



The West Bengal University of Health Sciences
MBBS 1st Professional Examination (New Regulation), Feb- March, 2024

Subject: Biochemistry

Paper : II

Full Marks : 100

Time : 3 hours

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

1. a) A nine year old girl was brought to a physician with pallor and weakness. On examination, there was no significant finding except pallor. On investigation, haemoglobin level was found as 9 g/100ml, microcytic hypochromic erythrocytes were found, serum iron level was low and TIBC was high. Iron deficiency anemia was diagnosed. Define anemia. Enumerate the causes of iron deficiency anemia. Describe how dietary iron is absorbed. Describe the regulation of iron absorption. Mention the dietary sources of iron. Explain why daily iron requirement is more for women in reproductive age group. 1+3+3+3+2+3
- b) An obese patient is suffering from Primary clinical hypothyroidism.
i) Mention the principle of TSH estimation.
ii) Prepare the lab report of thyroid function test of this patient.
iii) Briefly describe the signal transduction of TSH & thyroid hormone. 2+3+ (5+5)
2. a) Describe briefly the roles of vitamin E as antioxidant and Vitamin C in collagen formation. 5+5
b) Describe the features of major glycosaminoglycans in respect to their locations and functions. Discuss the association of glycosaminoglycans with major diseases with ageing. 5+5
c) What are proto-oncogenes? Mention two mechanisms of activation of proto-oncogenes. Explain the role of Tumor suppressor genes in carcinogenesis. What are Tumor markers? Name two Tumor markers and diseases associated with each of them. 1+2+2+2+3
3. Write short notes on the following: 2x5
a) Role of MHC molecule in cell mediated immunity.
b) Apoptosis (with diagram).
4. Explain the following statements: 5x4
a) Certain type of DNA repair defect may lead to skin pigmentary changes.
b) Decreased serum T4 may be associated with increased serum TSH as well as decreased serum TSH.
c) A large diverse set of proteins can be formed from a limited set of genes.
d) Vitamin B 12 deficiency occurs in partial or total gastrectomy patients.
e) Resting metabolic rate (RMR) is approximately 10% higher than basal metabolic rate (BMR).
- P.T.O**



5. Choose the correct option for each of the following:
- i) Unusual nucleotide bases are found in significant quantities in
- a) m RNA
 - b) t RNA
 - c) r RNA
 - d) Sn RNA
- ii) Strand of DNA from which mRNA is formed by transcription is called:
- a) Template
 - b) Anti-template
 - c) Coding
 - d) Transcript
- iii) Termination is caused by all except:
- a) RF-1
 - b) UAA
 - c) Peptidyl-transferase
 - d) 48s complex
- iv) Insulin activates:
- a) Adipocyte LPL
 - b) Adipocyte HSL
 - c) Muscle LPL
 - d) Myocardial LPL
- v) Which of the following amino acids is utilized for conjugation reaction during metabolism of xenobiotics?
- a) Glycine
 - b) Alanine
 - c) Valine
 - d) Leucine
- vi) Northern blot transfer technique is utilized for visualization of:
- a) DNA
 - b) RNA
 - c) Protein
 - d) Glycoprotein
- vii) Negative nitrogen balance is observed in:
- a) Pregnancy
 - b) Chronic fever
 - c) Convalescence
 - d) Growth period
- viii) Xeroderma pigmentosum is caused due to defective:
- a) Mismatch repair.
 - b) Base excision repair.
 - c) Nucleotide excision repair.
 - d) Double stranded break repair.
- ix) High fat low carbohydrate diet may be recommended in chronic obstructive pulmonary disease patient caused by chronic bronchitis due to:
- a) Fat contains more oxygen atoms related to carbon or hydrogen atoms.
 - b) Fat is less dense than carbohydrates.
 - c) Fat metabolism generates less CO₂.
 - d) The RQ of fat is higher RQ of carbohydrate.
- x) Normal anion gap acidosis occurs in:
- a) Diabetic keto acidosis
 - b) Lactic acidosis
 - c) Chronic kidney disease
 - d) Diarrhoea