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	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF BOTANY			
	EXAMINATION FOR JUNIOR (4 TH YEAR CHEMISTRY-MICROBIOLOGY)			
	COURSE TITLE:	Physiology of Algae را بوعر كيمياء - مائيرو		COURSE CODE: BO4123
DATE:	JANUARY, 2014	TERM: FIRST	TOTAL ASSESSMENT MARKS: 100	TIME ALLOWED: 2 HOURS


1 - Write short account on the following:

- A) Disadvantages of limited volume algae culture
- B) Indices of growth of algae
- C) Different kinds of algae nutrition
- D) differences between Open and closed algae culture

2- Write short notes on the following:

- A) Advantages of continuous culture
 - B) Role of Magnesium, Nitrogen and silicon in algae growth
 - C) Reasons of entering algae to death phase
 - D) Role of carotenoid in algae
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 1969	TANTA UNIVERSITY FACULTY OF SCIENCE DEPARTMENT OF CHEMISTRY		
	EXAMINATION FOR REGULAR B. SC. STUDENTS		
DATE: 14 TH JANUARY, 2014		TERM: FIRST	COURSE CODE: 4143
COURSE TITLE: Solid State Chemistry		TOTAL ASSESSMENT MARKS: 50	TIME: 2 HOURS

Answer the following questions (4 marks per question):

1- Draw and carefully label diagrams illustrating each of the following:

- a- An end centered tetragonal Bravais unit cell
- b- The (111) and (110) planes in a cubic unit cell.
- c- The [111] and [110] directions in a cubic unit cell.
- d- The 111 and 110 positions in a cubic unit cell.
- e- A hexagonal unit cell showing the axes and angles.
- f- Different types of liquid crystals.
- g- Phase diagram of the cationic surfactant cetyl trimethylammonium bromide (CTAB) in water showing the hexagonal, cubic and lamellar liquid crystal phases.
- h- The chemical structure of montmorillonite clay.
- i- The electronic and chemical processes occurring in TiO_2 particles upon photocatalytic mineralization of industrial waste water.
- j- Different types of point defects.

- 2-(a) Given silver crystals having a face-centered cubic (fcc) crystal structure with cell parameters $a = b = c = 4.086 \text{ \AA}$, and its atomic mass as 107.87 g/mol , calculate the density of silver given Avogadro's Number $N = 6.02 \times 10^{23}$ and $1 \text{ \AA} = 10^{-8} \text{ cm}$.
- (b) In not more than ten words, define each of the following terms:
A plasmon, a mesogen, an exciton, the aspect ratio (R) of nanorods, the exciton Bohr radius (a_{ex}), an amorphous material, intercalation phenomenon and Burger vector (b).
- (c) A reaction product is expected (pre-determined) by the arrangement and packing of the reactant molecules. Discuss this principle taking the photodimerization of trans cinnamic acids as a model.
- (d) Discuss briefly the application of polymerized crystalline colloidal arrays (PCCA) in the sensing of Pb^{2+} , Cu^{2+} , glucose and bladder cancer.

3- Give a scientific reason for each of the following:

- (a) Protein emission is dominated by tryptophan emission.
- (b) Zinc sulphide becomes fluorescent upon heating.
- (c) A transparent NaCl crystal becomes colored upon exposure to Na metal vapor.

EXAMINERS	PROF. DR. الزينى موسى عبيد	
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