

- Attention:-
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University of Balochistan Quetta
Chemistry M.Sc Annual Examination 2015
(Biochemistry) Paper III

Section I (20 marks)- Attempt all the questions. All questions carry equal marks.
Time Allowed 40 minutes

- 1) In gel filtration/size exclusion, which sized molecules get through (elute) faster, Large or Small?
- 2) A specific protein has 18-residue long α -helix. How many full turns are expected to be there in this α -helix?
- 3) Metal chelate affinity chromatography relies on a "tag" consisting of a series of identical amino acid residues. Write the name of these residues.
- 4) If two polypeptides have the same molar mass, name two methods you could use to separate them.
- 5) Name an enzyme that can make a phosphodiester bond WITHOUT adding a nucleotide.
- 6) In the Meselson-Stahl DNA replication experiment, what percent of the DNA was composed of one light strand and one heavy strand after one generation of growth in N^{14} containing growth media?
- 7) A pure dsDNA solution has an optical density of 0.5 at 260 nm for a 1 cm path length. What will be the concentration of DNA?
- 8) What is the difference in shape between normal and cancer cells?
- 9) Write one letter abbreviation of lysine and tryptophan.
- 10) How would you differentiate a nucleotide and a nucleoside?

Section II (80 marks)- Attempt any four questions. All questions carry equal marks. Time Allowed 2:20

Q. No. 2. What is gel filtration chromatography? Who invented gel filtration chromatography? How molecules are separated in gel filtration chromatography? Name any two media used in gel filtration chromatography.

Q. No. 3. What are DNA viruses? Write their classification. Do pleolipoviruses belong to DNA viruses?

Q. No. 4. Describe the structural components and double helical model of DNA in detail. In what respect DNA differs from RNA?

Q. No. 5. Classify the amino acids on the basis of their functional groups.

Q. No. 6. What is a spectrophotometer? What is the difference between single and double beam spectrophotometer? Write applications of spectrophotometer in biochemistry?

Q. No. 7. Write a detail account on operon model in prokaryotes. What are its components? How the genes are regulated?

Q. No. 8. Write short notes on any four of the following:

- a) Retroviruses
- b) Types of mutation in DNA
- c) Restriction Enzymes
- d) Isoelectric Focussing
- e) Ultracentrifugation

UNIVERSITY OF BALOCHISTAN QUETTA
MA/MS (ANNUAL) EXAMINATION .2015.

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Subject:-

BIO- CHEMISTRY .

Paper:- I(Final)

Time Allowed :- 3 Hours

Contemporary Bio – Chemistry

Max : Marks : 100

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION 20 MARKS)

Q.No.1

ATTEMPT ANY 10 QUESTIONS OUT OF 15. ALL CARRY EQUAL MARKS.

1. Human Nuclear Genome is distributed between.....?
2. In Human 95.5% of non-coding of the Genome is made up.....?
3. The Chromosome are long pieces of
4. The chromosome can be differentiate from one another on the basis of
5. What is the function of XIST gene?
6. Why we used Hybridization Probe.
7. Picornavirus remain viable 39 days..... 28 days.....and 60 days in
8. How many Genotype and Chromosome are present in Leishmania?
9. What are the application of Molecular Beacons?
10. Write down a four generation pedigree in which the mode of inheritance in autosomal recessive.
11. Write the name of GAG in which sulphate group is missing.
12. Write down the components of Lipopolysaccharide.
13. Micrococcus lysodeikticus have which type of cross link.
14. Cartilage contain which type of Glycosaminoglycan molecules
15. Write down the name of Glycoprotein which is abundantly found in human body.

SECTION-II (SUBJECTIVE PORTION)

Q.No.2. Write down the causes of genetic disorders, draw a five generation pedigree and explain in detail the identification of locus by Linkage Analysis.

Q.No.3 Explain Biosynthesis of cell wall Peptidoglycan.

Q.No.4 What is Attenuated Vaccine? Developed attenuated vaccine against Leishmania.

Q.No.5 Why mutations are caused, explain in details the methods of mutations identifications

Q.No.6 Write down in details the structure of gene and types of genes.

Q.No.7. write the name of virus which cause Foot and Mouth disease and explain the methods of vaccine development against this disease.

Q.No.8. Describe Teichoic acids their types and its application.

Q.No.9 Write a note on the following two.

- Glycolipid
- Mitochondrial Genome
- Physical Mapping

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Subject:-

BIO-CHEMISTRY

Paper:- I (Prev)

Time Allowed :- 3 Hours

Bio- Chemistry

Max : Marks : 75

Note :- Attempt 25 Questions. in All But Question No. 1- in section -I is compulsory and the time for Section-I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION -I (OBJECTIVE PORTION 15 MARKS)

Q. 1. Attempt only Ten giving short answers keeping in mind the time limitations.

1. Name three elements of life
2. what is glycogen, mono, di or a polysaccharide
3. Name five organelles of the cell
4. Define Active and catalytic sites of an enzyme
5. What do you mean by word nutrition.
6. What are immunoassays, define
7. name three ketone bodies
8. Name three coenzymes
9. What do you mean by Homeostasis
10. Name only Two enzymes used in clinical diagnosis
11. What is the relationship of Diabetes with heperglycemia
12. What is the function of biomolecules
13. Discuss the role of Vit. K
14. what is allosteric enzyme
15. Write immunoglobulin types
16. What are coo factors name any three
17. What is life if described in your perception
18. What is the difference between plasma and serum
19. Define intermediary molecules
20. What are buffers. Name three

Attempt Four Questions, (60)

2. Give details of Beta oxidation in detail with its energy output for sixteen carbon fatty acid
3. Discuss origin of life and biomolecules.
4. Give details of What are bioenergetics, discuss energy output of Glycolysis anaerobically
5. Give comprehensive note on immobilized enzymes
6. Discuss Vitamin B-12 in detail
7. Explain TCA cycle with energy calculations per glucose utilization
8. Write a note on plasma protein, buffers, and coenzymes
9. What is cell. Name three organelles with detailed description. Also state the importance of nucleus of eukaryotic cell

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Subject:-

BIOCHEMISTRY .

Paper:- II(Final)

Time Allowed :- 3 Hours

CURRENT TREND IN BIO - CHEMISTRY.

Max : Marks : 100

Note :- Attempt 5 Questions. in All But Question No. 1- in section -I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION -I (OBJECTIVE PORTION 20 MARKS)

- Q-1 Give short answers attempt any 10 of the following all questions carry equal marks.
- 1 How thermostability of a protein can be increased.
 - 2 Human pancreatic RNase can act as?
 - 3 Define what are Subtilisins?
 - 4 Define oligonucleotide directed mutagenesis.
 - 5 What are Hormones?
 - 6 What are T₃ and T₄.
 - 7 Define signal transduction?
 - 8 Enlist hormones secreted by pituitary gland.
 - 9 What are Growth Hormones?
 - 10 Define the term chemotherapy.
 - 11 Write three names of antimalarial drugs.
 - 12 Metronidazole, tinidazole and nifuratel are belongs to which class of drugs?
 - 13 Explain how the mode of action of penicillin.
 - 14 What is bleeding disorder? Explain with examples.
 - 15 What is Anemia?
 - 16 Enlist the blood components.
 - 17 What is normal level ESR?
 - 18 Name factors responsible for clotting of blood
 - 19 What are biofuel cells?
 - 20 Define the term Biomass?.

SECTION -II (80 MARKS) TIME ALLOWED: 2:20
ATTEMPT ANY FOUR QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

- Q-2. What is protein engineering and explain how the protease sensitivity can be decreased.
- Q-3. Write down the synthesis, mechanism of action and clinical significance of PTH.
- Q-4. How the Insulin synthesizes? Also explain its secretion and mode of action.
- Q-5. Describe the mechanism of action and clinical significance of epinephrine and norepinephrine.
- Q-6. How many types of anti-bacterial drugs have you studied explain their mode of action.
- Q-7. What is erythrocyte sedimentation rate (ESR) and describe its importance?
- Q-8. Write a note on the structure and function of Red blood cells and explain the blood transfusion.
- Q-9. Define biotechnology, and write a comprehensive note on the applications of biotechnology in medicine, agriculture, food and drinks.
- Q-10. Write a short note on any two of the following:
- Platelets.
 - Antiviral chemotherapeutic agents.
 - Biofuel cells.

UNIVERSITY OF BALOCHISTAN, QUETTA

M.A / M.Sc, (Annual) Examination, 2015

SUBJECT:

BIOCHEMISTRY

PAPER: PREV:-II

ALLOWED: 3 HOURS

BIO ORGANIC CHEMISTRY MAX: MARKS: 15+60=75

NOTE: ATTEMPT ANY FIVE QUESTION IN ALL, INCLUDING QUESTION NO.1, WHICH IS COMPULSORY. TIME FOR QUESTION NO.1 IS ONLY 40 MINUTES. AFTER 40 MINUTES ANSWER SHEET SHOULD BE HANDED OVER TO THE SUPERVISORY STAFF.

SECTION -I (15MARKS)

ATTEMPT 15 QUESTIONS OUT OF 20 QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

- Q-1
1. What is single Schiff base?
 2. What are the three components of LPS?
 3. Nitrile group on hydrolysis give carboxylic acid via an intermediate compound. Give its name.
 4. Name the effective blocking group for aldehyde.
 5. What is the difference between a polypeptide and a protein?
 6. What is general formula of monohydric alcohol?
 7. What is meant by di-deoxy sugar?
 8. Which type of an alcohol is present in wax molecule?
 9. What is the role of uronic acid in human body?
 10. Sucrose is a reducing or non-reducing sugar?
 11. What is the second name of polysaccharide?
 12. What is ceramide?
 13. What is chiral or asymmetric carbon atom?
 14. What are lactones?
 15. How hemiacetal are formed?
 16. What is the role of Sulphur containing amino acids in protein structure?
 17. Which type D or L involved in naturally occurring carbohydrates?
 18. What is reaction mechanism?
 19. Write down the names of three essential fatty acids.
 20. Write down the components of nucleotide.

P.T.O

SECTION -II (60 MARKS) TIME ALLOWED: 2:20

ATTEMPT ANY FOUR QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

- Q-2. Explain the following reactions with mechanism.
- Reaction of alcohol with sulphuric acid.
 - Reaction of alcohol with nitric acid.
 - Reaction of alcohol with carboxylic acid.
- Q-3. Describe conformation of open chain and cyclic compounds with reference to ethane and cyclohexane molecules.
- Q-4. Describe the following.
- Furanose and pyranose rings.
 - Anomers.
 - Haworth and conformational formulas of glucose.
 - Mutarotation in monosaccharides.
- Q-5. Describe in detail the interconversion of monosaccharides.
- Q-6. Explain in detail the followings.
- Glycolipids.
 - Lipopolysaccharides.
 - Biological functions of lipids.
- Q-7. Describe in detail the three classes of phospholipids you have studied.
- Q-8. What is the protection of functional group? Describe the general method and Merrifield synthesis of peptide.
- Q-9. What are nucleic acids? Illustrate the chemical synthesis of nucleotides.
- Q-10. Write a short note on any two of the followings:
- Applications of simple and complex carbohydrates.
 - Classification of lipid.
 - Essential and non-essential amino acids.

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Subject:-

BIO - CHEMISTRY .

Paper:- III(Final)

Time Allowed :- 3 Hours **ADVANCE IMMUNOLOGY & CLINICAL BIO – CHEMISTRY .** Max : Marks : 100

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION 20 MARKS)

Q. 1. Attempt only Ten giving short answers keeping in mind the time limitations.

1. What are phagocytes and what is phagocytosis
2. How lymphocytes can be activated
3. What is immunological tolerance
4. Define natural killer cells
5. What do you mean by hypokalemia
6. What are immunoassays, define
7. Define clinical enzymology
8. Name three ketone bodies.
9. What do you mean by Magnesium Homeostasis
10. Name only Two enzymes used in clinical diagnosis
11. What is the relationship of Diabetes with heperglycemia
12. What is Antigen and Antibodies
13. Discuss the role of IL-12 in immunity
14. Discuss role of interferons
15. Write immunoglobulin types
16. Give detail of Innate Immunity
17. What Alkaline Phosphate do in clinical diagnosis
18. Why is Fructosamine test necessary to carry
19. Define Bilirubin
20. What are interleukins

SECTION –II(SUBJECTIVE PORTION 80- MARKS) TIME ALLOWED 2:20

Attempt Four Questions, Two from each section/part carrying equal marks (20)

Part A

2. Discuss Adaptive Immunity
3. Give brief description of T and B cells
4. Give details of the hypersensitivity
5. Write a note on Alkaline Phosphatase

Part B

6. Name any three renal disease with description of its reasons
7. Explain Hepatitis A,B and C in brief
8. Write a note on advanced clinical Biochemistry
9. How urea, and creatinine can be determined clinically

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Subject:-

BIOCHEMISTRY .

Paper:- III (Prev:)

Time Allowed :- 3 Hours

Bio Analytical Chemistry .

Max : Marks : 75

Note :- Attempt Five Questions. in All But Question No. 1- in section –I is compulsory and the time for Section- I is only 40 Minutes. After Expiry of the Time paper should be handed over to the supervisory staff.

SECTION –I (OBJECTIVE PORTION 15 MARKS)

Q.No.1 Tick the correct answers :- (Attempt any 15)

1. The electromagnetic spectrum is reciprocal of the wavelength is:
 - a) Frequency
 - b) Wavelength
 - c) Wave number
 - d) Transverse waves
2. The decrease in molar absorptivity is referred to
 - a) Bathchromic shift
 - b) Hypochromic shift
 - c) Hyperchromism
 - d) Hypochromism
3. Mass spectrometry is related to,
 - a) Requirement of huge amount of substances for analysis.
 - b) Analyzed substance remains intact with.
 - c) The analyzed substance is ionized
 - d) The analyzed substance is deionized
4. At the doubled concentration
 - a) The wave length of the absorption is different
 - b) The extinction is twice as large
 - c) The extinction coefficient is twice as large
 - d) The extinction is weak
5. In electrolysis process which of following measurement involves.
 - a) Measurement of pH with electrode
 - b) Using a redox indicator as in redox titration
 - c) Stripping analysis of uranium in water sample
 - d) Titration related to the standard hydrogen electrode
6. Choose the most suitable electrochemical method requires the formation of an insoluble form of analyte
 - a) Coulometry
 - b) Electrogravimetry
 - c) Polarography
 - d) Potentiometry
7. Measurement of molecule complexity is best made by:
 - a) MS
 - b) NMR
 - c) IR
 - d) UV-VIS
8. Which of the following is not a step in atomic absorption spectroscopy (AAS)?
 - a) Vaporization of solution.
 - b) Construction of a calibration curve.
 - c) Light absorbance by atom.
 - d) Adsorption of Particles on a stationary phase.
9. Emission spectrum is observed as
 - a) Identical to a continuous spectrum
 - b) Coloured lines on an uncoloured background.
 - c) black lines on a coloured background.
 - d) A smooth curve.
10. The black lines present in absorption spectra are produced by?
 - a) The emission of light as electrons moves from higher energy levels to lower energy levels..
 - b) The absorption of light as electrons moves from higher energy levels to lower energy levels
 - c) The emission of light as electrons move from lower energy levels to higher energy levels
 - d) The absorption of light as electrons moves from lower energy levels to higher energy levels.
11. X-Ray diffraction can only be applied to:
 - a) Gaseous or vapor materials.
 - b) Liquids.
 - c) Solid, crystalline materials
 - d) none of the above
12. X-Ray diffraction is unable to detect the presence of substances:
 - a) Comprising elements with two or more isotopes
 - b) Containing a magnetic field
 - c) Comprising less than 5 percent of a mixture.
 - d) Containing a high concentration of carbon
13. What can you do about your protein sample that initiate loss of activity during storage.
 - a) Further purification of proteins.
 - b) Addition of protease inhibitor during purification steps
 - c) Using cold –room for Performance of purification steps.
 - d) By taking all of the above precautions.