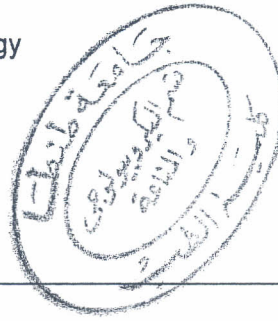


Examination for MD Degree in Medical Microbiology  
Course Title: Microbiology and Immunology  
Date: 9/ 11/ 2021  
Term: Microbiology and Immunology  
Time Allowed: 1:30 hours  
Total Assessment Marks: 150 marks  
Number of the questions: 6



Tanta University  
Faculty of Medicine  
Department of Microbiology  
& Immunology

**Q1: Discuss:**

**(28 marks)**

- a) Antibody diversity.
- b) Allelic exclusion .
- c) Leucocyte extravasation steps.
- d) Immune complex clearance

**Q2: Compare between:**

**(20marks)**

- a) Two effector cells in cell mediated immunity
- b) B1 & B2 lineage.

**Q3: Clarify :**

**(36 marks)**

- a) TSTAs
- b) Integrins
- c) CTLA-4
- d) Mediators derived from mast cells in anaphylactic hypersensitivity

**Q4 :Explain :**

**(24 marks)**

- a) Role of cryptic epitopes in autoimmune diseases
- b) Importance of anti-cytokine and anti-cytokine receptors.

**Q5: Mention:**

**(30 marks)**

- a) Chromium release assay
- b) RIA

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**Q6:**

**(12marks)**

**A 4-year-old boy has a history of recurrent bacterial infections, including several episodes of pneumococcal sepsis. He has an undetectable level of serum immunoglobulins and is diagnosed with an X-linked disorder.**

**A)What is the diagnosis of this case?**

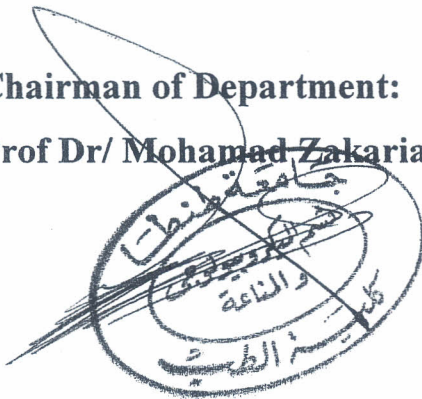
**B)During the investigation of such case ; you suspect to find what ?**

**C)How to treat your patient?**

**Good luck**

**Chairman of Department:**

**Prof Dr/ Mohamad Zakaria**



**3rd paper for MD /Degree in:**  
Microbiology & Immunology (virology)  
Date : 6 / 11 /2021

*Tanta University*  
*Faculty of Medicine*

**Time Allowed : 1.5 hours**

*Department of Microbiology*  
*and Immunology*

**Total Assessment Mark : 150**

**All questions to be answered**

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**Q1 ) Answer the following :** (total 40 marks ,8 marks each )

- a) Immunopathogenesis in viral infection could be induced by antigen /antibody –complement complex deposition in tissue, give 3 examples .
- b) Enumerate different effects and indicators of biological contamination of Tissue Culture .
- c) Describe the principle of enzyme linked virus inducible system (ELVIS) for viral isolation in tissue culture .
- d) Regarding alcohol : mention its types , antiviral mechanism of action, applications , advantages and disadvantages .
- e) Mention 2 different methods used to induce tumor virus replication in transformed cells .

**Q2 ) Regarding antiviral vaccines (10 marks ):**

Certain live vaccines could be used for immunization against other viruses , explain with one example.

**Q3) Regarding DNA viruses , answer the following (total 25 marks ) :**

**a) For HSV describe the following (8 marks ):**

1. Replication cycle with special note on the significance of VP16 and IE proteins
2. Transcription of this virus during latency

**b) Give short account on : (9 marks )**

1. treatment of HPV infection
2. Koilocytes and their significance
3. diagnosis of fifth disease

**c) A child who is under Aspirin therapy for a period has developed encephalopathy and liver degeneration. Answer the following (8 marks ):**

1. What is your most probable expectation for this clinical condition ? and what is the DNA virus that could be involved ?
2. What is the mechanism of pathogenesis ? and how to treat resistant strains ?
3. Why spreading of such virus in hospital is considered as a major IC problem ?
4. Vaccines against this virus , their indications and contraindications ?

RNA viruses (total marks 75 marks)

Q 4) In a table form :

a. Compare between : properties of Orthomyxoviruses and pararmyxoviruses . (5 marks)

b. list features of RNA viruses commonly infect GIT. (10 marks).

(Regarding ;disease, number of serotypes ,immunity, vaccine and antiviral therapy )

Q 5) Give an account on :

a. Norovirus (5 marks)

(Disease ,transmission, lab .diagnosis, treatment and prevention)

b. Coxsackie viruses (10 marks)

(Clinical findings and lab. diagnosis)

Q6) Hantavirus Pulmonary Syndrome (15 marks)

(Causative agent ,method of transmission ,lab. diagnosis and treatment.)

Q7) Regarding HIV infection answer the following:

a. Immune Reconstitution Inflammatory Syndrome (IRIS) and how to avoid it. (5 marks)

b. Post exposure prophylaxis (PEP)for HIV and steps to be taken to reduce the number of cases of infections in children from HIV infected mothers. (10 marks)

Q8) Discuss Monoclonal antibodies used in treatment of Covid-19 . (15 marks)

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**Good luck**

Examination for MD Degree in: Microbiology & Immunology

Course Title: Microbiology & Immunology

Date: 2/11/2021

Term: paper 2

Time Allowed: 3 hours

Total Assessment Marks: 300



Tanta University

Faculty of Medicine

Department of Microbiology  
and Immunology

**All questions to be answered**

Questions Number	Marks
<p><b>Q1: Clarify clinical presentation, diagnosis and treatment of each of the following:</b></p> <ul style="list-style-type: none"><li>A. Donovanosis.</li><li>B. Bacillary angiomatosis.</li><li>C. Lymphogranuloma venereum.</li><li>D. <i>Borrelia miyamotoi</i> syndrome.</li><li>E. Flavobacterium infection.</li></ul>	<p><b>50 marks</b> <b>10 each</b></p>
<p><b>Q2: Discuss the virulence factors of the following pathogens:</b></p> <ul style="list-style-type: none"><li>A. <i>Pseudomonas aeruginosa</i>.</li><li>B. <i>Yersinia pestis</i>.</li></ul>	<p><b>22 marks</b> <b>11 each</b></p>
<p><b>Q3: Explain:</b></p> <ul style="list-style-type: none"><li>A. Survival of helicobacter pylori in stomach of patient with chronic gastritis?</li><li>B. Shigella dysenteriae type I cause the severest form of bacillary dysentery?</li><li>C. Inhalational anthrax is not communicable from person to person?</li><li>D. Culture is not a good diagnostic test for B. pertussis?</li><li>E. Cultivation of <i>Francisella tularensis</i> in the laboratory are rarely undertaken for diagnosis?</li></ul>	<p><b>40 marks</b> <b>8 each</b></p>
<p><b>Q4: Regarding Enterobacteriaceae, answer the following:</b></p> <ul style="list-style-type: none"><li>A. Name four genera of Enterobacteriaceae that can cause gastrointestinal disease. Name two genera that can cause hemorrhagic colitis?</li><li>B. What virulence factor mediates hemorrhagic colitis.</li></ul>	<p><b>28 marks</b> <b>7 each</b></p>

Chairman of Department

Prof Dr. MOHAMMED ZAKARIA



All questions to be answered

C. Name the five groups of *E. coli* that can cause gastroenteritis.  
What is characteristic of each group of organisms?

D. Differentiate between disease caused by *Salmonella Typhi* and  
that caused by *Shigella sonnei*?

**Q5: Discuss:**

A. The medical and the economic importance of different fungi.

B. The different mechanisms of action and resistance of antifungal drugs.

20 marks  
10 each

**Q6: Post COVID fungal infections:**

A. Mention these infections.

B. Discuss in details the mode of transmission, clinical presentation,  
laboratory diagnosis, differential diagnosis and treatment of the  
most life-threatening infection.

30 marks

**Q7: Case study 1:**

A 52-year-old man presents for the evaluation of diarrhea and abdominal pain, which have been worsening over the past week. He denies vomiting or fever. He has no history of gastrointestinal diseases. He states that approximately 10 days ago he completed a course of amoxicillin/clavulanate for pneumonia. On examination he is mildly ill appearing, but his vital signs are normal. His abdomen is soft, has hyperactive bowel sounds, and is diffusely, mildly tender. A stool sample is negative for blood but positive for leukocytes. A stool culture is negative, but a specific toxin assay is positive.

42 marks  
7 each

a. What is the most likely etiologic agent of this disease?

b. Which condition predisposes this organism to cause disease in humans?

c. What virulence factors are produced by this organism?



**All questions to be answered**

- d. Explain why It is insufficient to culture the stool for the presence of this organism?
- e. What is the treatment and prevention of this disease?
- f. Why is it difficult to manage infections caused by this organism?

**Q8: Case study 2:**

A 46-year-old went to his physician with a 2-month history of weight, night sweats, and a low-grade fever. Mild hepatomegaly was noted. Chest x ray showing bilateral scattered infiltrates. Results of a chest examination revealed a new heart murmur. The physician suspected his patient had subacute endocarditis, and three sets of blood cultures were collected. After 1 week of incubation, the cultures remained negative. Additionally, serology for brucella species was negative.

- a. What is the most likely etiology of this infection?
- b. What diagnostic test (s) should be performed to determine if this patient has endocarditis caused by this organism?
- c. If this diagnosis is confirmed, how did the patient most likely acquire his infection?
- d. How should this infection be treated?

**32 marks  
8 each**

**Q9: Enumerate:**

- A. Indications of antiseptic hand wash.
- B. Requirements of central sterilization services.
- C. Importance of waste management system.
- D. Objectives of antimicrobial stewardship.

**36 marks  
9 each**

**1<sup>st</sup> paper for MD /Degree in:Microbiology & immunology**  
General & systemic bacteriology

**Date:** 30/10/2021

**Time Allowed:** 3 hours

**Total Assessment Mark :** 300

*Tanta University*

*Faculty of Medicine*

*Department of Microbiology  
and Immunology*

**All questions to be answered**

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**Q1 ) Answer the following ( 125 marks , 25 for each ) :**

- a) Regarding pathogenesis of infection : enumerate factors that enhance bacterial adhesion to surfaces then discuss the role of biofilm and Quorum sensing .
- b) Programmed rearrangement is a method of DNA transfer in bacteria, clarify this .
- c) Describe a genetically inactivated bacterial protein vaccine .
- d) Define Probiotics , mention their mechanisms of action with 2 examples for their clinical uses and which kind of patients are liable for complications .
- e) Regarding transposone : compare between function of its different domains and mention its role in Vancomycin resistance .

**Q2) Give a short account on (25 marks , 12.5 for each ) :**

- a) Peptide nucleic acid probes : principle and advantages Vs traditional DNA probes.
- b) Transcription –mediated amplification : principle and examples of commercially available assays.

**Q3) Answer the following (60 marks , 15 for each ):**

- a) Discus Pneumococcal vaccine for children less than 5 ys and its disadvantage .
- b) Regarding *S.aureus* , describe the role of endotoxin- like properties and pigment in pathogenesis of infection.
- c) Brain abscess can occur following dental surgery , explain .
- d) Regarding listeriosis , enumerate 3 risk groups of population liable for infection and what is the role of Listeriolysin in pathogenesis .

**Q4) Describe the following regarding non tuberculosis *Mycobacteria* (25 marks , 12.5 for each ) :**

Head of the department : Prof .dr Mohammed Zakaria



- a) Runyon's classification of atypical *Mycobacteria* in a table form with short account on a rapidly growing one.
- b) Mechanism for nerve damage in tuberculoid leprosy and for disfigurement in lepromatous leprosy .

**Q5) Regarding *Mycobacterium tuberculosis* , give short account on the following (25 marks ,12.5 for each ):**

- a) BCG vaccine : advantage , disadvantage , contraindication and other uses than TB prevention .
- b) Principle and significance of Quantiferon -TB and Spot -TB tests .

**Q6) Answer the following cases (40 marks , 20 for each ):**

- a) **A patient is suffering from thrombophlebitis of internal jugular vein complicated with metastasis of infectious emboli to the lung . Microbiologic examination revealed Anaerobic bacteria . answer the followings :**

- \* what is the most probable bacterial cause for this condition
- \* what is its morphology and growth condition
- \* what is the primary site of infection
- \* what is the name of this disease and what are other diseases caused by this organism
- \* what is the antibiotic of choice in treatment

- b) **A patient is suffering from weight loss ,diarrhea and polyarthriti s . Intestinal biopsy revealed foamy macrophages with intracellular organism which has ribosomal RNA similar to *Actinomycetes* . Answer the followings :**

- \* What is the most expected causative bacterium and what is the name of this disease
- \* What is method of infection and pathogenesis
- \* How to diagnose ?
- \* what is antibiotic of choice ?
- \* what is mortality rate?

Good luck

Head of the department : Prof .dr Mohammed Zakaria