Year: 3th Year Microbiology
Course: Enzymology
Date: 21/5/2015

Botany Department
Faculty of Science
Mansoura University

Question 1

A-How could you get the following compounds by enzymatic reaction: **(10 Marks):**
1-Seduheptulose-7-P from Ribose-5-P.
2-Fumaric from malic.
3-CO_2 from malate.
4-OAA from malate.
5-Aspartic from asparagine.
B-Mention two examples of isomerases and write the enzymatic equations. **(5 Marks):**
C-Compare between glutaminase and glutamine synthetase actions. **(5 Marks):**

Question 2

A- Explain the following points **(9 Marks):**

1- The effect of temperature on enzyme activity
2- The induced strain model
3- Competitive inhibitor

B- What would happen if **(8 Marks):**

1- The holo-enzyme lost its cofactor
2- A competitive inhibitor enter the active site while non and un-competitive inhibitors were around the enzyme
3- An enzyme was subjected to a pH higher than its maximum during the assay
4- L- lactate was incubated with D-lactate dehydrogenase

C- Draw the followings **(3 Marks):**

1- Pararrel beta sheets
2- Alpha domain

Question 3

A-Give two examples for the enzymes involved in medicine, write the chemical equations of the reactions in details. **(5 Marks):**
B-Explain how could you prepare pyruvate from alanine by two enzymatic methods. **(5 Marks):**
D-Choose the correct answer(s):

1- An example of the covalent bonds stabilizing the tertiary structure of protein is
   a- salt bridge b- peptide bond c- disulfide bond d- hydrogen bond
2- When the inhibitor is binding only the enzyme substrate complex it would be
   b- Competitive b- non-competitive c- Uncompetitive d- irreversible
3- The prosthetic group is
   a- Inorganic b- organic
   c- organic but dissociable d- organic and covalently bound
4- Homodimer is a protein of

a- Similar subunits b- two similar subunits c- two dissimilar subunits
d- two similar subunits with one active site in between

5- For extraction of proteins from bacteria,..... is required
a- Detergent b- homogenization c- cell wall disruption d- cooling

6- Recombinant protein means ..... protein
a- Homologues d- inducible c- constitutive d- extracellular

7- Carboxy peptidase active site contains
a- Prosthetic group b- co-factor c- co-substrate d- inorganic cofactor

8- The difference between induced fit model and key- and lock model is
a- substrate flexibility b- active site flexibility
c- substrate and active site flexibility d- substrate binding

9- Among the methods depend on mass in protein purification
a- Gel filtration b- hydrophobic interaction
c- ion exchange chromatography d- crystallography

10- "PKRFM" indicates
a- Primary structure b- secondary structure
c- recombinant structure d- helix loop helix

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Best wishes

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جامعة المنصورة
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Final Examination in Microbiology
Second Term: May 2015

Educational Year: Third level **Program (Branch): Microbiology**
Subject: M 308 **Course: Introduction in Medical Microbiology**
Time: 2 hrs **Date: 25 /5 / 2015** **Full mark: 60** **Question: 20 marks**

Q- 1- Write short notes on the following:-

1. Non-specific defense mechanisms against any pathogenic microorganisms (5 marks).
2. Dermatophytes (10 marks).
3. Aspergillosis (5 marks).

Q- 2- (A) Complete the following sentences (2 marks each)

1- Disease can be transmitted between individuals ……,……,……., …….
2- Candida cause a variety of severe infection, including ……,……., ……,…….
3- Initial …… and later …… symptoms of Rocky Mountain spotted fever.
4- Superficial mycoses are..... while Dimorphic systemic mycoses are ….
5- Zygomycosis caused by…… and Candidasis caused by….. as human pathogenic organisms.

Q-2-B: Mark T for true and F for false and explain the false answer (1 mark each)

6- Pathogenicity is mechanism by which the infectious agent is spread Mechanism by which the infectious agent is spread.
7- Mode of disease transmission is the ease or difficulty with which direct transmission occurs.
8- Communicability is the ability of an organism to cause disease and its stability outside of the host.
9- Physical barriers and immune system barriers are the host's natural defenses against pathogens .
10- An opportunistic pathogen may cause disease in patients whose immune function is compromised. These pathogens do not typically cause disease in a host with a healthy immune system.
11- ----------is the growth of micro-organisms in the host but it does not always cause host injury.
12- Pathogenic bacteria exhibit virulence mechanisms that enable them to colonize and invade the body.
13- Virulence is the degree of pathogenicity determined by the pathogen's invasiveness and by its toxigenicity.

14- Siderophores lactoferrin-binding proteins are just few examples of Many different bacterial systems for scavenging iron.

15-------the basic property of evading effective immune recognition, and also because they had gone unrecognized by the medical community.

Q-3- Choose the correct answer (2 marks each)

1- Which scientist developed a way to identify disease causing agent?

1- Alexander Fleming 2- Louis Pasteur 3- Robert Koch 4-Neal Armstrong

2- According to his method the pathogen must first be:

1- recoverable from the experimentally infected host and infected ones.
2- Visible under the microscope
3- Present in the environment
4- Destroyed by heat and disinfectant agents

3- Virulence factor responsible for the breakdown of the matrix of connective tissue and allows staphylococcus to cause bone and joint infections.

1- Capsule 2- Coagulase 3- Streptokinase 4- Hyaluronidase

4- Evidence for a potential pathogen being of clinical significant

1- Isolated in abundance and in pure culture
2- Isolated on more than one occasion from deep tissues
3- Evidence of local inflammation
4- Evidence of immune response to pathogen
5- Any of the above 6- All of the above 7- None of the above

5- Bacterial pathogenicity islands possess defined features Such as

1- Compact distinct , unstable genetic units, often flanked by tRNAs, ISs
2- occupy large chromosomal regions, carriage of many virulence genes with a different G+C content from host chromosome .
3- Presence in pathogenic versus non-pathogenic strains
4- Presence of (cryptic) mobility genes.
5- Any of the above 6- All of the above 7- None of the above

6- Stages of infectious disease process are:

1- Exposure, Incubation period , Prodromal phase, Acme , Invasive phase, Decline phase, Convalescence period and Sequelae.
2- Exposure, Incubation period , Prodromal phase, Invasive phase, Acme , Decline phase, Convalescence period and Sequelae.
3- Exposure, Incubation period , sequel phase, Prodromal phase, Invasive phase, Acme , Decline phase, and Convalescence period
4- Exposure, Incubation period , Sequelae, Prodromal phase, Acme , Invasive phase, Decline phase, Convalescence period.

7- Which is the major Microbial defenses against host immunologic clearance:

1- Encapsulation and / or Destruction of phagocytes
2- Antigenic mimicry, antigenic masking and antigenic or phase variation
3- Inhibition of phagolysosome fusion and resistance to lysosomal enzymes.
4- All of the above 5- None of the above 6- Any of the above

8- Usually infectious disease is associated with appearance of:

1- A combination of signs, symptoms and syndrome that are characteristic of a disease

2- A combination of signs and symptoms that are characteristic of a disease
3- Only symptoms that are characteristic of a disease.
4- Only sign that are characteristic of a disease.
5- All of the above 5- None of the above 6- Any of the above

9- Match the types of infection with the correct definition:

1- A superinfection :: an infection resulted after treatment an antibiotic-resistant organism.
2- An subacute infection:: develops slowly and is soon over
3- An acute infection :: develops rapidly but is soon over
4- Chronic infection:: develops slowly and soon is not over.
5- Latent infection:: minimally asymptomatic carriers of disease display inapparent infections.

10- Match the types of symbiotic associations with the correct definition

1- Mutualism:: no apparent benefit or harm to either member of the association.
2. Commensalism:: both members of the association benefit.
3. Parasitism:: One member of the association lives at the expense of the other member.
4. Synnecrosis :: the type of relationship that exists where one species is inhibited or completely obliterated and one is unaffected.
5. Amensalism :: a rare type of symbiosis in which the interaction between species is detrimental to both organisms involved.

"Best of Luck"

Examiners: Prof. Dr. Yehia Ellazeik *Prof. Dr. Gamal M. Abdel-Fattah*

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جامعة المنصورة
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Final Examination in Botany
Second Term: May . 2015

Educational Year: 3rd Level **Program : Microbiology**
Subject: (M 310) **Courses: Mineral Nutration & Plant Hormones**
Time: 2 hrs **Date: 1 / 6 / 2015** **Full mark:** 60 **Question mark: 20**

Answer the following questions:

Part I

Q1 **A-Discuss briefly each of the following:** **(10 Marks)**

1- Disadvantage of Water (solution) culture or hydroponics
2- Pattern of ion distribution & circulation
3- Give an idea about the concept of rhizosphere
4- Types of membrane transport mechanism .

A- In detail explaine the following : **(10 Marks)**

1- Carrier hypothesis . Draw a labeled diagram of a typical set up this prosses
2- Transport of ions from the symplasm to xylem vessels (Broyer & Crafts theory).

Q2 A) Name the respective mineral nutrient element that : **(10 Marks)**

1) Forms the core constituent of the ring structure of chlorophyll
2) Activates pyruvate kinase , glutathione synthetases and starch synthase .
3) In the structure of nucleic acid (purine & pyrimidin) .
4) Share in the synthesis cell wall of plant cell.
5) Its deficiency makes Leaves to be become more blue dark green due to severe accumulation of anthocyanin pigments .
6) Has a role in protein synthesis and is a part of flavor compounds in mustard, garlic and onions.
7) Is important for the Respiration and Photosynthesis processes.
8) Where are "mobile" & "Immobile"? elements deficiencies seen first?
9) Give an examples of Micronutrients .
10) Differentiate between Necrosis and Chlorosis.

P.T.O→

Part 2

Q2- Explain each of the following:

A- Triple response.....(3 marks)
B- Mechanism of ethylene action.....(3 marks)
C- IAA destruction.....(4 marks)

Q3-Write on each of the following:

A- Gibberellins biosynthesis.....(4 marks)
B- Delay of senescence.....(4 marks)
C- Combined effects of auxin and kinetin.....(4 marks)
D- Seed dormancy and Vivipary.....(4 marks)
E- Polar auxin transport.....(4 marks)

Examiners:- Prof: Wafaa Shukry Prof: Samia Haroun

Mansoura University
Faculty of Science
Botany Department

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3rd level Microbiology	Subject : Microbial Toxins, Water and Air Microbiology		Code: M311
Time: 2 hours	Date: 4 June 2015	Full mark: 60	Question mark: 20

Question No.1: Write short notes on the following:

1. Important differences between bacterial Exotoxins and Endotoxins (5 marks)
2. Aflatoxins (10 marks)
3. Mechanism of antibiotics action (5 marks)

Question No.2:

Part A:Complete the following sentences (2 marks for each point)

1. Taboxins is ……. While Rhizotoxins is…….
2. Five fungi commonly found in air samples are…….‘…….‘…… ‘…….‘……
3. Non host-specific *Alternaria* toxins is……
4. Factors affecting virulence is……‘……‘...……‘……
5. The gene transfer in bacteria takes place by 3 means as……‘……‘…….

Part B:

Anatoxin and **Anthrax toxin** produced by different microorganisms and require a special mechanism for activation. Write **short notes** with **drawing** on **ONLY ONE** of these toxins **producer microorganism**, **toxin structure** and **activation mechanism** (10 marks)

Question No.3:

Part A:Complete the following sentences (5marks - 1 mark for each point)

1. Toxikos: Ancient Greek word means ……
2. All fish products should have a minimum concentration of 3% of ……. to prevent growth of *Clostridium*
3. Disease of birds that caused by *Clostridium* called …… ……..
4. Anthrax is one of the top four agents listed as potential ……. ……
5. Types of Anthrax are …….. , …….. and ……

Part B: write short notes on ONLY ONE of the following (5 marks)

1. Causes parameters of toxic algal blooming
2. Analytical methods of microcystin detection

Part C: Explain the following sentences

1. *Clostridium botulinum* produce toxins which can be used commercially (5 marks)
2. Anthrax toxin is an A/B toxin (5 marks)

"Best wishes"

Examiners:

Prof. Dr. Gamal M. Abdel-Fattah **Dr. Eladl Galal**