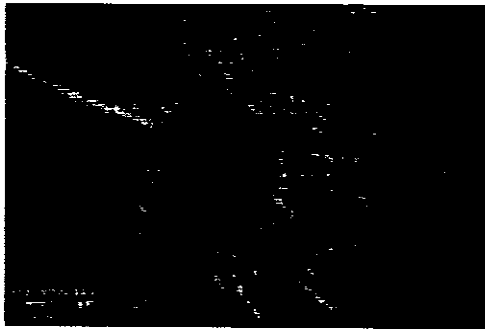


BITS, Pilani-Dubai
II Year - I Semester 2007 - 2008
COURSE NO / TITLE: TAUC211: MEASUREMENT TECHNIQUES – 1 [BIOLOGY]
Date: 27th DEC 2007 **Marks: 40**

NAME OF THE CANDIDATE: _____ **ID NO:** _____

1) Identify the structure of the following specimens and label the parts. (2X2=4)



a) _____



b) _____

2) Calculate the calibration constant, when Eye Piece Scale reading (42mm) coincides with the Stage Micrometer reading (48mm). (2marks)

3) Complete the following: (4marks)

Blood group	Contain Antigen	Contain Antibody	Can donate to	Can receive from
A				
B				
AB				
O				

4) Draw the schematic diagram of UV-Visual spectrophotometer and name the five major components in it. (4marks)

5) Write the normal range of erythrocytes count and the haemoglobin content in adult male and female. (2marks)

6) A technician in a clinical lab diluted a blood sample to 200 times and counted 484 cells in five square grids of a Neubauer chamber. What are the cells he was counting and give the total count along with the formula? (3marks)

7) Mention the significance of resolution in the Microscopy. (2marks)

8) What is the function of condenser and Iris diaphragm?

(2marks)

9) When you are counting the Mitotic cell to be 17 and non-mitotic cell to be 106, what will be the Mitotic Index? (2marks)

10) Chromosomes are most clearly visible in the cell cycle at (1mark)

- i) G 2 because DNA replication is over.
- ii) During Telophase as nuclear membrane reformed to reveal the chromatin.
- iii) During Metaphase because chromosomes get streamlined at mitotic plate.
- iv) S phase because DNA replication takes place.

11) In which way Haemoglobin count helps a person to identify the deformities. (2marks)

12)) What is Rh-incompatability?

(2marks)

13) Name the area of the onion root tip in which the somatic cells undergo active mitotic division. (0.5 mark)

14) Mention the constituents of Hayems solution and their function. (2marks)

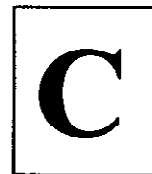
15) A person living in high altitude has been diagnosed with the increased level of RBCs. Which disorder could he be suffering from? (0.5mark)

16) Define: "Beer- Lamberts law" (2marks)

17) When blood reacts with 0.1N Hcl, the brown colour is formed. Write the reason. (0.5 mark)

18) Write the Procedure that you have followed for White Blood Cell count and explain the derivation. (4.5marks)

**BITS, Pilani-Dubai
INTERNATIONAL ACADEMIC CITY, DUBAI**



**II Year - I Semester 2007 - 2008
MT-1 (Chemistry)**

**COURSE NO.: TAUC211;
TIME: 30 min**

**COURSE TITLE: Measurement Techniques-I;
WEIGHTAGE: 40%**

Date: 27.12.2007

I.D. No. _____

NAME: _____

Sec No: _____

RECHECK REQUEST:

MT-1 (CHEMISTRY)

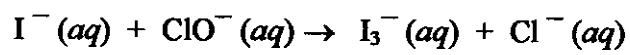
1. Which is a monosaccharide? **(1M)**
(a) Sucrose (b) Maltose (c) Galactose (d) Cellulose
2. Starch gives a blue colour when treated with iodine solution. This is due to the reaction between _____ component of starch and iodine. **(2M)**
3. Write a confirmatory test for oxalic acid with the relevant chemical equation. **(2M)**
4. Mention the composition of Fehling's solution? **(2M)**
5. KMnO_4 is not a primary standard - Why? **(2M)**

6. Why is dilute H_2SO_4 most suitable as compared to HCl and HNO_3 in Permanganometry titration.

(2M)

7. Balance the following redox equation in acidic medium. (show the steps)

(2M)



8. In acid solution the reaction $\text{MnO}_4^- \rightarrow \text{Mn}^{2+}$ involves
(a) oxidation by $3 e^-$ s (b) reduction by $3 e^-$ s (c) oxidation by $5 e^-$ s
(d) reduction by $5 e^-$ s (1M)
9. In general, the rate of reaction can be increased by all the factors except (2M)
(a) increasing the temperature
(b) increasing the concentration of the reactants
(c) increasing the activation energy
(d) using a catalyst
10. The powers to which the concentration of a substance appear in the rate expression is known as _____ (1M)
11. A reaction involving two different reactants can never be? (2M)
(a) First order reaction
(b) Unimolecular reaction
(c) Second order reaction
(d) Bimolecular reaction
12. If the acid hydrolysis of an ester is followed by titration using standard alkali, the titre value at any given time is proportional to (2M)
(a) The ester left over
(b) The ester already hydrolysed
(c) Neither (a) nor (b)
(d) Both (a) and (b)
13. Calculation of molar conductance at infinite dilution for weak electrolyte is based on (1.5M)
(a) Ostwald's dilution law
(b) Arrhenius law
(c) Kohlraush's law
(d) Raoult's law

14. As the dilution increases molar conductance increases for strong electrolytes because of **(1.5M)**
- (a) decrease in inter- ionic interaction
 - (b) increase in inter- ionic interaction
 - (c) decrease in polar effect
 - (d) increase in solubility
15. If the specific conductance is $1600 \mu\text{S}$ for 1 M acetic acid, the degree dissociation will be ($\lambda = 391 \text{ ohm}^{-1} \text{ cm}^2$) _____ **(1.5M)**
16. The degree of dissociation tends to be unity only **(1.5M)**
- (a) at high concentration
 - (b) at low concentration
 - (c) at moderate concentration
 - (d) at zero concentration
17. Ostwald's dilution law is verified graphically by plotting _____ vs _____ **(1M)**
- _____
18. Calculate the hydrogen ion concentration at 25°C if the pH of a solution is 8.197. **(2M)**
19. At the half way point in the titration of a weak acid with a strong base the pH was measured as 4.66. What is the acidity constant, K_a , of the acid? **(2M)**
- (a) 19×10^{-5}
 - (b) 1.9×10^{-5}
 - (c) 29×10^{-5}
 - (d) 1.0×10^{-5}

20. Sketch the pH curve of a solution containing 0.10 M $\text{NaCH}_3\text{CO}_2(\text{aq})$ and a variable amount of acetic acid. (2M)
21. Write the structural equation for the synthesis of acetanilide . (2M)
22. Indicate the atom in which protonation of an amide occurs during the synthesis of Acetanilide. (2M)
23. In the laboratory preparation of acetanilide which substance is acting as the nucleophile? (2M)
