



**Q1: Discuss:** (28 marks)

- a) NOD like receptors
- b) Plasmacytoid cells .
- c) Mannan -binding lectin pathway.
- d) Di Georges Syndrome

**Q2: Compare between:** (20marks)

- a) Vesicular and cytosolic pathways of antigen processing and presentation
- b) KIR & KAR.

**Q3: Clarify :** (36 marks)

- a) Classes of tumor antigens
- b) Antibody diversity
- c) Cytokines therapy
- d) Mechanisms of evasion of innate immunity by microbes

**Q4: Define & explain the importance of:** (20 marks)

- a) Epitope spreading
- b) Relative Risk

**Q5: Mention:** (30 marks)

- a) The methods of assessment of B cell competence
- b) Tests used for HLA typing

Examination for MD Degree in Medical Microbiology  
Course Title: Microbiology and Immunology  
Date: 7/ 5/ 2022  
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

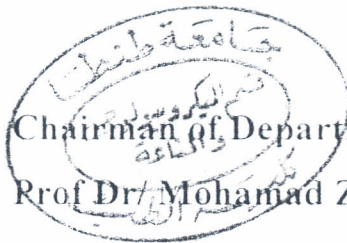
Q6:

(16marks)

Infant was a healthy 19 month old female who developed marked right thigh swelling, redness and pain within 6 hours of receiving booster vaccinations. At the visit to the clinic she received a booster dose of diphtheria, pertussis and tetanus in her right thigh. She had received her primary immunisation series at 6, 10 and 14 weeks of age. No prior adverse reactions had been noted. No childhood or other illnesses noted.

- A)What is the diagnosis of this case?
- B)What are the basic principles of the reactions and give some clinical examples?
- C)What could be done to further investigate the reaction?

**Good luck**



Chairman of Department:  
Prof Dr/ Mohamad Zakaria

Examination for MD Degree in: Microbiology & Immunology  
Course Title: Medical Microbiology & Immunology  
Date: 27/4/2022  
Term: II paper  
Time Allowed: 3 hours  
Total Assessment Marks: 300 marks



Tanta University  
Faculty of Medicine  
Department of:  
Microbiology

Questions Number

Marks

Q1

- **Name the organism(s) having each of the following structures or products. Explain the action of each & its role in establishment (pathogenesis) of disease:**
  - a)  $\beta$ -glucuronidase producers
  - b) Filamentous haemagglutinin(FHA)
  - c) CAMP inducers
  - d) Aflatoxin

60(15marks each)

Q2

**For the following diseases mention the causative organism , method of transmission, laboratory diagnosis:**

- a) Cat-scratch disease
- b) Bubonic plague (Black death)
- c) Pontiac fever
- d) Erysipeloid

60(15marks each)

Q3

What is **HACEK** group of organisms? . Discuss the laboratory diagnosis to identify them and mention the type of infection caused by these group and immunity acquired after a non- fatal attack

40 marks

Q6

An 18-year –old sexually active woman develops left lower quadrant pain of 2 days duration , fever and a yellowish vaginal discharge . On pelvic examination there is tenderness in the left adnexa and a mass suggestive of a uterine tube abscess is palpated. The patient is diagnosed with **pelvic inflammatory disease (PIV)**.

30 marks



- a) enumerate the bacteria considered to be a common cause of pelvic inflammatory disease?.
- b) What are the laboratory diagnosis to such a case?
- c) Explain how this infection occurred ?
- d) What is the importance of infection with such microorganisms in such a case ?

### **Mycology**

1. Give an account on **fungal biofilm**. . 10 marks
2. **Post COVID\_19 fungal infections:** 20marks
  - a) Enumerate these infections.
  - b) Discuss the mode of transmission, laboratory diagnosis and differential diagnosis .
3. Give an account on **paracoccidioidomycosis** 20 marks

### **Infection control**

1. Schedules of **vaccination** for healthcare workers: types, ,methods of administration, doses. 36marks(12marks each)
2. Compare between different types of **hand hygiene**
3. Define **standard precautions** and enumerate five of them.

### **Clinical case :**

#### **Chief Complaint**

A 1– year-old girl who had a seizure about 20 minutes ago

#### **History**

She was well except for an upper respiratory tract infection during the past 2 days. Last night she felt feverish and became very sleepy. She was difficult to arouse this morning and then had a generalized

24 marks





CONVULSION. Her mother brought her to the emergency room immediately . Immunizations : oral polio and DPT vaccines given at 2,4,and 6 months

**Physical Exam**

T 40° C ,BP 100/70 ,P120 ,R16. A somnolent child who was irritable when examined . Pertinent findings include:

**Skin:** : no petichae or ecchymoses

**Eyes:** pupils regular and equal. No papilledema

**Ears** : Normal

**Throat** : Mild inflammation. No exudates

**Neck** : Marked Rigidity

**Lungs** : Clear

**Heart** : Normal

**Abdomen** : Normal

**Neurologic** : Deep- tendon reflexes normal .

Remainder of the exam deferred because the patient was too irritable to cooperate

**Laboratory**

**Blood:** Haematocrite 40% ,WBC 21,000; differential 16% bands, 80% polys,4% monos.

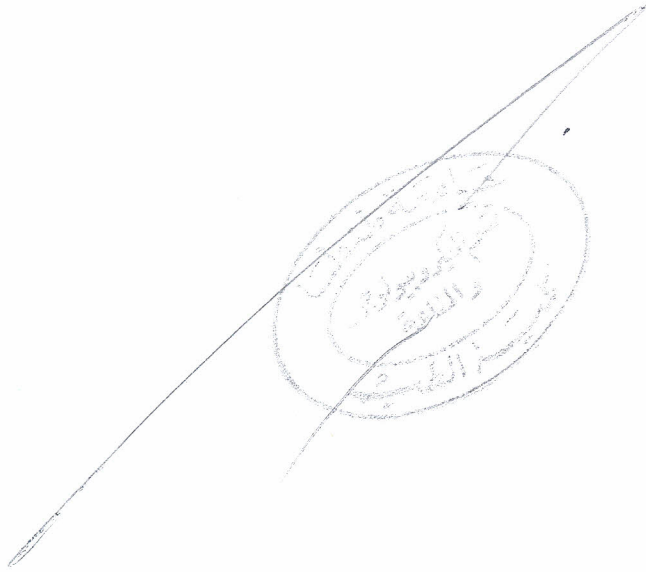
**Urine** : Normal

**QUESTIONS:**

1. What are the 2 most important specimens to obtain to make a microbiologic diagnosis?
2. Which laboratory test should be done immediately on one of the specimens that may provide information regarding the cause of this infection?
3. What is the most likely organism to cause this infection? What are 2 other possibilities?
4. How would you distinguish among these 3 organisms on Gram's stain?
5. What is the natural habitat of this organism and how is it acquired?
6. Do toxins(exo or endo) play a role in pathogenesis by this organism?
7. What is the role of the organism's capsular polysaccharide in causing disease?
8. Which antibiotics would you begin as your empirical therapy?
9. Which immunologic test can be done on the spinal fluid that might identify the organism?



10. How can this disease be prevented



1<sup>st</sup> paper for MD /Degree in:Microbiology & immunology

(contents :General & molecular & systemic bacteriology)

Date: 20/4/2022

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) Describe probiotics : definition , 2 different mechanisms of action , 2 clinical applications and contraindications .
- b) Discuss the purified protein vaccine with 2 examples.
- c) Regarding chemical antiseptics and disinfectants : define phenol coefficient , enumerate 2 mechanisms of action and how to calculate rate of bacterial death.
- d) Mention the disadvantages of benzylpenicillin and compare between the spectrum of 5 different types of penicillins in a table form .
- e) Explain the different clinical manifestations induced by bacterial endotoxin and give short account on endotoxin-like activity in gram positive bacteria .

**Q2) Give a short account on (25 marks ) :**

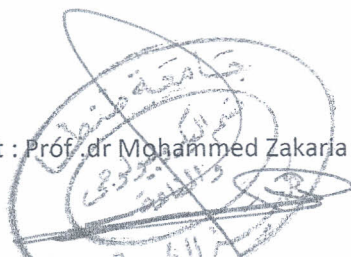
- a) Digital PCR (10 marks )
- b) Advantages of isothermal amplification over thermal PCR (5 marks )
- c) Optimization of PCR conditions with reference to Gradient PCR (10 marks )

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

- a) Give 5 examples for patients at risk of infection with *S.aureus*, mention the mechanism of resistance and treatment for vancomycin resistant strains .
- b) Compare between enterococcal and non enterococcal group D *Streptococci* .
- c) Discuss 2 pneumococcal vaccines used for adult and for children
- d) Regarding disseminated Gonorrhoea: describe clinical manifestations , predisposing factors , difficulty in diagnosis and mention a rapid screening diagnostic test .

(see next page )

Head of the department : Prof. dr Mohammed Zakaria





**Q4) A patient has developed gastrointestinal disturbance ,fever and myalgia after eating refrigerated undercooked meat . Gram +ve motile bacilli was isolated from stool . Discuss the following (25 marks, 5 for each ):**

- a) The most expected causative bacterium
- b) pathogenesis
- c) Three different risk groups for infection
- d) The main host defense mechanism against it
- e) Prevention of infection by this organism

**Q5) Regarding *Mycobacteria* , answer the following (25 marks ) :**

- a) Mention 2 main problems with PPD skin test in detecting latent infection , describe the principle and different versions of a quantifiable alternative laboratory test .(9 marks )
- b) Mention acid fast bacteria other than *Mycobacteria* that can induce lung cavitation , how to differentiate , patients at risk and treatment .(9 marks )
- c) Describe mechanism for nerve damage in tuberculoid leprosy and for disfigurement in lepromatous leprosy . (7 marks )

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

**a) An intubated patient has developed pneumonia and gram negative rods were isolated from him .Answer the following :**

\*if the organism was vancomycin sensitive ,what is the most expected causative bacterium and its alternative name ?

\*what are other clinical conditions caused by it ?

\*what are antibiotics to which it is resistant ?

\*Give 2 examples of other types of vancomycin sensitive bacteria ?

**b) A patient suffering from gastrointestinal disturbance and pain in multiple joints was subjected for intestinal biopsy using Periodic acid schiff stain :**

\* If inclusion bodies are found in macrophages using this stain , what is the most probable causative agent and the name of disease .

\*mention the most important characteristic

\* method of infection and pathogenesis

\*Other method of diagnosis and how to treat

Good luck

Head of the department : Prof .dr.Mohammed Zakaria

