**ST MARY’S UNIVERSITY**

**TWICKENHAM, LONDON**

BSc Degree Examination students registered for

Level **FIVE**

Title**: Nutritional Biochemistry**

Code: **NUT5011**/**NUT5036**

Semester: **ONE**

Date: **January 11th 2019**

Time: **9:30 – 11:30AM**

TIME ALLOWED: **TWO** HOURS

**SECTION A:**

Multiple choice; answer **ALL** questions (2 marks each)

1. The pentose phosphate pathway is primarily responsible for the synthesis of:
2. ATP
3. ADP
4. NADPH
5. NADH
6. Glucose can be converted to fat but fat cannot be converted to glucose because:
7. Three steps of glycolysis are irreversible
8. acetylCoA cannot be converted to lactate
9. acetylCoA cannot be converted to pyruvate
10. acetyl CoA cannot be converted to citrate
11. When separating lipid molecules using Thin Layer Chromatography (TLC), the lipid with the lowest polarity:
12. will travel the longest distance on the TLC plate
13. will travel the shortest distance on the TLC plate
14. will travel the same distance as other molecules as polarity is not involved in the process
15. will not be attached to the TLC plate at all due to its low polarity
16. Which of the following statements is correct?
17. Chromosomes are part of genes
18. Genes are part of chromosomes
19. DNA is part of chromosomes
20. All of the above
21. DNA and RNA differ because
    1. DNA contains Thymine whereas RNA contains Uracil instead
    2. DNA and RNA contain different sugar molecules in their strands
    3. Both A and B
    4. Neither A nor B
22. What are the components of a triglyceride?
    1. Three fatty acids attached to two molecules of glycerol
    2. Two fatty acids attached to one molecule of glycerol
    3. Three fatty acids attached to one molecule of glycerol
    4. Three fatty acids attached to three glycerol molecules
23. What is the main functions of protein?
    1. Enzymes
    2. Hormones
    3. DNA
    4. All of the above
24. What is the main function of enzymes?
25. They reduce inflammation
26. They transmit messages between cells
27. They catalyse chemical reactions
28. They synthesise new amino acids
29. Which of these is an essential amino acid?
30. Alanine
31. Leucine
32. Glutamine
33. All of the above
34. The structure of an amino acid includes:
    1. An Amino
    2. An Amine group and carboxylic acid
    3. An enzyme and an acid group
    4. A glucose and an acid

11. During prolonged physical activity, which biochemical process creates glucose (to be utilised in the muscle) from non-glycogen sources?

a) Glycolysis

b) Gluconeogenesis

c) Glycogenesis

d) Lipogenesis

1. During protein synthesis, which process uses the codon A-U-G to begin?

a) Transcription

b) Transformation

c) Translocation

d) Translation

1. Reactions within \_\_\_\_\_ provide most of the energy needed by a typical cell.
2. Cytoplasm
3. The cell wall
4. The mitochondria
5. The endoplasmic reticulum
6. The lipoproteins that carry absorbed lipids from the intestinal tract to the bloodstream are the:
7. HDLs.
8. VLDLs.
9. LDLs.
10. Chylomicrons.
11. Acidosis in the blood is between which pH ranges?

a) 6.8 – 7.35

b) 7.35 – 7.45

c) 7.45 – 8.0

d) 4.5 – 6.0

**SECTION B:**

Answer **TWO** questions from this section (35 marks each)

* + - 1. Explain the biological processes involved in how stored fat is converted into ATP. (35 marks)
      2. Explain the biochemical processes that take place when blood glucose levels increase and there is a simultaneous accumulation of ATP. (35 marks)
      3. Describe the process involved in protein synthesis. (35 marks)

**END OF EXAMINATION**