المستوى الرابع ميكروبيولوجي - ميكروبيولوجيا تطبيقية صباحية (م ٤٠٧)

MansouraUniversity
Faculty of Science
Botany Department
El-Mansoura, Egypt

جامعة المنصورة
كلية العلوم
قسم النبات
المنصورة - مصر

Final Examination in Botany
Second Term: May 2014

Educational Level: Fourth Level
Subject:M407
Time: 2 hrs Date:7/6/2014

Program (Branch): Microbiology
Course(s): Applied and Industrial
Full mark:60 **Question mark:** 20

Q1:

(A) Mark (True) or (False): (0.5 Marks each)

1- All seaweeds can be used as vegetables. ( )
2- Sea vegetables are used for their trace elements. ( )
3- Some Egyptian marine algae can be used in human feed. ( )
4- The daily consumption of algae per person in Japan is approximately 100 gm. ( )
5- The most important element in algal food is iodine. ( )
6- In Iceland, animals graze on seaweed on the shore. ( )
7- In North West Europe, algal fodder is manufactured in factories. ( )
8- In France and England, seaweeds are used as land fertilizer. ( )
9- Seaweeds are used to manure artichoke and cotton fields. ( )
10- Algal manure may be used as fresh or powdered but not as liquid extracts. ( )
11- *Ulva*and *Enteromorpha*are very good as agarophytes. ( )
12- Agar is prepared from red and some brown seaweed. ( )
13- The percentage of agar in red algae is about 37%. ( )
14- The world production of agar is 5000 metric tons and it is totally produced in Japan. ( )
15- Carrageenan is extracted from *Chondrys* and*Gigartina*. ( )

(B) Complete the following sentences: (0.5 Marks each)

1- The two types of Carrageenan are known as _____ and _____.

2- Carrageenans differ in their _____ characters.

3- Phyco-colloids are used in foods like _____ and _____.

4- Algin is present in cell walls and _____ of brown algae.

5- Bromine is produced from red algae like_____-.

6- Iodine is extracted from brown seaweeds like _____- and _____.

7- The most useful algal genera for algin manufacturing are _____ and _____.

8- Algae are used as remedies because of their _____ content.

9- Japanese people do not suffer from _____ because of their algal consumption.

10- Algal genera like _____ and _____ are used against intestinal worms.

11- Powder of _____are added to human food to treat calcium deficiency.

12- Algal antibiotics are like _____ that produced from_____.

13- The main target in sewage treatment is to reduce their _____ content by_____.

14- Spirulina is useful in treating diseases like _____and _____.

15- Toxic algal genera are present in classes: _____, _____ and_____.

(2)

(C) Choose the best sentence: (1.25 Marks each)

1- A- Carrageenan is extracted from *Gigartina* and *Hypnea*.

B- Carrageenan is a phyco-colloid including two types.

C- Carrageenan types extracted from family Gigartinaceae have physical differences.

D- Kappa and Lambacarraageenans differ physically.

2- A- Sewage alga is an alga that can withstand high organic pollution.

B- Sewage alga is the producer of oxygen for sewage treatment.

C- Sewage algae are microalgae that can live in high organic pollution.

D- Sewage algae can make photosynthesis in high organic pollution.

3- A- A toxic alga is either dinoflagellate or haptophyte and cyanophyte.

B- A toxic alga produces either exo- or endo-toxins.

C- A toxic alga is harmful to man and animals.

D- A toxic alga hurts man and animals because of their toxins.

4- A- A medicinal alga is useful in treating some diseases.

B- A medicinal alga is cautiously used for oral consumption.

C- A medicinal alga is like *Spirulina*, *Coalepra* and *Jania*.

D- A medicinal alga is cautiously used to treat some diseases.

Q2:

(A) Illustrate the different reactions in a sewage oxidation pond, (5 Marks)

(B) Illustrate the different methods for sewage aeration. (2 Marks)

(C) Illustrate the change in the viscosity of a phyco-colloid with temperature. (3 Marks)

(D) Complete the following sentences: (10 Marks)

1- The vessels used in large-scale industrial fermentations for food and pharmaceutical production are called_____.

2- The optimum medium to enhance Protease productivity should contain_____ as the major carbon source.

3- The ability of bacteria to produce light is called_____, and the most common bacterium with this capability is called_____.

4- The most expensive mushroom is called_____.

5- Different methods of enzyme immobilization include _____, _____ and _____.

6- _____ Species could be used in the Mycoprotein production process.

7- The maximum enzyme production is usually in _____ phase of microbe growth.

Q3:

(A) Determine if the each of the following statements is True (T) or False (F) and correct the false one(s): (15 Marks)

1- Secondary metabolites such as antibiotics are usually produced during exponential stage in the growth of a bacterium ( ).

2- From the down-streaming prospective, Extracellular enzymes are preferred over Intracellular one in the industrial processes ( ).

3- Taq-polymerase enzyme is extracted from an extreme psychrophilic bacterium that can tolerate harsh conditions ( ).

4- One of the main disadvantage of applying Single Cell Protein as a food supplement is its high concentration of fatty acids ( ).

5- Enzyme Adsorption is the most common immobilization techniques used in the manufacture of biosensors ( ).

6- The optimum medium to enhance cellulase enzyme productivity should contain glucose as the major carbon source. ( )

7- Enzyme immobilization decrease its life time. ( )

8- Ultra-purified enzymes are the cheapest enzyme could be obtained. ( )

9- Neurotoxins stimulate the release of acetylcholine which prevents muscles from contracting. ( )

10- *Clostridium* toxins were proven to be a successful bioweapon due to its Extreme potency and lethality. ( )

(E) Choose the most appropriate answer: (5 Marks)

1-Which of the following is not made by a microbial fermentation process?

(a) Copper, (b) Antibiotics, (c) Vitamins, (d) Amino acids, (e) Steroids

2- Which of the fallowing CANNOT be used in a biogas generator?

(a) Manure, (b) Organic waste, (c) Compost/garbage, (d) Metal

3- A paralyzing agent that produced by *Clostridium* species which could be used in cosmetic surgery,

(a) Botulism, (b) botulinum toxin A, (c) botulus, (d) botulinum toxin B

4- In the detergent industry, Proteases are one of the major enzymes to be used. Such proteases have to be obtained from

(a) Extreme Acidophiles, (b) Microaerophiles, (c) Extreme Alkaliphiles, (d) Extreme Halophiles

5- Methanogenic bacteria are archaea that are,

(a) Strict anaerobes that obtain energy through the synthesis of methane, (b) strict anaerobes that obtain energy through the consumption of methane, (c) strict aerobes that obtain energy through the synthesis of methane.

Examiners:

Prof. Yehia Azzab **Dr. Ahmed AbdElrazak**

٤ ميكروبيولوجي - أيض ومسارات أيضية (م٤١٠)

Year: 4th Year
Microbiology
Course: Metabolism
Date: May 2014
Time: 2hr

Botany Department
Faculty of Science
Mansoura University

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Answer the following questions:

Question 1

a-**Outline** each of the following:

i-The pathway for the biosynthesis of the aspartate family of amino acids.

ii-The pathway for the biosynthesis of the leucine and valine family of amino acids.

iii-Main routes of nitrogen into amino acid biosynthesis.

Question 2

a-**What** is meant by : Oxidative phosphorylation and photosynthetic phosphorylation (with reference to the difference between the two types in the latter one). Illustrate the answer with diagrams in both cases.

b-**Show** how can CO_2 be fixed into sugars in CAM plants.

Question 3

a-_During glycolysis the G-6-P may be shifted to another pathway known as Pentose Shunt. **Illustrate** how can this be carried out.

b-**Write** short notes on the different factors affecting the rate of respiration.

C- **Mention**:

i- the processes in which glutathione and its derivatives are involved.

ii-the factors affecting transcription and activity of nitrate reductase in plants.

iii-Relation between pentose phosphate pathway and nitrite reduction.

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Best wishes

Prof. Hamed M El-Shora   Prof. Samy Abo Kassen