Madhya Pradesh Medical Science University, Jabalpur
MBBS First Professional Examination Feb-2021
Subject- Biochemistry
Paper-II
(NEW SCHEME)

Time: 3:00 Hours
Maximum Marks :100

Instructions:
a) All questions are compulsory
b) Draw diagrams wherever necessary
c) Answers of Questions and Sub-questions must be written strictly according to serial order of question paper.
d) MCQ has to be answered in theory answer book
e) Please write MCQ answer neatly and in serial order with black or blue pen in brackets; for example: - 1. (a) 2. (c)
f) MCQ has to be answered only once, any kind of repetition or cutting or erasing or whitener will be considered as malpractice, such answers will not be counted in marks and action will be taken according to UFM rules of university.

Q1. Total MCQs: 20

1. Termination of the synthesis of RNA molecule is signaled by a sequence in the template strand of the DNA molecule, a signal that is recognized by a termination

protein 20 x 1 = 20

(a) Rho factor
(b) sigma factor
(c) delta factor
(d) epsilon factor

2. The correct statement concerning RNA and DNA polymerases is

(a) RNA polymerases use nucleoside diphosphatase
(b) RNA polymerase requires primers and adds bases at 5' end of the growing polynucleotide
(c) DNA polymerases can add nucleotides at both ends of the chain
(d) all RNA and DNA polymerases can add nucleotides only at 3' end of the growing polynucleotide chain

3. The enzyme DNA ligase

(a) introduces super helical twists
(b) connects the end of two DNA chains
(c) unwinds the double helix
(d) synthesizes RNA primers

4. Restriction endonucleases

(a) cut RNA chains at specific locations
(b) excise introns from hnRNA
(c) remove Okazaki fragments
(d) acts as defensive enzymes to protect the host bacterial DNA from foreign organisms

5. All of the following statements about uric acid is true EXCEPT

(a) it can be formed from allantoin
(b) formation of uric acid stones in kidneys can be decreased by alkalinization
(c) uric acid begins to dissociate at pH above 5.8
(d) it is present in plasma mainly as monosodium urate

6. The daily total body water derived from oxidation of foodstuffs is about
(a) 100 ml
(b) 300 ml
(c) 600 ml
(d) 1000 ml

7. Minimum excretory urinary volume for waste product elimination in 24hrs is
(a) 200-300 ml
(b) 200-400 ml
(c) 500-600 ml
(d) 800 ml

8. All of the following features are found in blood chemistry in uncompensated lactic acidosis EXCEPT
(a) pH is decreased
(b) bicarbonate is decreased
(c) pCO2 is normal
(d) anion gap is normal

9. During compensation of respiratory alkalosis, all of the following changes occur EXCEPT
(a) decreased secretion of hydrogen ions by renal tubules

(b) increased excretion of sodium in urine
(c) increased excretion of bicarbonate in urine
(d) increased excretion of ammonia in urine

10. Normal quantity of urobilinogen excreted in the feces per day is about
(a) 10-25 mg
(b) 50-250 mg
(c) 300-500 mg
(d) 700-800 mg

11. The normal range of indirect bilirubin in serum is
(a) 0-0.1 mg/100ml
(b) 0.1-0.2 mg/100ml
(c) 0.2-0.7 mg/100ml
(d) 0.8-1.0 mg/100ml

12. The normal values for creatinine clearance varies from
(a) 20-40 ml/min
(b) 40-60 ml/min
(c) 70-85 ml/min
(d) 95-105 ml/min

13. Methemoglobin can be reduced to hemoglobin by
(a) removal of hydrogen
(b) vitamin C
(c) glutathione
(d) creatinine

14. Alpha fetoprotein level in serum is increased in
(a) prostatic cancer

(b) hepatoma
(c) cancer in lungs
(d) nephritis

15. Which of the following enzymes produce a free radical in macrophages
(a) SOD
(b) catalase
(c) GSH peroxidase
(d) NOS

16. The minimum daily requirement of proteins in food for a normal healthy adult is
(a) 0.2 gm/kg body weight
(b) 0.5 gm/kg body weight
(c) 0.7 gm/kg body weight
(d) 1.5 gm/kg body weight

17. Which has no role in calculating calorie requirements
(a) respiratory quotient
(b) specific dynamic action
(c) basal metabolic rate
(d) physical activity

18. Ratio of carbohydrates, fats and proteins in balanced diet should be
(a) 50:40:10
(b) 60:20:20
(c) 50:10:40
(d) 70:20:10

19. A 2-year-old boy presents to OPD with poor eating for

past few weeks. Recently he has developed a wound on his leg which shows poor healing. On examination he appears plump but apathetic. He has dry, sparse golden hair and skin appears thick and pigmented. Abdomen is distended. His serum albumin is 1.5 g/dL. What is the diagnosis

(a) anorexia nervosa
(b) starvation
(c) marasmus
(d) kwashiorkor

20. The laboratory reports the following ABG: pH 7.33, pCO2 40 mmHg (N 35-45) and HCO3 20 mEq/L (N 22-26), you interpret these results as

(a) respiratory acidosis
(b) metabolic acidosis
(c) respiratory alkalosis
(d) metabolic alkalosis

Q2. Short Answer Questions

Write short notes on any THREE of the following:

a. Dehydration
b. Nitrogen balance
c. Tumour markers
d. Applications of polymerase chain reaction
e. Gout
f. Eukaryotic post transcriptional RNA processing
g. Types of RNA

h. Water intoxication

i. Give an example of some oncogenic viruses. Name some anti-carcinogens

j. Explain the concept of balanced diet

Q3. Long Answer Questions

a. A 67-year-old female presented at clinic with intense jaundice. She had noted that her stools had been very pale. Laboratory test revealed a very high level of direct bilirubin. The level of alkaline phosphatase was markedly elevated (1+2+2+2+3)

i. What is the probable diagnosis
ii. Why color of stools Is very pale
iii. What will be the status of bilirubin and urobilinogen in urine
iv. Why is alkaline phosphatase markedly elevated
v. What do you understand by direct and indirect bilirubin

b. A person presents himself with untreated diabetes mellitus, he is then treated for acidosis (1+2+2+2+3)

i. What is the type of acidosis
ii. What is the normal bicarbonate/carbonic acid ratio
iii. What will happen to the ratio in this patient
iv. How will compensation occur
v. What is the role of kidney in regulation of acid base balance in the body

c. Classify renal function tests. Describe serum and urine markers of renal functions (4+3+3)

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