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The West Bengal University of Health Sciences
MBBS 1st Professional Examination (New Regulation), June 2022

Full Marks : 100
Time : 3 hours

Subject: Biochemistry
Paper : II

Attempt all questions. The figures in the margin indicate full marks.

1. a) A 6year old child was brought to the hospital with complaints of slow growth and pain in bones. On examination, he was anemic, had frontal bossing, bowing of legs and swelling of costochondral junction. Laboratory results were: Serum calcium:8.2 mg%, Serum phosphorous: 2.8 mg%, serum ALP: 720IU/L. 3+4+8
   i) What is likely diagnosis and pathogenesis of the condition ?
   ii) How the deficient element in this patient is synthesized in healthy child ?

   b) Differentiate between proto-oncogenes and oncogenes. Explain how proto-oncogenes can be converted into oncogenes. Explain how p53 acts as a guardiain of genome. 4+6+5

2. a) Write short notes on: 5+5
   i) Monoclonal antibodies
   ii) Restriction endonuclease
   b) Write down the principles and tools of recombinant DNA technology. 5+5
   c) Classify Hormones. Explain the mechanism of action of Group 2 Hormones. 7+3

3. Write a short notes on the following : 2x5
   a) Small ribonucleic acids (sRNA).
   b) Protein energy malnutrition.

4. Explain the following statements: 5x4
   a) Hormones may be related to different types of cancer.
   b) Apoptosis is tightly regulated.
   c) Low carbohydrate diet promotes weight loss.
   d) Oxidative damage by xenobiotic metabolites could have a protective role.
   e) Vitamin D acts as a hormone.

5. Choose the correct option for each of the following: 10x1

i) Which one of the following is the most important source of blood glucose during the last hours of a 48 hour fast.
   a) Muscle Glycogen
   b) Amino acids
   c) Lactate
   d) Liver glycogen.

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ii) Choose the vitamin involved in posttranslational modification :
a) Vitamin C
b) Vitamin A
c) Folic acid
d) Pyridoxin

iii) All Plasma proteins are synthesized in liver Except
a) Albumin
b) Ferritin
c) Immunoglobulin.
d) Hapto globulins.

iv) In addition to Taq Polymerase, PCR requires all Except:
a) Primase
b) Primers
c) A template DNA
d) Deoxy ribonucleotide triphosphates

v) Hormone mainly involved in sodium and potassium balance:
a) Cortisol.
b) Aldosterone.
c) Adrenalin.
d) Glucagon.

vi) In the "Lac operon' concept. Which of the following is a protein:
a) Operator
b) Repressor
c) Inducer
d) Promoter

vii) Xeroderma pigmentosa occurs due to defective
a) Mismatch repair
b) Base excision repair
c) Nucleotide excision repair
d) Double stranded break repair

viii) All the following except one aid in protein folding
a) Molten globule
b) Chaperone proteins
c) Cis-trans isomerase
d) Peptidyl transferase

ix) Transfection in recombinant DNA technology involves
a) Isolation of desired gene.
b) Formation of chimeric DNA.
c) Isolation of vector.
d) Uptake of Chimeric DNA.

x) The separation of molecule based on their size, shape and molecular weight is done by:
a) Ion exchange chromatography
b) Gel filtration chromatography
c) Adsorption chromatography
d) Affinity chromatography

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