OLABISI ONABANJO UNIVERSITY, AGO-IWOYE.

DEPARTMENT OF BIOCHEMISTRY, REMO CAMPUS

2013/2014 HARMATTAN SEMESTER EXAMINATIONS

BCH 405: METABOLIC REGULATIONS (2UNITS)

DATE: 10TH Nov. 2014 **TIME ALLOWED: Hours**

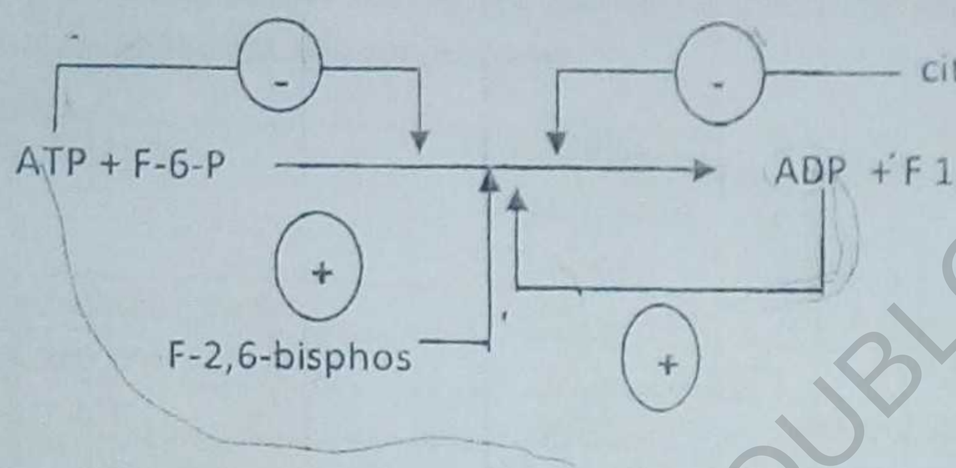
Instruction: Answer questions ONE and TWO and any other question

1 (a) Define the following terms as they relate to enzyme catalysed biochemical pathways:

(i) feedback inhibition (ii) sigmoidal kinetics (iii) allosteric site (iv) homotropic effector

(v) heterotrophic effector (vi) zymogen

(b) The scheme below is showing the reaction catalysed by phosphofructose kinase 1 in glycolysis



Using the following terms (negative homotropic effector, negative heterotrophic effector, positive heterotrophic effector, negative feed forward control, positive feedback control)

(i) select which terms appropriately describes the role of citrate , ATP, ADP on the enzyme

(ii) what is the quaternary structure of PFK 1

2 . Using a named biochemical pathway of your choice, give the name of the enzyme , substrate and products of the committed step/ rate limiting step of the named pathway. Describe its regulatory mechanism

3. Glycogen levels in the muscle and liver are delicately regulated to meet the energy needs of the cell as well as to minimize cellular wastage of energy resources. Discuss how this regulation is achieved in a mammalian cell.

4(a) All biochemical pathways are delicately regulated to maintain the ordered state. Discuss briefly the major strategies by which this regulation is accomplished.

(b) Discuss how a named hormone regulate a metabolic process/pathway

5. Compare and contrast the sequential and the concerted models of allosterism