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GOVERNMENT OF KARNATAKA
BOARD OF EXAMINING AUTHORITY
D. Pharm Part-II Examination (ER-2020) JANUARY 2024
BIOCHEMISTRY & CLINICAL PATHOLOGY

Time: 3 Hours **Max marks: 80 M**

Note: i) Answer 6 questions from section A, 10 questions from section B and all questions from section C.
ii) Draw diagram wherever necessary.
iii) Answer to the point for objective type.

SECTION –A

Long Essay (Answer any six) 6X5=30 M

1. Explain the qualitative tests of carbohydrates.
2. Define and classify proteins with examples. Explain the deficiency diseases of proteins.
3. Define and classify lipids with examples. Write the functions of lipids.
4. Discuss factors affecting enzyme action with graphs and equations.
5. Discuss in detail the role of fat soluble vitamins.
6. Explain glycolysis. Write its bioenergetics.
7. Describe urea cycle. Write its significance.

SECTION –B

Short Essay (Answer any ten) 10X3=30 M

8. Write a note on biological role of carbohydrates.
9. What are essential amino acids? List them.
10. Functions of RNA.
11. Write a note on diagnostic applications of enzymes.
12. Write the functions of Vitamin C, vitamin B12 and folic acid.
13. Write a note on ketone bodies, its test and significance.
14. Explain transamination with an example.
15. Write the functions of calcium, iron, phosphorous.
16. Write a note on water balance.
17. Mention the abnormal constituents of urine. Write their significance.
18. What is lipid profile?

SECTION –C

Objective type (Answer all questions) 20X1= 20M

19. Who coined the term 'Biochemistry'?
20. Structure of sucrose.
21. Give two examples of unsaturated fatty acids.
22. Mention pyrimidine bases.
23. What is holoenzyme?
24. What is an inhibitor? Give an example.
25. Role of biotin.
26. What is normal level of cholesterol in humans?
27. Write the deficiency diseases and symptoms of iodine.
28. What is RDA for zinc?
29. Which is the major anion of extracellular fluid?
30. Define genetic engineering.
31. Rothera's test is used to test _____.
32. Proteins acting as bio-catalyst are called as _____.
33. Full form of SGPT is _____.
34. Vitamin B12 deficiency causes _____.
35. Match the following:

A	B
1) Glycogenesis	a) 38 ATPs
2) ATP gain in TCA cycle	b) Electron Transfer Chain.
3) Cytochrome oxidase	c) Synthesis of glycogen
4) Albinism	d) 12 ATPs
	e) Breakdown of glycogen
	f) Abnormal protein metabolism

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Code No. : 2608

BIOCHEMISTRY AND CLINICAL PATHOLOGY

Time : 3:00 Hours] **[Maximum Marks : 80**

NOTES:

i) Attempt **all** parts.

ii) Students are advised to specially check the Numerical Data of question paper in both versions. If there is any difference in Hindi Translation of any question, the students should answer the question according to the English version.

iii) Use of Pager and Mobile Phone by the students is not allowed.

PART-A

(Long Questions)

Attempt any six questions. Each question carries equal marks. [6 × 5 = 30]

Q1) Define carbohydrates. Classify carbohydrates with examples.

Q2) What are proteins? Classify proteins with suitable examples.

Q3) What are triglycerides? Give properties of triglycerides.

Q4) What is DNA? Describe structure of DNA (Watson and Crick model)

Q5) What are enzymes? Discuss the different factors affecting enzymatic actions.

Q6) Describe Krebs cycle.

Q7) Write in short the various tests to assess the functions of liver.

PART-B

(Short Questions)

Attempt any ten questions. Each question carries equal marks. [10 × 3 = 30]

Q1) Why is the mitochondria called the powerhouse of the cell?

Q2) Write a note on qualitative tests for carbohydrates.

Q3) Write about diseases related to malnutrition of proteins.

Q4) Give therapeutic and pharmaceutical importance of enzymes.

Q5) Give the functions and deficiency disorder of cyanocobalamin.

Q6) Write a note on urea cycle.

Q7) What are Ketone bodies? Write a note on Ketogenesis.

Q8) Define and classify minerals with suitable examples.

Q9) Write a note on oral rehydration therapy.

Q10) What is blood? Write functions of blood.

Q11) How sugar is detected in urine?

PART-C

(Objective Type Questions)

Answer all questions. Each question carries equal marks. [20 × 1 = 20]

Q1) Which of the following monosaccharide is not on aldohexose?

a) fructose
b) glucose
c) galactose
d) mannose

Q2) Which of the following amino acids is not an essential amino acids:

a) valine
b) leucine
c) histidine
d) glycine

Q3) Cholesterol is a

a) Phospholipid
b) Steroid
c) Fatty acids
d) Glycolipid

Q4) The major component of biological membrane is.

a) steroid
b) fatty acids
c) phospholipid
d) glycolipid

Q5) _____ are the major purine bases found in the nucleic acids.

a) Adenine
b) Guanine
c) Adenine and guanine
d) Thymine

Q6) Enzymes that split the molecules with water.

a) Lipase
b) Hydrolases
c) Isomerase
d) None

Q7) Coenzymes are organic but_____ molecules.

a) Nonprotein
b) Protein
c) Both A and B
d) None

Q8) The process of blood clotting is initiated by

a) fibrinogen
b) thrombin
c) prothrombin
d) thromboplastin

Q9) Beriberi is caused by the deficiency of _____.

a) riboflavin
b) niacin
c) folic acid
d) thiamine

Q10) Phosphoglyceralde hyde is an important intermediate stage in the breakdown of

a) carotene
b) starch
c) glucose
d) haemoglobin

Q11) Glycogenesis is the synthesis of _____

a) glucose
b) glycogen
c) glyceral
d) starch

Q12) β-oxidation is the breakdown of

a) polypeptides
b) longchain fattyacids
c) aminoacids and sugar
d) polysaccharides

Q13) Which of the following element is required for constriction of muscles.

a) Ca^{++}
b) Na^{+}
c) Mg^{++}
d) Mn^{++}

Q14) Goitre is caused by the deficiency of

a) chloride
b) fluorine
c) iodine
d) sulphide

Q15) An adult human contains about_____of water.
(60% / 80%)

Q16) Vaccine is the product of _____.
(biotechnology/biological science)

Q17) High density lipoprotein cholesterol (HDL cholesterol) is a _____cholesterol.
(good/bad)

Q18) Urea is the end product of _____ metabolism.
(Carbohydrate/protein)

Q19) _____is a condition where blood appears in the urine.
(Haematuria/Pyuria)

Q20) _____is a hereditary disease, also known as bleeding disease.
(Haemophilia/Purpura)

(हिन्दी अनुवाद)

नोट : i) सभी प्रश्नों के उत्तर दीजिए।

ii) परीक्षार्थियों को सलाह दी जाती है कि वे प्रश्न–पत्र के दोनों अनुवादों में सांख्यकीय आँकड़ों का विशेष रूप से मिलान कर लें। यदि हिन्दी अनुवाद के किसी प्रश्न में किसी प्रकार की भिन्नता है, तो परीक्षार्थी अंग्रेजी अनुवाद के अनुसार प्रश्न का उत्तर दें।

iii) परीक्षार्थियों द्वारा पेज़र और मोबाइल फोन का प्रयोग अनुमन्य नहीं है।

खण्ड – अ

(दीर्घ प्रश्न)

किन्हीं छः प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न के अंक समान हैं। [6 × 5 = 30]

प्र.1) कार्बोहाइड्रेट्स को परिभाषित कीजिए। उदाहरण सहित कार्बोहाइड्रेट्स का वर्गीकरण कीजिए।

प्र.2) प्रोटीन्स क्या होते हैं? उपयुक्त उदाहरण देते हुए प्रोटीन्स का वर्गीकरण कीजिए।

प्र.3) ट्राइग्लिसराइड्स क्या है? ट्राईग्लिसराइड्स के गुणों को बताइए।

प्र.4) डी एन ए क्या है? डी एन ए की संरचना (वाटसन और क्रिक मॉडल) का वर्णन कीजिए।

प्र.5) एन्जाइम्स क्या होते है? एन्जाइम्स के कार्यो को प्रभावित करने वाले विभिन्न कारकों का वर्णन कीजिए।

प्र.6) क्रेब्स चक्र का वर्णन कीजिए।

प्र.7) यकृत के कार्यो का आकलन करने के लिए विभिन्न परीक्षणों को संक्षेप में लिखिए।

खण्ड – ब

(लघु प्रश्न)

किन्हीं दस प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न के अंक समान हैं। [10×3=30]

प्र.1) माइटोकॉन्ड्रिया को कोशिका का बिजली घर क्यों कहा जाता है?

प्र.2) कार्बोहाइड्रेट्स के गुणात्मक परीक्षणों पर एक टिप्पणी लिखिए।

प्र.3) प्रोटीन्स के कुपोषण से सम्बन्धित रोगों के बारे में लिखिए।

प्र.4) एन्जाइम्सों का उपचारात्मक एवं भेषजिक महत्व बताइए।

प्र.5) साइनोकोबालामिन की कमी विकार एवं कार्य लिखिए।

प्र.6) यूरिया चक्र पर एक टिप्पणी लिखिए।

प्र.7) कीटोन बाडीज क्या है? कीटोजेनेसिस पर एक टिप्पणी लिखिए।

प्र.8) उपयुक्त उदाहरणों के साथ खनिजों को परिभाषित एवं वर्गीकृत कीजिए।

प्र.9) ओरल रिहाइड्रेशन थेरेपी पर एक टिप्पणी लिखिए।

प्र.10) रक्त क्या है? रक्त के कार्य लिखिए।

प्र.11) मूत्र में शर्करा का पता कैसे लगाया जाता है?

भाग – स

(वस्तुनिष्ठ प्रकार के प्रश्न)

सभी प्रश्नों के उत्तर दीजिए। प्रत्येक प्रश्न के अंक समान हैं। [20 × 1 = 20]

प्र.1) निम्नलिखित में से कौन सा मोनोसैकराइड एल्डोहेक्सोज नही है?

अ) फ्रक्टोज ब) ग्लुकोज

स) गैलेक्टोज द) मैन्नोज

प्र.2) निम्नलिखित में से कौन सा अमीनो एसिड एक आवश्यक अर्गीनो एसिड नही है :

अ) वेलिन ब) ल्यूसीन

स) हिस्टडीन द) ग्लाइसिन

प्र.3) कोलेस्ट्राल एक है :

अ) फॉस्फोलिपिड ब) स्टेरॉयड

स) फैटी एसिड द) ग्लाइकोलिपिड

प्र.4) जैविक झिल्ली का प्रमुख घटक है :

अ) स्टेरॉयड ब) वसायुक्त अम्ल

स) फास्फोलिपिड द) ग्लाइकोलिपिड

प्र.5) ..... न्यूक्लीक अम्लों में पाये जाने वाले प्रमुख प्यूरीन क्षार है।

अ) एडीनाइन
ब) गुआनिन
स) एडीनाइन और गुआनिन
द) थाइमिन

प्र.6) पानी के साथ अणुओं को विभाजित करने वाले एंजाइम्स :

अ) लाइपेस
ब) हाइड्रोलेसेस
स) आइसोमेरेस
द) कोई नहीं

प्र.7) कोएंजाइम कार्बनिक होते है लेकिन ..... अणु।

अ) गैर प्रोटीन
ब) प्रोटीन
स) (अ) और (ब) दोनों
द) कोई नहीं

प्र.8) रक्त के थक्के बनने की प्रक्रिया किसके द्वारा शुरू की जाती है :

अ) फाइब्रिनोजेन
ब) थ्रोम्बिन
स) प्रोथ्रोम्बिन
द) थ्रोम्बोप्लास्टिन

प्र.9) बेरी बेरी किसकी कमी से होता है :

अ) राइबोफ्लेबिन
ब) नियासिन
स) फोलिक एसिड
द) थायमिन

प्र.10) फास्फोग्लिसरालिडहाइड के टूटने में एक महत्वपूर्ण मध्यवर्ती चरण है :

अ) कैरोटीन
ब) स्टार्च
स) शर्करा
द) हीमोग्लोबिन

प्र.11) ग्लाइकोजेनेसिस ..... का संश्लेषण है :

अ) शर्करा
ब) ग्लाइकोजन
स) ग्लिसरॉल
द) स्टॉच

प्र.12) बीटा–ऑक्सीकरण ..... का टूटना है :

अ) पाली पेप्टाइड्स ब) लंबी श्रृंखला फैटी एसिड

स) अमीनोएसिड और सुगर द) बहुशर्करा

प्र.13) मांसपेशियों के संकुचन के लिए निम्नलिखित में से कौन सा तत्व आवश्यक है :

अ) Ca^{++} ब) Na^{+}

स) Mg^{++} द) Mn^{++}

प्र.14) घेंघा रोग ..... की कमी से होता है :

अ) क्लोराइड ब) फ्लोरीन

स) आयोडीन द) सल्फाइड

प्र.15) एक व्यस्क मानव में लगभग ..... जल होता है। (60% / 80%)

प्र.16) वैक्सीन उत्पाद है .....। (जैव प्रौद्योगिकी/जैविक विज्ञान)

प्र.17) उच्च घनत्व वाले लिपोप्रोटीन कोलेस्ट्रॉल (एच डी एल कोलेस्ट्राल) एक ..... कोलेस्ट्रॉल है। (अच्छा/बुरा)

प्र.18) यूरिया ..... उपापचय का अंतिम उत्पाद है। (कार्बोहाइड्रेट/प्रोटीन)

प्र.19) ..... एक ऐसी स्थिति है जहाँ मूत्र में रक्त दिखाई देता है। (हेमट्यूरिया/पाययूरिया)

प्र.20) ..... एक वंशानुगत रोग है, जिसे रक्तस्रावी रोग भी कहा जाता है। (हीमोफिलिया/पुरपुरा)

ER20-23T

8103

BOARD DIPLOMA EXAMINATION, (ER-20) MAY—2023

DPH - SECOND YEAR EXAMINATION

BIOCHEMISTRY AND CLINICAL PATHOLOGY

Time : 3 Hours] [*Total Marks* : 80

PART—A

5×6=30

Instructions : (1) Answer *any* ***six*** questions.

(2) Each question carries **five** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Write the factors that affect enzyme activity. 5

2. Define and classify Proteins with example. 1+4=5

3. Define and classify Vitamins with examples and write the functions and deficiency diseases of Vitamin A. 1+2+2=5

4. What is Glycolysis and write the reactions of Glycolysis. 1+4= 5

5. Write the reactions of Urea cycle. 5

6. What are electrolytes and write the functions and deficiency diseases of *(a)* Calcium and *(b)* Sodium 5

7. Write about liver function tests and their clinical significances. 5

[Contd...

PART—B

3×10=30

Instructions : (1) Answer *any* **ten** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

8. Write the structures of *(a)* Glucose *(b)* Maltose and *(c)* Galactose. 1+1+1=3

9. Write the classification of Amino Acids based on nutritional requirements with example. 3

10. Define the terms *(a)* Carbohydrates *(b)* Proteins and *(c)* Lipids 1+1+1=3

11. Write the mechanism of action of Enzymes. 3

12. Write the co-enzymes of B-complex vitamins. 3

13. Write about *(a)* fatty liver and *(b)* phenyal ketonuria. 3

14. Write the function and deficiency diseases of Iron. 3

15. Write lipid profile tests and their clinical significances. 2+1=3

16. Write about *(a)* Kwashiorkor and *(b)* Marasmus. 3

17. Write the significance of abnormal constituents of urine. 3

18. Write the role of platelets in health and disease. 3

PART—C

1×20=20

Instructions : (1) Answer all questions.

(2) Each question carries **one** marks.

(3) Choose the correct answer or write the ***correct*** answer.

19. The active site of protein synthesis is

(a) Nucleus

(b) Ribosomes

(c) Mitochondria

(d) Cell sap

20. Cobalt is the essential component of

(a) Vitamin B1

(b) Vitamin B6

(c) Vitamin B12

(d) All of the above

21. Which of the following Vitamin deficiency causes Beri-Beri?

(a) Vitamin A

(b) Vitamin B_1

(c) Vitamin B_6

(d) Vitamin B_{12}

22. Iodine is used for the prevention of

(a) Goiter

(b) Pellagra

(c) Scurvy

(d) Diarrhoea

| Contd...

23. Dehydration is occurred due to_____

(a) insufficient intake of water

(b) excessive water

(c) Both (a) and (b)

(d) None of the above

24. Decrease in number of Lymphocytes below the normal value is called as

(a) lymphocytosis

(b) lymphopenia

(c) Both (a) and (b)

(d) purpura

25. An example of ketone bodies is

(a) acetone

(b) acetoacetate

(c) betahydroxybutyrate

(d) All of the above

26. The end product of Glycolysis under anaerobic condition is

(a) pyruvic acid

(b) lactate

(c) acetic acid

(d) acetoacetate

27. Diabetes Mellitus occurs due to deficiency of

(a) insulin

(b) glucagon

(c) cortisone

(d) thyroxine

28. An example of non-reducing sugar is

(a) frutose
(b) galactose
(c) sucrose
(d) glucose

29. LDL refers to

(a) bad cholesterol
(b) good cholesterol
(c) total cholesterol
(d) None of the above

30. Red blood cells are also called as

(a) leukocytes
(b) erythrocytes
(c) lymphocytes
(d) platelets

31. Molisch test is used for the identification of _____.

32. Example of sulphur containing amino acid is _____.

33. Phenylketonuria occurs due to the deficiency of _____ enzyme.

34. Example of Pyrimidine nitrogenous bases is _____.

35. Deficiency of Vitamin-D leads to_____ in Children.

36. Benzidine test is used for detection of _____ in the urine.

37. Pellagra occurs due to the deficiency of_____.

38. Synthesis of Glycogen from glucose is called_____.

★★★

2nd Year / Pharmacy
Subject: Biochemistry & Clinical Pathology

Time: 3 Hrs. **M.M.: 80**

SECTION-A

Note: Multiple choice questions. All questions are compulsory (20x1=20)

Q.1 Which one is example of Disaccharides

a) Glucose b) Fructose c) Lactose d) starch

Q.2 which one is not an example of example of simple protein

a) Albumins b) Globulins c) Histones d) Glycoprotein

Q.3 Molisch test is used for identification of

a) Carbohydrates b) Protein c) Vitamins d) Lipids

Q.4 Fehling B Reagent contains

a) Sodium Potassium tartrate b) Acetic Acid
c) Cellulose d) iodine

Q.5 Which one is not an essential amino acid

a) Tryptophan b) Valine c) Lysine d) Alanine

Q.6 All Enzymes are

a) Protein b) Vitamins c) Minerals d) Lipids

Q.7 Cholecalciferol is name of

a) Vitamin D b) Vitamin A c) Vitamin B12 d) Vitamin C

Q.8 Which one is the end product of Metabolism of Amino Acid

a) Glucose b) Fructose c) Urea d) Insulin

Q.9 Which one is not an example of Compound Lipids

a) Phospholipids b) Glycolipids c) Lipoproteins d) Waxes

Q.10 Saponification test is used for identification of

a) Lipids b) Protein c) Carbohydrates d) Amino Acids

Q.11 Define the term Carbohydrates.
Q.12 Barford's test, a qualitative test is used for the identification of what.
Q.13 Define the term Glycoprotein.
Q.14 Mention one use of vitamin K.
Q.15 in Anaerobic Glycolysis net gain of how many ATP occurs.
Q.16 Define the Term Glycogenolysis.
Q.17 Define the term Alkaptonuria.
Q.18 Mention one use of Vitamin B-1.
Q.19 Define the term Alkaptonuria.
Q.20 Mention one example of Derived Lipids.

SECTION-B

Note: Short answer type questions. Attempt any ten questions out of eleven questions. (10x3=30)

Q.21Mention three contribution of Biotechnology
Q.22 Mention three function of liver
Q.23 Mention three General properties of Amino Acids
Q.24 Mention three uses of vitamin B-12
Q.25 Mention three function of fluorine
Q.26 Mention three functions of Nucleic Acid
Q.27 mention three Difference between Competitive and non-Competitive Enzyme inhibition
Q.28 Mention three Biological roles of protein
Q.29 Write a brief note on disease Kwashiorkor
Q.30 Mention Biochemical role of Creatinine
Q.31 Mention three factors affecting Enzymes activity

SECTION-C

Note: Long answer type questions. Attempt any six questions out of seven questions. (6x5=30)

Q.32 Describe in detail about TCA Cycle
Q.33 Describe in detail about structure of protein
Q.34 Describe in brief the classification of lipids with suitable examples
Q.35 Describe in detail about therapeutic Importance of enzymes
Q.36 Describe in detail about Biochemistry of vitamin D, E & B-6
Q.37 Describe in detail about urea cycle
Q.38 Describe in details Dehydration causes, Symptom, type and oral rehydration therapy

STATE BOARD OF TECHNICAL EDUCATION AND TRAINING
TELANGANA
DIPLOMA EXAMINATION (ER-2020)
ER2020-APR-2023
II Year , PHARMACY END EXAM

ER20-23T

BIOCHEMISTRY & CLINICAL PATHOLOGY

PCODE 10203

Exam Date: 27-04-2023 Session: FN
Duration: 3 Hours [10:00 AM To 01:00 PM] [Total Marks: 80]

PART-A

Instructions: 1. Answer the following questions. 20 X 1 = 20
2. Each question carries **ONE** mark.

1. What are essential fattyacids.
2. Give example for Sulphur containing Amino acids
3. Deficiency of riboflavin causes _____
4. What is metabolism.
5. The principle cation of external fliud is ____
6. Life span of erythrocytes is about...
7. Define Carbohydrates.
8. Long continued deprivation of proteins in adults lead to _____disease.
9. Which enzyme is used for diffusion of number of drugs
10. What is ketogenesis.
11. What are Major electrolytes. Give some examples.
12. By using Háy's test which component of urine is analysed.
13. What are Polysaccharides.
14. Which vitamin is necessary for blood coagulation
15. The term Biotechnology was given by.....
16. What are Phospholipids.
17. Where does the oxidative phosphorylation reaction occurs.
18. In which conditions very low specific gravity of urine is observed.
19. Millons test is specific for.....
20. Deficiency of iodine leads to _____

PART-B

Instructions: 1. Answer any **TEN** questions. 10 X 3 = 30
2. Each question carries **THREE** marks.

21. Write a short notes on Optical isomerism.
22. Write the difference between DNA and RNA
23. What are vitamins.
24. Write the difference between transamination and deamination.
25. What is Oral Rehydration Therapy.
26. What is Anaemia. List out various types of Anaemia.
27. What is nucleoside and nucleotide
28. Define Lysozyme.
29. Write the biological role of Iron.
30. Define Protein & Aminoacid
31. What is Hyperammonemia and write its symptoms.

PART-C

Instructions: 1. Answer any **SIX** questions. 6 X 5 = 30
2. Each question carries **FIVE** marks.

32. Define a) Saponification value. b) Acid value. c) Acetyl number.
33. Write the classification of Proteins
34. Write the sources, chemical nature, functions and deficiency diseases of vitamin C.
35. Define and explain the citric acid cycle.
36. Write the Biological importance of Water.
37. Explain clinical significance of Lipid Profile tests.
38. Write a note on various types of Clearance tests.