KATHMANDU UNIVERSITY
End Semester Examination [C]
December, 2018

Marks scored:

Level : B. Pharm.
Year : II

DEC 27 2018

Course : BIOL 206
Semester: II

Exam Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date :

SECTION "A"
[20 Q ×1 =20 marks]

Tick [√] the correct answer.

1. Which of the following organelles are found in animal cells but not in plant cell?
   a. Mitochondria b. Thylakoid c. Chloroplast d. Lysosomes

2. In which of the following covalent modification is a protein covalently attached
   a. Phosphorylation b. Myristoylation
   c. Ubiquitination d. ADP ribosylation

3. Under which class of enzymes does dehydrogenase fall into?
   a. Lyase b. Isomerase c. Transferase d. Oxidoreductase

4. Out of the 10 steps of glycolysis, which step produces NADH?
   a. Step 1 b. Step 3 c. Step 6 d. Step 9

5. Glycogenin serves as
   a. a primer for glycogen synthesis
   b. an enzyme that hydrolyzes glycogen
   c. an enzyme that phosphorylates glucose
   d. an enzyme that catalyzes alpha 1→6 bond formation

6. Phosphotidyl ethanolamine is formed from
   a. Cardiolipin b. Phosphotidyl glycerol
   c. Phosphotidyl glycerol 3-phospholipid d. Phosphotidyl serine

7. HDLs
   a. transport triacylglycerol from the liver to other tissues
   b. transport cholesterol from the liver to other tissues
   c. are formed from LDLs
   d. transport cholesteryl ester from tissues to the liver

8. Which of the coenzymes is involved in decarboxylation during the conversion of pyruvate to acetyl CoA?
   a. TPP b. CoA c. Lipoate d. NAD

9. In which step of the Kreb's cycle is $FADH_2$ formed?
   a. Isocitrate to alpha-ketoglutarate conversion
   b. Alpha-ketoglutarate to Succinyl CoA conversion
   c. Succinyl CoA to succinate conversion
   d. Succinate to fumarate conversion

10. Which of the following is not a protein?
    a. Cytochrome C
    b. Coenzyme Q
    c. Cytochrome a + a3
    d. Cytochrome b

11. NAD+ carries electrons:
    a. directly
    b. as H^+ ions
    c. as hydrogen atoms
    d. as hydrite ions

12. DNA primase
    a. helps unwind DNA
    b. creates a short RNA sequence
    c. forms DNA from RNA sequence
    d. helps sew Okazaki fragments

13. During de novo synthesis of purines
    a. 6 membered and 5 membered rings close at the same time
    b. 6 membered ring closes before 5 membered ring
    c. 5 membered ring closes before 6 membered ring
    d. The order of ring closing cannot be determined

14. Ribose bonds with phosphate groups at positions
    a. 5 and 2 b. 3 and 2 c. 3 and 1 d. 5 and 3

15. In mammalian tissue serine can be a biosynthetic precursor for which amino acid?
    a. Methionine b. Glycine c. Arginine d. Lysine

16. The conversion of NH_4^+ to an amine group in glutamate requires
    a. ATP only
    b. ATP and NADH
    c. NADH only
    d. ATP and NADPH

17. Which of the following is NOT a stop codon?
    a. UAA b. AUG c. UAG d. UGA

18. Which vitamin can be synthesized from precursors in the human body?
    a. Vitamin B1 b. Vitamin B3 c. Vitamin B2 d. Vitamin D

19. The deficiency of which of the vitamins leads to scaly skin, muscular weakness, wasting and sterility in laboratory animals
    a. Vitamin A b. Vitamin E c. Vitamin C d. Vitamin K

20. What type of hormone is insulin
    a. Peptide b. Catecholamine c. Eicosanoid d. Steroid

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Indicate by checking (√) of each question you have answered in the cover page of main answer book.

SECTION "B"

[5Q. × 3 = 15 marks]

Answer *ANY FIVE* of the following questions.

1. Explain what is meant by RNA world hypothesis. [3]

2. What is a mixed inhibition? Draw two Lineweaver Burk plots one showing the effect of mixed inhibition on uninhibited enzyme catalyzed reaction and another showing the effect of competitive inhibition on an uninhibited enzyme catalyzed reaction. [1 + 1 + 1]

3. Write a short note on glycogen. [3]

4. How is activated isoprene formed from mevalonate? [3]

5. What are the relative concentrations of NADPH and NADP+, NADH and NAD+ in the cytoplasm? How is their concentration related to their function? [3]

6. What metal does Vitamin B12 contain? What are two reactions in which it serves as a cofactor? [1 + 2]

7. How is nitric dioxide formed? How does it act as a hormone? [1.5 + 1.5]

SECTION "C"

[5Q. × 5 = 25 marks]

Answer *ANY FIVE* of the following questions.

8. Describe the concept of coupling of electron transport and ATP synthesis. [5]

9. Write a short note on steroid hormone. [5]

10. Draw the structure of palmitoleic acid, which is an unsaturated 16-carbon fatty acid with a carbon-carbon double bond between carbon 9 and 10. Draw the structure of malonoyl CoA. Describe the role of malonoyl CoA in fatty acid synthesis. [1+1+3]

11. Using your knowledge from amino acid metabolism, draw the structures of oxaloacetate and alpha-ketoglutarate. In citric acid cycle what are they formed from and what do they convert into? Describe any products that are formed during their formation and processing. [5]

12. What are the three enzymes involved in glycogenolysis? What do these enzymes do? [1+4]

13. Describe how atmospheric nitrogen is converted to NH_4^+. [5]

14. Write a short note on Vitamin B1. Describe its various functions and deficiency syndromes? [5]

SECTION "D"

[2Q. × 7.5 = 15 marks]

Answer *ANY TWO* of the following questions.

15. Describe some of the features of the genetic code. Describe the process of activation of an amino acid during protein synthesis.

16. Describe the process of conversion of ribonucleotides to deoxyribonucleotides. How is this process regulated? Describe.

17. Describe the role of glutamine and glutamate in amino acid metabolism.