

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86**  
**(For candidates admitted during the academic year 2015–16)**

**SUBJECT CODE: 15CH/AC/FB33**

**B.Sc. DEGREE EXAMINATION, NOVEMBER 2016**  
**BRANCH V(a) – PLANT BIOLOGY & PLANT BIOTECHNOLOGY**  
**BRANCH VI(a) - ADVANCED ZOOLOGY & BIOTECHNOLOGY**  
**THIRD SEMESTER**

**REG.NO .....**

**COURSE : ALLIED CORE**

**PAPER : FUNDAMENTALS OF BIOCHEMISTRY - I**

**TIME : 30 MINUTES**

**MAX.MARKS :30**

**SECTION – A**

**(30x1=30)**

**ALL QUESTIONS TO BE ANSWERED**

**ANSWER ON THE QUESTION PAPER ITSELF:**

**I. CHOOSE THE CORRECT ANSWER:**

1. Phenolphthalein is a colourless, weak acid which dissociates in water forming  
a) blue anions      b) purple anions      c) magenta anions      d) colourless anions
2. The process of sedimentation occurs through in response to the forces due to  
a) gravity      b) centrifugal acceleration      c) electromagnetism      d) all of these
3. The metabolic process in our body predominantly produces \_\_\_\_\_  
a) carbonic acid      b) lactic acid      c) sulphuric acid      d) phosphoric acid
4. \_\_\_\_\_ in the blood is important in the respiratory regulation of pH.  
a) Platelets      b) Hb      c) Plasma      d) Serum
5. Compounds in the biological system which on hydrolysis yield energy are called  
a) Energy rich compounds      b) High energy compounds  
c) only a      d) both a & b
6. In thermodynamics a reaction that utilizes energy is called \_\_\_\_\_ reaction.  
a) exergonic      b) endergonic      c) free energy      d) energized
7. Though the precursors are produced in the mitochondria, gluconeogenesis takes place in the  
a) nucleus      b) golgi bodies      c) cytosol      d) ribosomes
8. The process by which glucose is converted to lactate or pyruvate is called  
a) uronic pathway      b) glycolytic pathway      c) glycogenolysis      d) glycogenesis
9. Which of the following is a nucleotide coenzyme?  
a) CoA      b) UDP      c) TPP      d) both b & c
10. The energy required for the reactants to undergo a reaction is called  
a) activation energy      b) transition      c) free energy      d) none of these

**II. FILL UP THE BLANKS:**

11. When water behaves simultaneously like both acid and base the resulting product is \_\_\_\_\_.
12. The pH range of methyl orange is \_\_\_\_\_.
13. Respiratory acidosis is due to the increase in \_\_\_\_\_.
14. The most common sex linked clotting disorder transmitted from females affecting the males is \_\_\_\_\_.
15. The utilizable energy available to do work is called \_\_\_\_\_.
16. Standard free energy is represented by the symbol \_\_\_\_\_.
17. Carbohydrates that completely dissolve in water are called \_\_\_\_\_.
18. The electron transport chain takes place in the \_\_\_\_\_.
19. Substrate concentration at half maximum velocity is called \_\_\_\_\_ constant.
20. The \_\_\_\_\_ is the non-protein moiety which binds to the apoenzyme.

**III. STATE WHETHER TRUE OR FALSE:**

21. The endogenous waste produced in our body is derived from the oxidation of foodstuff.
22. The body can efficiently maintain the acid – base balance when the pH of the blood is 6.4.
23. One mole of ATP releases 5.5 kCal of energy.
24. Fasting blood glucose in normal individuals is 70-100 mg/dl.
25. Tyrosine is a bond specific enzyme.

**IV. ANSWER IN ONE OR TWO SENTENCES:**

26. Define pH.
27. What is sickle cell anaemia?
28. Differentiate between enthalpy and entropy.
29. Draw the Haworths structure for glucose.
30. Define apoenzymes.

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**TIME : 2½ HOURS** **MAX.MARKS : 70**

**SECTION – B** **(5x6=30)**

**Answer any FIVE questions:**

1. What are the physical properties of water?
2. Explain the role of phenolphthalein and methyl orange as indicators.
3. Explain the mechanism of coagulation of blood.
4. Give the structure of ATP and give reasons why ATP is called the “Energy currency of the cell.”
5. Elucidate the structure and function of a homopolysaccharide and a heteropolysaccharides.
6. Explain the steps in glycogenesis.
7. Classify the enzymes based on the reactions they catalyse.

**SECTION – C** **(2x20=40)**

**Answer any TWO questions:**

8. a) Elaborate on the principle, instrumentation, technique and significance of SDS-PAGE and Dialysis. (8+6)  
b) Describe the maintenance of Glucose level in blood. (6)
9. Write the steps involved in the complete breakdown of glucose to CO<sub>2</sub> and H<sub>2</sub>O through glycolysis and TCA cycle.
10. Write short notes on:  
a) Lock and Key and Induced Fit Model. (6)  
b) Maintenance of pH of Blood by Bicarbonate buffer. (6)  
c) Factors affecting enzyme action. (8)

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