THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF MEDICAL LABORATORY SCIENCES
ACADEMIC YEAR 2018/2019 – SEMESTER II

BACHELOR OF MEDICAL LABORATORY SCIENCE HONOURS
MLU2345 – SYSTEMATIC AND CLINICAL MICROBIOLOGY I
FINAL EXAMINATION

DURATION: THREE HOURS

DATE: 28th NOVEMBER 2019 TIME: 9.30 AM – 12.30 PM

Part B: Structured Essay Questions (100 marks)

Q1

A 19-year-old married Asian female presented in a clinical set-up with a headache, backache, and mild lower limb weakness for four months. She was diagnosed as a case of "A" based on the cerebrospinal fluid (CSF) detailed report.

Biochemical analysis of CSF collected from the patient suspected of "A" is as follows.

Glucose	: 1.5 mmol/L	(Normal: 2.5 – 4.0 mmol/L)
Protein	: 780 mg/L	(Normal: 100-400 mg/L)
Leucocyte count	: 930 x10^6 cells/L	(Normal: Up to 5x10^6)
Cells type	: Increased Neutrophils Markedly Increased Lymphocytes	

The blood culture was positive on BACTEC medium. She was given isoniazid 250 mg, rifampin 450 mg, streptomycin 750 mg, and pyrazinamide 1000 mg once daily.

1.1 Identify "A". (2 marks)

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1.2 Discuss characteristic CSF changes in "A" of the central nervous system (CNS) based on the above report. (4 marks)

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1.3 What is the causative agent of "A"? (2 marks)

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Index No: .....

1.4 Briefly describe how you process the above CSF specimen (**less than 1ml**) for both microscopy and culture of "**A**". **(10 marks)**

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1.5 Briefly describe the expected findings of microscopy of "**A**". **(2 marks)**

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Index No: .....

1.6 Outline **what you can see** and **how to report** the results of microscopy of "A"?

(5 marks)

What you see	What to report

Total – 25 Marks

Index No: .....

Q2

A man aged 22 had chancroid as characterized by painful sores on the genital area and lymph adenitis in the regional lymph nodes.

2.1 Write down the causative agent(s) of chancroid. **(2 marks)**

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2.2 What are the specimen(s) to be collected for laboratory diagnosis of chancroid? **(2 marks)**

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2.3 Briefly describe the expected results of Gram stain of above mentioned (2.2) specimen(s).

(2 marks)

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2.4 What is the medium to be used for culture? **(2 marks)**

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2.5 Briefly describe the colony morphology of causative agent(s) mentioned in 2.1 on the above medium (2.4). **(2 marks)**

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2.6 Briefly describe gonococcal urethritis under the following headings **(15 marks)**

Causative agent : .....

Specimen(s) : .....

How to collect the specimen:

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How to transport:

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Microscopy:

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Index No: .....

Specimen processing for Culture:

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Total – 25 Marks

Index No: .....

Q3

Chickenpox is a highly communicable disease caused by "**B**". Most of the cases (~ 90%) occur in children younger than 10 years. In temperate countries 40% of adults are found to be seronegative.

3.1 What is the causative agent (**B**) of chickenpox? **(2 marks)**

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3.2 Briefly describe the pathogenesis of chickenpox. **(12 marks)**

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3.3 Write down the specimen(s) to be collected for diagnosis of chickenpox? **(2 marks)**

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3.4 Write down **ONE (01)** laboratory test done for the diagnosis of chickenpox. **(3 marks)**

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3.5 List **THREE (03)** viral causes of skin infections and their causative agent(s), except chickenpox. **(6 marks)**

i) .....

ii) .....

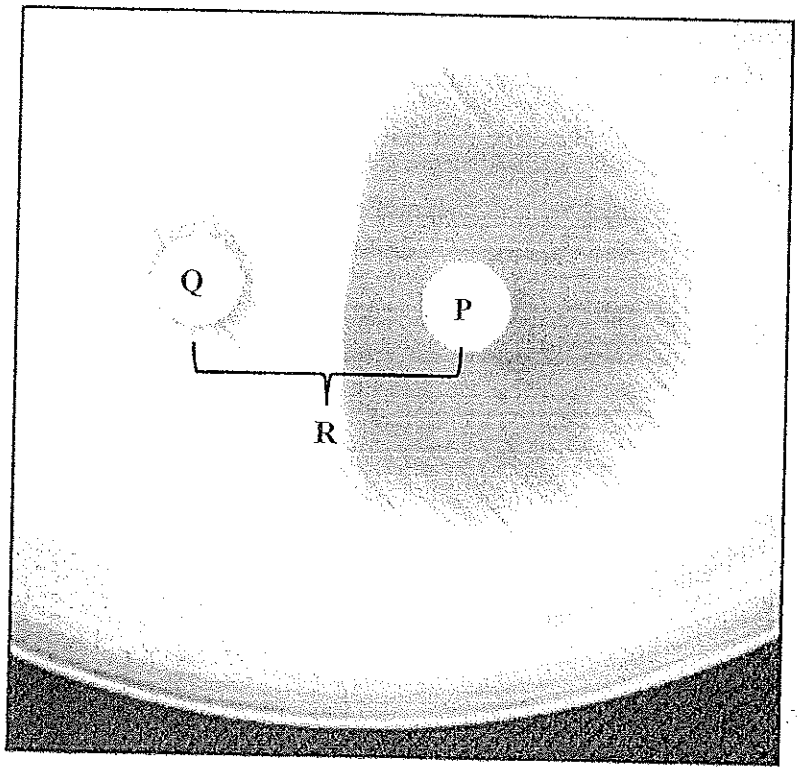
iii) .....

Total – 25 Marks

Index No: .....

Q4

A 44-year-old man had fever, chills, and increased low back pain for 10 days post lumbar discectomy. He had complained 3 days of erythema, bloody drainage, and pain along his incision. He had a wound exploration and the tissue Gram stain showed significant white blood cells and Gram-positive cocci. β-haemolytic colonies were isolated on blood agar. The ABST was as shown below.



4.1 List **THREE (03)** major antibiotic resistant patterns in Gram positive bacteria.

(3 marks)

i) .....

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ii) .....

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iii) .....

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4.2 State which antibiotic resistant pattern is shown in the above picture? **(2 marks)**

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4.3 Identify P and Q. **(2 marks)**

P: .....

Q: .....

4.4 State the distance (R). **(2 marks)**

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4.5 Which class(s) of antimicrobials do "P" and "Q" belong to? **(2 marks)**

P: .....

Q: .....

4.6 Briefly describe the mechanism of action of "P" and "Q". **(5 marks)**

P: .....

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Q: .....

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4.7 Outline the spectrum of activity of "P" and "Q". **(9 marks)**

P: .....

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Index No: .....

Q: .....

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Total – 25 Marks

Part C: Essay Questions (40 marks)

1. A 11-year-old girl presented with a history of stabbing epigastric pain every 10 minutes and nonbilious vomiting more than 10 times a day. She did not have fever or diarrhea. She was suspected of having a *Helicobacter pylori* infection. Describe the laboratory diagnosis of *Helicobacter pylori* infection associated with peptic ulcers. **(20 marks)**

2. A 13-year-old child was admitted to the ward with acute paralysis of the right lower limb. The pediatrician suspected of her having polio virus infection. Describe the **causative agents, pathogenesis, collection, transport of specimen(s)** and **relevant investigations** regarding poliomyelitis. **(20 marks)**

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