduction
 - Indications of GFT
 - Gastric juice
 - Collection tubes and procedures
 - Precautions
52. Micro albuminuria
- Introduction
 - Causes
 - Symptoms
 - Tests
53. Laboratory investigations of iron deficiency anemia

- Tests and significances
- 54. Methods to estimate serum bicarbonate
 - Methods
 - Interpretations
- 55. Describe the causes and laboratory diagnosis of haemolytic jaundice
 - Jaundice introduction
 - Causes
 - Tests
 - Interpretation
- 56. Synthesis of thyroid hormones and methods available for its estimation
 - Thyroid hormones significance
 - Synthesis
 - Tests
 - Interpretations
- 57. Laboratory findings in prehepatic, hepatic and post hepatic jaundice
 - Jaundice
 - Tests
 - Interpretation
- 58. Significance of specific gravity of urine in renal function tests
 - RFT introduction
 - Specific gravity
 - Tests
 - Interpretations
- 59. Tests to assess hepatic injury
 - Tests and interpretations
- 60. Hypothyroidism
 - Introduction
 - Causes
 - Symptoms

➤ Tests and significance

ANSWER BRIEFLY-3MARKS

1. Schilling test
2. Vandenberg test
3. Specific gravity test
4. Test for female infertility
5. Three characteristic findings in obstructive jaundice
6. Sweat chloride test
7. Specific gravity of urine
8. D xylose absorption test
9. Tests for occult blood in faeces
10. Urinary findings in different jaundices
11. HDN
12. Hyperthyroidism
13. Tests for occult blood in faeces
14. Test to assess fetal lung maturity
15. Faecal fat estimation
16. Titrable acidity
17. Triple test
18. Laboratory investigations of polyuria
19. Estimation of free and total acidity in gastric juice
20. Exogenous marker of GFR
21. Tests for renal tubular functions
22. Pentagastrin test
23. Screening of Cushing's syndrome
24. Test to estimate serum bilirubin
25. Urobilinogen
26. Significance of sweat chloride estimation
27. Prothrombin time
28. Test for male infertility

ACID BASE BALANCE

ESSAY – 10 MARK

1. Define buffer. Add note about body buffer system
 - Definition of buffer
 - Mechanism
 - Examples with detail
2. Define P^H , add a note about renal regulation of P^H .
 - Define
 - 4 stages of renal regulation of P^H with diagrams
3. Respiratory and renal regulation of P^H
 - Regulation
 - Role of kidney and lungs disorders
4. Discuss the disturbance in acid base balance
 - Write detail about alkalosis and acidosis-causes
 - Stages
 - Symptoms
 - Compensatory mechanism
5. Acidosis and alkalosis
 - Write detail about alkalosis and acidosis-causes
 - Stages
 - Symptoms
 - Compensatory mechanism
6. Write detail about fluid and electrolyte balance
 - Hr.regulation
 - Rennin angiotensin mechanism
 - Na/k metabolism
7. Define P^H , add a note about estimation of blood gases.
 - Define
 - Detection methods of P^H

- Blood gas analysis
8. What is the normal P^H of blood ? explain the role of plasma buffers and renal mechanism in the maintenance of acid –base balance of the body
- Define
 - Role of buffers
 - Renal regulation
9. What is the titratable acidity of urine? What is the role of kidney in maintaining acid base balance
- Define titratable acidity
 - Renal regulation
10. Discuss the regulation of pH . Describe the principles and procedure of arterial blood gas analysis
- Define pH
 - Role of buffers
 - Renal regulation
 - Respiratory regulation
 - ABG analyser- principle , procedure , clinical importance
11. What is the normal plasma pH? What are the different mechanisms for the regulation of acid base balance. Describe the renal regulation of pH
- Define PH
 - Normal pH
 - Role of buffers
 - Renal regulation
 - respiratory regulation
 - Renal regulation in detail

SHORT NOTES-5 MARKS

1. Body buffer system
- Definition
 - Mechanism

- Examples
- And it's role
- 2. Respiratory regulation of P^H
 - Define
 - Regulation with diagram
 - Disorders
- 3. Alkalosis
 - Define
 - Types
 - Causes
 - Compensatory mechanism
- 4. Acidosis
 - Define
 - Types
 - Causes
 - Compensatory mechanism
- 5. P^H
 - Define
 - Regulation
 - Mechanism
 - Detection methods
- 6. Metabolic acidosis
 - Define
 - Causes
 - Compensatory mechanism
 - Symptoms
 - Treatment
- 7. Metabolic alkalosis
 - Define
 - Causes

- Compensatory mechanism
 - Symptoms
 - Treatment
8. Respiratory alkalosis
- Define
 - Causes
 - Compensatory
 - Mechanism
 - Symptoms
 - Treatment
9. Respiratory acidosis
- Define
 - Causes
 - Compensatory mechanism
 - Symptoms
 - Treatment
10. Osmolality
- Definition
 - Role
11. Blood gas estimation
- Principle
 - Procedure
 - Parameters
 - Precautions
12. Bicarbonate buffer system of blood
- Define
 - Mechanism
 - Role
13. Alkali reserve
- Define

- Mechanism
14. describe the principle and functioning of Ph meter
- Introduction
 - Principle
 - Working
15. What are the renal mechanisms for regulating acid base balance
- Define
 - Regulation with diagram
 - Disorders
16. Factors regulating fluid balance
- Fluid balace components
 - Factors for regulation
17. Assessment of acid base status
- Define
 - Regulation
 - Mechanism
 - Detection methods

ANSWER BRIEFLY -3 MARKS

1. Body buffers
2. Respiratory regulation of P^H
3. p^H
4. Metabolic acidosis
5. Metabolic alkalosis
6. Respiratory alkalosis
7. Respiratory acidosis
8. Osmolality
9. Osmolar gap
10. Anion gap
11. ABG analyser

12. Describe the salient features of metabolic acidosis
13. Define osmolality and mention the normal plasma osmolality
14. Normal levels of po_2 , pco_2 , serum bicarbonate

AUTOMATION

ESSAYS-10MARKS

1. Define Automation. explain the different types of auto analyzers
 - Definition
 - Types
 - Parts
 - Merits and demerits
2. Define automation. Write in detail about discrete analyzers
 - Define
 - Types
 - Part
 - Procedure
 - Merits
 - Demerits
3. Define automation. Write in detail about Continues flow analyzers
 - Define
 - Types
 - Parts
 - Procedure
 - Merits
 - Demerits
4. Definition, Functions, Principle, Different parts and functions, Merits and demerits of different auto analysers
 - Define
 - Types

- Parts
 - Procedure
 - Merits
 - Demerits
5. Enumerate various types of auto analyzers. Describe the principle, parts ,function, merits and demerits of dry chemistry analyzer
- Define
 - Types
 - Parts
 - Procedure
 - Merits
 - Demerits
6. Describe principle, parts and functions of auto analyzers
- Definition
 - Principle
 - Parts
 - Functions
7. Describe principle, parts and functions of semi automated analyzers
- Definition
 - Principle
 - Parts
 - Functions
8. Discuss the parts , functions , merits and demerits of fully automatic analyzers
- Define
 - Types
 - Parts
 - Procedure
 - Merits
 - Demerits
9. Describe principle, parts and functions of semi automated analyzers. How it is different from fully automated analyser

- Definition
- Principle
- Parts
- Functions
- Difference between semi and fully automatic analysers

SHORT NOTES-5 MARKS

1. CFA

- Define
- Types
- Parts
- Picture
- Procedure
- Merits
- Demerits

2. Semi auto analyzer

- Define
- Types
- Parts
- Procedure
- Merits
- Demerits

3. Centrifugal analyzer

- Types
- Method
- Merits
- Demerits

4. LIS

- Definition
- Components
- Uses

5. Recent trends in automation

- New method
- Principle
- Procedure
- Examples
- Merits and demerits

6. Fully auto analyzer

- Types
- Method
- Features
- Merits
- Demerits

7. Drychemistry analyzer

- Types
- Method
- Merits
- Demerits

8. Discrete analyzer

- Types
- Method
- Merits
- Demerits

9. Batch analyzers

- Types
- Method
- Merits
- Demerits

10. Random access analyzer

- Types
- Method
- Merits

- Demerits
11. Automation in clinical lab
 - Types
 - Method
 - Merits
 - Demerits
 12. STAT analyzer
 - Types
 - Method
 - Merits
 - Demerits
 13. POCT
 - Definition applications
 14. Discuss the principles of laboratory automation
 - Types of auto analysers and principles
 15. Describe the merits and demerits of dry chemistry analyser
 - Types
 - Method
 - Merits
 - Demerits

ANSWER BRIEFLY-3MARKS

1. LIS

QUALITY CONTROL

ESSAYS-10MARKS

1. Define QC. Write in detail about IQC
 - Definition
 - Types
 - IQC
 - QC charts
 - Errors
 - Control sera
 - Variables
 - Statistics
2. Write an essay on internal quality control
 - IQC
 - QC charts
 - Errors
 - Control sera
 - Variables
 - Statistics
3. Define QC.add a note on QC charts
 - Definition of QC types
 - Types of charts types
 - Definition
 - Uses merits
 - Demerits
 - Examples with diagrams
4. Write an essay on QC
 - Definition
 - Types
 - IQC
 - EQC
 - QC charts

- Errors
 - Control sera
 - Variables
 - Statistics
5. Discuss the quality control programmes in a clinical laboratory
- Definition
 - Types
 - IQC
 - EQC
 - QC charts
6. Define quality in laboratory management . Discuss the principles and elements of quality management. Add a note on quality control programmes
- Definition
 - Principles and elements
 - Types
 - IQC
 - EQC
 - QC charts

SHORT NOTES-5 MARKS

1. QC charts
 - Types
 - Definition
 - Uses merits
 - Demerits
 - Examples with diagrams
2. LJ charts
 - Purpose
 - Features and Chart
3. Referance interval

- Definition
- Preparation
- Use
- Significance

4. Preanalytical variables

- Definition
- Variables
- Corrections

5. Analytical variables

- Definition
- Variables
- Corrections

6. Control sera

- Preparation
- Purpose
- Storage
- Method

7. Quality control programme

- IQC & EQC

8. IQC

- Definition
- Errors
- Correction procedure
- Statistical procedures
- Control sera

9. EQC

- Definition
- Procedure
- authorised agency
- Control sera

- Statistics
- 10. Statistical procedure used in establishing reference values
 - Measures of central tendency
 - Measures of dispersion
- 11. Quality assessment
 - Definition
 - Procedures
 - Programmes
 - Interpretations
- 12. Errors
 - Definition
 - Types
 - Errors
 - Corrections
- 13. Sensitivity and specificity
 - Definition
 - Importance
- 14. Cusum chart
 - Purpose
 - Features and Chart
- 15. West guard rules
 - Rules and explanations
- 16. 16 Establishment of reference interval
 - Definition
 - Preparation
 - Use
 - Significance
- 17. Postanalytical variables
 - Definition

- Variables
- Corrections

18. Standard deviation

- Definition
- Importance
- Formula
- Calculation

ANSWER BRIEFLY-3MARKS

1. Precision
2. Accuracy
3. Sensitivity
4. Specificity
5. Normal Value
6. Random errors
7. Systemic errors
8. SD
9. Mean
10. CV
11. Mode
12. LJ charts
13. Use of reference values
14. Control sera
15. Difference between accuracy and precision
16. Describe three preanalytical variables
17. Define standard deviation and how it is calculated
18. Define precision and accuracy
19. Difference between sensitivity and specificity

HORMONES

ESSAY-10MARKS

1. Write in detail about synthesis, storage and role of thyroid hormone. Add a short note about Estimation of thyroid hormones
 - Synthesis
 - Storage
 - Regulation
 - Mechanism of action
 - Clinical significance
2. Write in detail about synthesis, storage and role of adrenal hormone. Add a short note about Estimation of adrenal hormones
 - Synthesis
 - Storage
 - Regulation
 - Mechanism of action
 - Clinical significance
3. Write in detail about synthesis, storage and role of adrenal cortex hormone. Add a short note about Estimation of adrenal hormones
 - Synthesis
 - Storage
 - Regulation
 - Mechanism of action
 - Clinical significance
4. Write in detail about synthesis, storage and role of adrenal hormone. Add a short note about Estimation of adrenal medullary hormones
 - Synthesis
 - Storage
 - Regulation
 - Mechanism of action
 - Clinical significance

5. Define hormones. Describe the mechanism of action of group 2 hormones
 - Definition
 - Types of mechanism
6. Define hormones. Describe the mechanism of action of group 1 hormones
 - Definition
 - Types of mechanism
 - Explanation with examples
7. Write in detail about synthesis, storage and role of pancreatic hormone. Add a short note about Estimation of pancreatic hormones
 - Synthesis
 - Storage
 - Regulation
 - Mechanism of action
 - Clinical significance

SHORT NOTES-5MARKS

1. Hormone receptor
 - Define
 - Characteristics
2. G protein
 - Structure
 - Types
 - Diagram
3. Insulin receptor
 - Structure
4. Insulin
 - Structure
 - Mechanism of action
 - Functions

5. Hypothalamic hormones
 - Types
 - Synthesis
 - Function
 - Clinical importance
6. TFT
 - Types
 - Synthesis
 - Function
 - Clinical importance
7. Mineralocorticoids
 - Types
 - Synthesis
 - Function
 - Clinical importance
8. Glucocorticoids
 - Types
 - Synthesis
 - Function
 - Clinical importance
9. Aldosterone
 - Types
 - Synthesis
 - Function
 - Clinical importance
10. Mechanism of action of group2 hormones
 - Mode of actions with examples
11. Anterior pituitary hormones
 - Typesynthesis
 - Function

- Clinical importance
- 12. Mechanism of action of group 2 hormones
 - Mechanism of action with example
- 13. Parathyroid hormones
 - Types
 - Synthesis
 - Function
 - Clinical importance
- 14. cAMP
 - Synthesis
 - Mechanism of action
 - Role as 2nd messengers
- 15. cGMP
 - Synthesis
 - Mechanism of action
 - Role as 2nd messengers
- 16. posterior pituitary hormones
 - Type
 - Synthesis
 - function
 - Clinical importance
- 17. ADH
 - Synthesis
 - Functions
 - Clinical importance
- 18. Oxytocin
 - Synthesis
 - Function
 - Clinical importance

19. Growth hormone
 - Synthesis
 - Function
 - Clinical importance
20. Catecholamines
 - Synthesis
 - Function
 - Clinical importance
21. Steroid hormones
 - Synthesis
 - Function
 - Clinical importance
22. Estimations of catecholamones
 - Method
 - Principle
 - Procedure
 - Normal range
 - Clinical significance
23. Estimations of VMA and its significance
 - Method
 - Principle
 - Procedure
 - Normal range
 - Clinical significance
24. Estimations of 5OH IAA
 - Method
 - Principle
 - Procedure,
 - Normal range
 - Clinical significance

25. Estimations of 17 Ketosteroid (17 oxosteroids)

- Method
- Principle
- Procedure
- Normal range
- Clinical significance

26. Pancreatic hormones

- Synthesis
- TYPES
- Role
- Significance
- Regulations

27. Glucagon

- Synthesis
- Structure
- Role
- Regulation
- Mechanism of action
- Significance

28. Gonadal hormones

- Synthesis
- Structure
- Role
- Regulation
- Mechanism of action
- Significance

29. Parathyroid hormones

- Synthesis
- STRUCTURE
- Role
- Regulation

- mechanism of action
 - Significance
30. Determination of estrogen in plasma and urine
- Introduction
 - Method
 - Principle
 - Procedure
 - normal range
 - Clinical significance
31. General techniques in steroid estimation
- Introduction
 - Method
 - Principle
 - Procedure
 - normal range
 - Clinical significance
32. Urinary VMA
- Synthesis
 - function
 - estimation
 - clinical importance
33. Urinary 17 ketosteroids
- Synthesis
 - function
 - estimation
 - clinical importance
34. Synthesis of thyroid hormones and methods available for its estimation
- Synthesis
 - function
 - estimation
 - clinical importance

35. Mechanism of action of steroid hormones
 - Mechanism of action with example
36. Action of insulin in regulating blood glucose
 - Insulin action in various pathways of carbohydrate metabolism (glycolysis, gluconeogenesis , glycogen metabolism)

ANSWER BRIEFLY-3MARKS

1. FSH
2. LH
3. Thyroid hormone
4. Parathyroid hormone
5. Progesterone
6. Biosynthesis of estriol
7. Adrenal hormones and associated diseases
8. VMA
9. Urinary 5HIAA
10. Synthesis of adrenocortical hormones
11. Determination of urinary estriol
12. Urinary 17 ketosteroids
13. Urinary VMA estimation
14. Urinary 5HIAA estimation
15. Action of insulin on lipid metabolism
16. Formation of progesterone

ORGANIZATION AND MANAGEMENT OF BIOCHEMISTRY LABORATORY

ESSAY-10MARKS

1. Organization and management of the Clinical biochemistry lab
 - Structure and organization
 - Equipment
 - Document system

- Safety
- Manpower

TOXICOLOGY

ESSAY-10MARKS

1. General methods of analysis and screening test for common drugs used in therapy
 - Drugs classification
 - Methods-principle
 - Procedure
 - Interpretations

SHORT NOTES-5MARKS

1. LSD
 - Types
 - Mechanism of action
 - Uses
 - Adverse effects
 - Analysis
2. Barbiturate
 - Types
 - Mechanism of action
 - Use
 - Adverse effects
 - Analysis
3. Paracetamol
 - Types
 - Mechanism of action
 - Uses
 - Adverse effects

- Analysis
- 4. Antidepressant drugs
 - Types
 - Mechanism of action
 - Uses, adverse effects
 - Analysis
- 5. Drug assay in clinical biochemistry
 - Types
 - Mechanism of action
 - Uses, adverse effects
 - Analysis methods

ANSWER BRIEFLY-3MARKS

1. Screening test for barbitone

MOLECULAR BIOLOGY

ESSAY -10 MARK

1. Describe about the process of DNA replication in detail
 - Definition
 - Types
 - Stages of replication
 - Inhibitors
 - Diagram
2. Describe about replication in detail, add a note about difference of replication in eukaryotes and prokaryotes
 - Define
 - Stages
 - Picture
 - Difference between eukaryotes and prokaryotes
3. DNA repair mechanism

- Definition
 - Classification
 - Clinical aspect of repair mechanism
4. Central dogma of genetics
- Replication
 - Transcription
 - Translation
5. Define transcription, add a note about stages of transcription and post transcriptional modifications.
- Definition
 - Stages
 - Diagram, and posttranscriptional modification
6. Define translation, add a note about stages of translation and post transcriptional modifications.
- Definition
 - Stages
 - Diagram
 - And post transcriptional modification
7. Regulation of gene expression in prokaryotes
- Types and stages- operon concept
8. Discuss about translation and add a note about genetic code
- Definition
 - Stages of translation
 - Characters of genetic code
9. Regulation of gene expression in eukaryotes
- Types and stages
10. Define PCR ,stages of PCR, and add it's applications
- Define
 - Stages

- Types
- Applications

11. Define blotting technique, add a note about southern blotting

- Definition
- Types
- Southern blotting technique-stages and application

SHORT NOTES-5 MARK

1. Central dogma of genetics

- Replication
- Transcription
- Translation

2. Replication

- Definition
- Stages
- Diagram

3. DNA polymerase

- Action
- Types in eukaryotes and prokaryotes

4. Semiconservative mode of replications

- Definition
- Types
- Salient features

5. Major enzymes and other proteins involved in DNA replication

- Enzymes and proteins in replications

6. Add a note about cell cycle and its role

- Cell cycle and different phases

7. Difference between replication in eukaryotes and prokaryotes

- Table representation of difference between eukaryotes and prokaryotes
8. DNA polymerase and RNA polymerase
 - It's action
 - Classification
 - Role in genetics
 9. DNA repair mechanism
 - Define
 - Different types of defects
 - And different types of mechanism
 10. Stages of transcription
 - Initiation
 - Elongation
 - Termination
 - Post transcriptional modifications
 11. Genetic code
 - Salient features of genetic code
 12. Translation of m-RNA
 - Explain the stages with diagram
 13. Chaperone
 - Define
 - Mechanism
 - Properties
 - Examples
 14. Inhibitors of replication
 - Write examples of each drug with it's role
 15. Inhibitors of transcription
 - Write examples of each drug with it's role
 16. Inhibitors of translation

- Write examples of each drug with it's role
17. Lac operon
- Picture
 - Repression
 - Derepression mechanisms
18. Mutations
- Define
 - Classifications
 - Mutagens
 - Detection
19. Vectors
- Define
 - Types
 - Role
 - Classification
20. Cloning
- Define
 - Stages
 - Application
21. Gene library
- Definition
 - genetic library
 - c.DNA library
 - DNA probes
 - Applications
22. Blotting technique
- 3 types and applications
23. Southern blotting
- Definition

- Procedure
 - Stages
 - Application
24. Northern blotting
- Definition
 - Procedure
 - Stages
 - Application
25. Western blotting
- Definition
 - Procedure
 - Stages
 - Application
26. T-RNA
- Structure
 - Parts
 - Classification
 - Function
27. RT-PCR
- Stages
 - Procedure
 - Difference between conventional PCR and RT PCR
28. HGP
- Define
 - History,
 - Benefits
29. FISH
- Define
 - Stages
 - Application

30. Protein folding and protein targeting
 - Define
 - Stages
 - Factors
31. Recombinant DNA technology
 - Define
 - Stages
 - Application
32. Post transcriptional modifications
 - Modification methods
33. Post translational modifications
 - Modification methods
34. Tools for recombinant DNA technology
 - Define
 - Stages
 - Tools
 - Application
35. 35)Prenatal diagnosis of genetic disorder
 - Diagnostic methods-principle and procedure

ANSWER BRIEFLY- 3 MARKS

1. DNA polymerase
2. Semiconservative mode of replications
3. Major enzymes and other proteins involved in DNA replication
4. Cell cycle
5. Difference between replication in eukaryotes and prokaryotes
6. DNA polymerase and RNA polymerase
7. Genetic code
8. Chaperone
9. Inhibitors of replication

10. Inhibitors of transcription
11. Inhibitors of translation
12. Gene library
13. Vectors used in recombinant DNA technology
14. Southern blotting
15. Post translational modifications
16. Cloning
17. Structure of DNA
18. FISH
19. PCR
20. Protein targeting
21. Blotting techniques
22. Protein folding
23. Applications of blotting techniques in laboratory diagnosis
24. Gene therapy
25. Okazaki fragments

COMMON TOPICS

SHORT NOTES- 5 MARKS

- Ion selective electrodes
- Flame photometry
- Tumor markers

ANSWER BRIEFLY – 3 MARKS

- Flame photometry
- Principles of colourimetry
- Principles of flame photometry
- Bohr effect