TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

PURE AND APPLIED SCIENCES DEPARTMENT

UNIVERSITY EXAMINATION FOR

BTAC 14S

ACH 4312 : COMPUTERS IN CHEMISTRY

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: DEC 2016

Instructions to Candidates
You should have the following for this examination
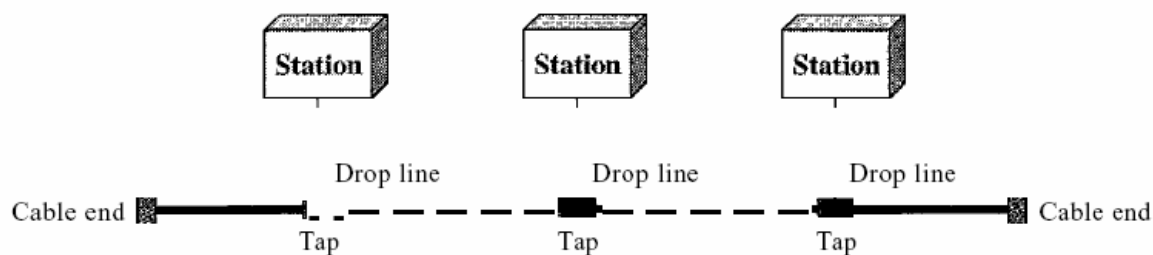 -*Answer Booklet, examination pass and student ID*
This paper consists of five questions. Answer question one and any other two.
Do not write on the question paper.

Question ONE

a)   Explain the following terms
  i.   Chemometrics   (2mks)
  ii.   Data communication   (2mks)
  iii.   Topology   (2mks)
  iv.   Pseudocode   (2mks)
  v.   Chemical patent   (2mks)

b)   Differentiate between the following as applied to networks
  i)   Syntax and semantic   (2mks)
  ii)   LANs and MAN   (2 mks)

c)   Explain the two major functions of CAS (Chemical Abstract Service)

                                                                    (4marks)
d)   i)   List the two main types of connections

                                                                    (2marks)

ii)   Explain each type of connection in d(i) above.

(4marks)

e)   State the importance of Chemdraw to a chemistry scholar

(2marks)

f)   Study the diagram below and answer the questions that follow

i)   Identify with reason the type of topology represented above.   (2mks)
ii)   State two advantages and one disadvantage of the topology in an industrial set-up

(3mks)

Question TWO

a)   Using a schematic diagram describe the functions of each of the following layers in ISO-OSI network model.
         i)   Physical layer
         ii)   Network layer
         iii)   Data link layer
         iv)   Transport layer
         v)   Session layer
         vi)   Presentation layer
         vii)   Application layer

(14 marks)

b)   Explain each of the following CAS databases
         i)   CASREACT®
         ii)   Chemical Industry Notes (CIN)

(6marks)

Question THREE

a)   Outline any five major features and their related benefits of SciFinder Scholar software.

(10 marks)

b)   Provide the three major searches for SciFinder Scholar.

(6marks)

c)   i)   Explain the term Chemcats®.

(2marks)

         ii)   State the information offered by Chemcats®.

(2marks)

Question FOUR

a) Describe each of the following five components of data communication system
   i) Sender
   ii) Message
   iii) Receiver
   iv) Transmission medium
   v) Protocol

   (10marks)

b) Explain each of the following data presentation
   i) Text
   ii) Numbers
   iii) Coloured images

   (6marks)

c) Account for the preference of TCP-IP model over ISO-OSI model

   (4marks)

Question FIVE

a) Illustrate the layout of the following types of network topologies

   i) Mesh topology   (6marks)

   ii) Star topology   (6marks)

b) Explain the two major services offered by Science IP database

   (4marks)

c) State any four users of Science IP database

   (4marks)