

**Madhya Pradesh Medical Science University,
Jabalpur
MBBS First Professional Examination Feb-2021
Subject- Biochemistry
Paper-I**

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. Intracellular sorting, packing and secretion of proteins is done by

(a) ribosomes (b) peroxisomes (c) endoplasmic

reticulum (d) golgi complex

2. Which of the following is a semi-essential amino acid
(a) serine (b) cysteine (c) asparagine (d) arginine
3. Corneal transparency is a function of which mucopolysaccharide
(a) chondroitin sulphate (b) heparan sulphate (c) keratan sulphate (d) dermatan sulphate
4. Which phospholipid acts as a pulmonary surfactant
(a) cephalin (b) dipalmitoyl lecithin (c) phosphatidyl inositol (d) sphingomyelin
5. All of the following are formed from cholesterol EXCEPT
(a) vitamin D (b) bile acid (c) bile pigment (d) steroid hormones
6. All of the following are formed from tyrosine EXCEPT
(a) melanin (b) melatonin (c) dopamine (d) thyroid hormones
7. Level of HbA1c diagnostic of diabetes mellitus is
(a) $\geq 5\%$ (b) ≥ 5.6 (c) $\geq 6.5\%$ (d) $\geq 7\%$
8. Rate limiting enzyme of fatty acid biosynthesis is
(a) acetyl CoA carboxylase (b) acetyl trans acylase (c) 3-ketoacyl synthase (d) 3-ketoacyl reductase
9. Pyruvate dehydrogenase multienzyme complex requires all of the following coenzymes EXCEPT
(a) thiamine pyrophosphate (b) CO-enzyme A (c) FMN
(d) NAD⁺

10. Which of the following cannot serve as a generalized energy reserve of the body
(a) adipose tissue TAG (b) liver glycogen (c) muscle glycogen (d) muscle protein
11. Enzyme which is estimated as an indicator of hypoxia in covid 19 patients is
(a) CK-MB (b) SGOT (c) SGPT (d) LDH
12. Dicumarol acts as anticoagulant by inhibiting vitamin K epoxide reductase
(a) competitively (b) non-competitively (c) irreversible (d) allosterically
13. Which of the following decreases serum calcium
(a) calciferol (b) calcitonin (c) parathyroid (d) thyroid
14. Anti tuberculosis drug INH leads to deficiency of vitamin
(a) B1 (b) B2 (c) B6 (d) B12
15. Ketolysis cannot take place in the liver due to deficiency of enzyme
(a) thiokinase (b) thiophorase (c) thioesterase (d) thiolase
16. BAL (british antilewisite) or dimercaprol inhibits the electron transport chain at complex
(a) I (b) II (c) III (d) IV
17. Food preservative benzoic acid is conjugated with which conjugating agent to be excreted as hippuric acid
(a) glycine (b) glutamate (c) glutamine (d) glucuronic
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18. All of the following are formed with the help of TCA cycle EXCEPT

(a) haeme (b) fatty acids (c) essential amino acids (d) glucose

19. All of the following are substrates for gluconeogenesis EXCEPT

(a) fatty acids (b) lactic acids (c) propionic acid (d) all amino acids except leucine and lysine

20. Which of the following is formed by transmethylation

(a) creatine phosphate (b) epinephrine (c) melatonin (d) all of the above

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Q2. Short Answer Questions

20 x 1 = 20

- a. Biologically important peptides
- b. Ketosis
- c. Secondary structure of proteins
- d. Phenylketonuria
- e. Electron transport chain
- f. Functions and deficiency of vitamin D
- g. Competitive and non-competitive enzyme inhibition
- h. Structure of cell membrane
- i. Iron deficiency and iron toxicity
- j. Phase 2 of detoxification

Q3. Long Answer Questions

10 x 5 = 50

- a. Describe the breakdown of protein to urea and explain its significance in a person with impaired liver function
 - b. A middle-aged obese smoker with family history of heart disease came for a routine check-up to the hospital
 - i. What investigations will be done in lipid profile to assess the risk of heart disease (2)
 - ii. Describe formation of cholesterol up to mevalonate, explaining the significance of the conversion of HMG CoA to mevalonate and how it is inhibited (3)
 - iii. Name clinical
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- conditions associated with hypercholesterolemia and describe atherosclerosis (2.5) iv. Which markers can be used to diagnose myocardial infarction (MI)? Which enzyme is used therapeutically to dissolve the clot (2.5)
- c. A diabetic child came to the hospital with complaints of polyuria, polyphagia, polydipsia.
- i. What investigations can be done in his blood and urine to assess his glycemic index (5) ii. Describe the regulation of blood glucose (5)

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