المستوى الثالث - ميكروبيولوجي - علم الإنزيمات - النهائي ٢٠٢٠

Year: 3rd Year –
Microbiology- Time 2h
Course: Enzymology

Botany Department
Faculty of Science
Mansoura University

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Answer the following questions:

Question 1

A-Write the following enzymatic equations, the enzymes involved, and their classification:

1-C_3 (keto acid) + C_5 (amino acid)..... C_3 (amino acid) + C_5 (Keto acid)
2-C_4..... C_3 + C_1
3- C_4 + NADP..... C_3 + C_1 + NADPH
4-C_4 + NAD ..... NADH + H^+ + C_4
5-C_5 + NH_3 + ATP ..... C_5 + ADP + ... + ...

B- Identify isomerase. Write the equations of triosephosphate isomerase - phosphoglucomutase – phosphoglyceromutase.

C- How could you synthesize G-1-P by three various enzymatic methods.

Question 2

A-i-What is meant by amidase?. Mention two examples and write their enzymatic equations.
ii-How could you get benzaldehyde from amygdaline. Write the equations for its production.

B-Complete the following sentences (10 Marks):

1- Organic cofactors are generally regarded as ..... and when they are tightly bound to the enzyme they called .....
2- The amino acids are connected together by ..... bond , however, the alpha helix is generated by ..... bonds.
3- Adaptive enzyme is ..... and ..... is an example of adaptive enzyme.
4- Heterodimer enzyme consists of ..... Polypeptide chains and the active site of this enzyme lies in .....
5- The active site is characterized by ....., ..., ... and .....
6- In protein purification methods, ... is a method depending on polarity ,however, ... is a method depending on the molecular mass of the proteins.
7- The absolute specificity of the enzyme means ..... and ..... enzyme is a typical example of absolute specificity.
8- The linkage specificity of the enzyme means ..... and ..... enzyme is a typical example of linkage specificity.
9- The normal physiological pH inside the cell is..... and if the pH value is shifted to acidic range that will cause .....

Question 3

A- How could you explain the following statements (10 Marks):

1- Apo-enzyme is unable to convert its substrate to the product
2- An enzyme is unable to bind to its substrate
3- D-amino acid oxidase is not acting on L-amino acid
4- Enzymes = Life

B- Compare between each of the following (6 Marks):

1- Noncompetitive and competitive inhibitors
2- Parent strain protein and recombine ant protein

C- Draw an Imaginable labeled diagram of a protein containing an alpha-helix at the N-terminus followed by a beta-sheets (with 3 polypeptide chains) and an alpha helix at the C-terminus (4 Marks).

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Best wishes

Prof. Hamed M El-Shora *Dr Amr Mohammed*

8-Bacteria that are responsible for fermentation of dairy milk are

a. Azetobacter b. Rhizobium
c. Lactobacillus d. Hay bacillus

9--**pasteurization is a**

a)low temp. treatment b)steaming treatment
c)high temp. treatment d)low and high temp. treatment

10- **Temperature in pasteurization is**

a. 22° C b. 35.7° C
c. 68.2° C d. 90° C

(Q.3). (20 mark)

A. Describe the symbiotic growth that appears during yoghurt production with special reference to mechanism of its action, & Effect of starter culture on milk composition. (5 marks)

B. DNA is a molecule responsible for preserving genetic information across species and across time. It consists of a meaningful arrangement of chemicals called nucleotides that are symbolized by "A", "T", "C" and "G." These arrangements tell us a story of each organism or individual. DGGE have a real potential in screening large number of food products for rapid and reliable identification of deleterious changes, **Define DGGE & explain the mechanism of action of this technique as a molecular analytical tool for food safety?** (6 mark)

C.What are the Principal causes of milk spoilage?,

Mention the main stages of milk decay with special reference to Deteriorative changes. (9 mark)

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* Examiners:

Assist. Prof. Dr. Mervat H. Hussein
Dr. Ahmed I. El-Shobaky

With our best wishes,

Mansoura University
Faculty of Science
Botany Department
El-Mansoura, Egypt

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Final Examination in Microbiology
Second Term: May: 2014

B. Choose the most correct answer(s)(10 marks)

1-The yoghurt is made from

A. *Lactobacillus bulgaricus*
B. *Streptococcus thermophilus*
C. *S. cremoris*
D. Mixed culture of (a) and (b)

2-**Salt and sugar preserve foods because they**

a. Make them acid
b. Produce a hypotonic environment
c. Deplete nutrients
d. Produce a hypertonic environment

3-Which of the following terms describe organisms that thrive in cold?

a)mesophiles b)thermophiles c)psychrophiles d) Aerophiles

4-When food material are preserved at a temperature just above freezing temperature, the process is called.

a. Freezing b. Pasteurisation
c. Chilling d. Frosting

5-**The undesirable change of food that make it unsafe for human consumption is referred as**

a)food decay **b**)food spoilage **c**)none of these **d**)foodloss

6-The term that is used for the bacteria which can withstand pasteurization but does not grow at higher temperatures

a. Thermophiles
b. Extreme thermophiles
c. Thermoduric
d. Facultative thermophiles

7-**food preservation involve**

a)increasing shelf life of food b)ensuring safety for human consumption
c)both a & b d) none of these

* فضلا إقلب الصفحة

المستوى الثالث - ميكروبيولوجى - ميكروبيولوجيا الأغذية والألبان (٣٠٧ م)

Mansoura University
Faculty of Science
Botany Department
El-Mansoura, Egypt

جامعة المنصورة
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المنصورة - مصر

Final Examination in Microbiology
Second Term: May: 2014

Educational Year: **3rd Level** Program: **Microbiology**

Subject: **M 307** Course: **Microbiology of Foods & Dairy Products**

Time: **2 hrs** Date: **4 / 6 /2014** Full mark: **60** Question mark: **20**

Answer the following questions:

(Q1) Complete the following sentences (15 marks):

A.

a. Methods of introducing curing agents into meat are:
(1) ……, (2) ……. , (3) …….. , (4) ……..

b. Factors that influence the invasion of microorganisms to animal tissues are:

(1) …….. , (2) …… , (3) …….. , (4)……..

c. Meat spoilage under aerobic conditions may cause:
(1)…… , (2)…….. , (3)…….. , (4)…….. , (5)……..

d. Factors that influence the growth of microorganisms and kind of meat spoilage:

(1)……, (2)……., (3)……, (4)……., (5)…….

e. Hydrogen swell in heated canned foods are favored by:

(1) ……., (2) ……

B. **B. Choose the most correct answer(s) (5 marks):**

a. **Which of the following is Not an intrinsic factor in food spoilage:**

i. pH
ii. moisture content
iii. temperature
iv. physical structure

b. **Food spoilage**

i. is any change in the appearance, smell, or taste of a food product that makes it unpalatable
ii. is the growth of pathogenic bacteria on a food
iii. the food is unsafe to eat
iv. all of the above

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c. **Water activity (Aw)**

i. a measure of the available water in a food

ii. affected by how much sugar is present in food

iii. measured in reference to water has an Aw of 1.00

iv. the vapour pressure of air in equilibrium with a substance or solution divided by the vapour pressure of pure water

v. all of the above

d. **Grinding and mixing of foods such as sausage and hamburger**

i. Increase the food surface area.
ii. Alter cellular structure.
iii. Distribute contaminating microorganisms throughout the food
iv. All of the above.
v. None of the above.

e. **Despite efforts to eliminate spoilage organisms during canning, sometimes canned foods are spoiled. This may be due to:**

i. Spoilage before canning.
ii. Under processing during canning.
iii. leakage of contaminated water through can seams during cooling
iv. All of the above.
v. None of the above.

(Q 2) **A. Discuss each of the following:** (10 marks)

i. Types of biological spoilage of heated canned foods (4 marks).

ii. Meat spoilage under facultative and anaerobic conditions (2 marks)..

iii. Chemical changes of myoglobin during meat processing and curing (4 marks).

• فضلا إقلب الصفحة

المستوى الثالث - ميكروبيولوجي - تغذية معدنية, هرمونات نباتية (م ٣١٠)

Mansoura University
Faculty of Science
Botany Department
El-Mansoura, Egypt

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Final Examination in Botany
Second Term: May. 2014

Educational Year: 3rd Level **Program : Microbiology**
Subject: (M 310) **Courses: Mineral Nutrition & Plant Hormones .**
Time: 2 hrs **Date: 8/6/2014** **Full mark: 60** **Question mark: 20**

Answer the following questions:

Q1 Explain each of the following : (each 5 Marks)

a- Polar auxin transport .
b-Gibberellins biosynthesis .
c- Mode of cytokinin action .
d-Photo-and enzyme- oxidation of IAA.

Q2

I- What do you know about each of the following :
a- Effect of auxin on gene expression (5 Marks)
b- Delay of senescence by cytokinin (5 Marks)

I- Differentiate between the following : (10 Marks)
with the help of well-labelled diagrams

a- Apoplast and Symplast pathways of movement of minerals in plants.

b- Pattern of ion transport in xylem and phloem

Q3 Write an account on the following : (20 Marks)

1- Mention the availability , function and deficiency symptoms of any two elements (one mobile and other immobile) .
2- Carrier hypothesis.
3- The disadvantages of solution culture.
4- Mass flow in passive transport of elements .

" Best of Luck "

Examiners: Prof.Dr. Wafaa M.Shukry
Prof.Dr.Samia A. Haroun

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Final Examination in Botany
Second Term: Jun. 2010

Educational Year: Third Year **Program (Branch): Microbiology**
Subject: M308 **Course(s): Introduction to Medical Microbiology**
Time: 2 hrs **Date: 11 /06 /2014** **Full mark: 70** **Question mark: 20 points**

Answer the following questions:

1 **A- Circle T for true and F for false. If the statement is false, rewrite the sentence making it true (1 mark each).**

1. All infectious diseases are exogenously acquired from the environment.
2. Invasive period is the period during which the typical signs and symptoms of the disease reach their greatest intensity; sudden and severe.
3. Coagulase, like streptokinase, triggers blood clotting mechanism, allowing bacteria protection from immune defenses. Ex. *Staphylococcus aureus*.
4. Prodromal period is a short period during which nonspecific, often mild, symptoms such as malaise and headache sometimes appear. You feel like you're coming down with something.
5. Hyaluronidase helps Staphylococci to digests the glue-like substance that holds the cells of a particular tissue together **and hence** invade deeper tissues.
6. Acute disease develops more slowly, is usually less severe, and persists for a long period (ex. Hepatitis B & C).
7. Systemic infection confined to a specific area of the body but the its effects are felt all over the body.
8. Contagious diseases do spread easily form one host to another (ex. Chicken Pox), similar to communicable diseases.
9. Bacteremia is a mean of spreading microbes to distant organ through their transient presence in the blood.
10. Infectious dose is the number of microbes that must enter the body to establish infection in 50% of test animals and it is expressed as the ID50.

B)Answer each of the following questions as requested:(10 mark)

1) Mention the different groups of Streptococcus and *Enterococcus* in relation to hemolytic activity? (5 mark)

2) Describe the different stages involved in the development of tuberculosis in the lungs with special reference of various types of tuberculosis? (5 mark)

2 **Choose the most correct answer(s):(20 marks total; 1 mark each)**

1-Group C *Streptococcus* (GCS) is
a-Gamma haemolytic b-Beta haemolytic c-Alpha haemolytic
d-Alpha haemolytic or no haemolysis

2-Questioning patient with COLD or FLU, which of the following is most often used to eliminate flu as diagnosis?
a. Do you have stuffy / runny nose? b. Do you have muscle aches?
c. Do you have a temperature? D. Do your ears hurt?

3-Staphylococcus aureus produces all of the following lesions, except
a. Sycosis barbae b. Erysipeals c. Boil d. Carbuncle

4-All of the following are associated with pneumonia except:
A. Require major antibiotics B. Coughing and dyspnea.
C. Fever. D. Viral infections.

5-Pus-forming forms are called as

Final Examination in Botany
Second Term: Jun. 2010

a. Pyrogallic b. Pyogenic c. Pyrogen d. None of the above

6-Septicaemia is
a. Bacteria in blood b. Toxin in blood c. Pus in blood
d. Multiplication of bacteria and toxins in blood

7-The causative agent of epidemic typhus:
a. R.Quintana b. R.rickettsii c. R.orinetalis d. R.prowazekii

8-The antibiotic acting on cell wall is
a. Bactracin b. Penicillin c. Cyclosporine d. All of these

9-Drugs of choice for treatment of Mycoplasma infections:
a. Tetracyclines b. Erythromycin c. a and b d. Penicillins

10-Common cold is caused by
a. Adeno virus b. Corono virus c. Hepatitis virus d. rhinoviruses

11-Antibiotics used in combination may demonstrate
a. Synergism b. Antaginism c. both d. None of these

12-The causative agent of Legionnaires:
a. Adeno virus b. Corono virus c. Paramyxo virus d. None of these

13-The drug of choice in Atypical Pneumonia is
a. Histamine b. Corticosteroid c. Epinephrine d. erythromycin

14-Virulence factor for *Strep. pneumoniae*:
a. Capsular polysaccharide b. Specific soluble substance
c. Vi-antigen d. Forsmann antigen

15-Diphtheria is caused by
a. Corynebacterium diphtheriae b. C. Bovis c. C. Jeikeium d. C. equi

16-The commonest cause of CHRONIC MENINGITIS
a. Congential rubella b. Mycobacteria
c. Expanded rubella syndrome (ERS) d. Both a and c

17-Penicillin is the drug of choice for
a. Scarlet fever b. Sore throat c. Brucellosis d. Cholera

18-The causative agent of tetanus is
a. Clostridium botulinum b. Cl. tetani c. Cl. welchii d. Cl. Perfringens

19- Rabies virus can multiply in
a. The central nervous system b. The peripheral nerves
c. Muscle tissues d. All the above

20- Tuberculin skin test identifies
a.tuberculosis b.pneumonia c. Sycosis barbae d-none of these

3 Choose the correct answer (2 marks each):

1. Which of the following is not one of Koch's postulates?

A. The organism is regularly found in lesions of the disease.

B. The organism can be isolated (pure) from diseased tissues on artificial media

C. Inoculation of the pure culture produces a similar disease in experimental animals

D. Treatment of the disease with a broad spectrum oral antimicrobial dependably eradicates the organism and cures the disease

Final Examination in Botany
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2. How does your innate immune response to a pathogen differ the second time you are exposed to that particular pathogen? It is:

A) faster. B) lasts longer. C) shorter.
D) the same. E) More than one is true.

3. A 21-year-old woman experienced painful sores in her throat area. It disappeared after a week and lasted for four months. This morning, she woke up with a very similar pains; What is the most likely explanation for the 4-month period of time when she was symptom free?

A) The infectious agent was cleared from her body after the initial symptoms, and then she was later reinfected.

B) The infectious agent traveled to her liver where it continued to replicate slowly until it reached a threshold resulting in symptoms.

C) The infectious agent remained latent in her nervous system before becoming reactivated.

D) All of the above are likely reasons for the second outbreak.

4. Which of the following represents a passive mechanism by which a bacterium can penetrate a host?

A. Attacking the intestinal linings
B. Degrading carbohydrate-protein complexes
C. Disrupting the cell surface
D. Tissue damage caused by other organisms.
E). All of the above

5. Infectious bacteria evade host defenses by:

a. Antigenic variation some microbes change their surface antigens
b. Production of exoenzymes c. live inside phagocytes
d. all of the above e. none of the above

6. Which of the following does not represent direct contact from host-to-host?

a. coughing b- sneezing c- shedding onto surfaces
d- body to body contact

7. In order to cause disease, three steps of pathogen infection must occur in a well defined order. Which of the following is *NOT* one of those steps? (choose best answer)

a. entry into host b. adherence c. damage to the host
d. exit from host e. all of the above f. none of the above

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8. Each of the following statements concerning normal flora is true EXCEPT:

A) The normal flora of the colon consists primarily of anaerobic organisms.

B) Normal flora prevents certain pathogens from infecting the upper respiratory tract.

C) Components of the normal flora do not vary with age or physiological changes.

D) All of the above are true.

9. Which one of the following bacterial proteins can take iron from human lactoferrin?

A. Protease B- hyaluronidase C- siderophores D- kinases

10. A 25 year old woman has a 4 year old son who is now recovering from Group A *Strep. pharyngitis.* The mother was tested positive for Group A strep even though she doesn't have a sore throat, and she was negative to an ASO titer and anti DNAse B assays. At this point we would say that she:

A. has asymptomatic infection B. has opportunistic infection
C. is a carrier D. is immunosuppressed

Best of Luck

Examiner: Prof Dr. Yehia Ellazeik ***Dr. Ahmed Elshoubky***

Faculty of science **Program (Branch): Microbiology**
Botany department
Educational Year: **Level 3**
Subject: Botany **Course(s): Microbial toxins**
Time: 2 hrs **Date: 1 / 6 /2014** **Full mark:** 60 **Question mark: 20**

Answer the following questions:

Q1- **A- Choose the most correct answer (10 marks):**

1-Among the condtions that encourage fungal growth is
a- High humidity
b- Dryness
c- Low temperature

2- Trichothethene toxins target the
a- Circulatory system
b- Kidney
c- Eyes

3- Vomitotoxin is the other name of
a- Deoxynivalenol (DON)
b- Zearalenone
c- T-2 toxins

4- Advisory level of Deoxynivalenol (DON)
a- 1 ppm
b- 10 ppm
c- 5 ppm

5- Aflatoxins are produced by
a- *Fusarium* sp.
b- *Aspergillus* sp.
c- *Penicillium* sp.

6- Mimics the body's production of estrogen
a- Zearalenon
b- T-2 toxin
c- DON toxin

7- Dry gangrene in animals is caused by
a- Ergot poisoning
b- *Alternaria* toxins
c- Aflatoxins

8- Is a definite lik to cancer in animals
a- Aflatoxin B-1
b- Zeralenon
c- T-2 toxin

9- Ocratoxin A causes
a- Kidny damage
b- Neurogenic diseases
c- Gangarine

10- The number of mycotoxins presently identified are
a- 300-400
b- 12-20
c- 50-100

B- Write an account of Symptoms of mycotoxicosis. (10 marks)

Q2- **A- Give an account of Methods of inactivation of mycotoxins (10 marks).**

B- B-Choose the most correct answer(s):(5 marks)

1-All of the following are true of A-B exotoxins except:

a- The B portion of the toxin binds to surface receptors on host cells.

b- They are only produced by gram-negative bacteria.

c- Many exotoxins are A-B toxins.

d- The A portion of the toxin is the active component.

e- They consist of two polypeptide components.

2-Which of the following bacterial toxins binds to nerve cells, preventing chemical communication between nerve and muscle cells?

a- Staphylococcal enterotoxin

b- Botulinum toxin

c- Diphtheria toxin

3- Which is true of endotoxins?

a-They are proteins.

b-They increase blood pressure.

c-They are produced by gram-positive bacteria.

d-They are disease-specific.

e-They are released upon cell lysis.

4- Which is not true of exotoxins?

a-They can be converted to toxoids.

b-The exotoxin can work by binding and entering the host cell.

c-The genetic material that encodes most of them is plasmid or prophage associated.

d-They rarely have enzymatic activity.

e-They can cause toxemia

5- diphtheria toxoid is.....

a-thermal treated toxin. b-chemically modified toxin.
c-both a & b. d-none of the above.

c-Describe Frequency-response curve? Detect the potentiality of this curve in toxicology? & mention how you can calculate MATC.
(5 marks)

Q.3.

A-Describe the Domain Organization & structure of diphtheria toxin with special reference to role of each domain in toxicity.(10 marks)

B-Explain the Mechanism of Action of botulinum toxin .(5 marks)

C-Mention the toxin class of both Microcystins & Brevetoxin?(5 marks)

Examiners: Dr.Hoda soliman Dr.Ahmed el shobaky