



Higher Specialist Diploma

Virology

Examination - February 2021

Essay Paper

120 minutes

Attempt 2 out of 5 questions

Instructions to candidates

1. Record your candidate number and HSD discipline on the front sheet of the answer booklet.
2. Record your candidate number, the question number and the page number in the spaces provided on the answer sheets.
3. Begin each new answer on a new page.
4. Each question is worth 100 marks.

1. Discuss the laboratory investigation of enterovirus infections.
2. A microbiology laboratory within your network currently sends samples to your virology department for Chlamydia and GC NAATs testing. It is proposing to replace this with a POCT assay which will be done within the laboratory by biomedical scientists instead. Discuss the relative merits and limitations of such an approach.
3. Outline a business plan to provide a virology service to a neurology department.
4. Discuss the laboratory diagnosis of congenital infections caused by rubella virus and human cytomegalovirus.
5. What are the issues which need to be considered when introducing POCT kits for SARS-CoV-2 in a non-laboratory setting?



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Case Studies

120 minutes

Attempt all case studies

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4. Each question is worth 100 marks.

SEEN CASE STUDY

1.

Mr GH, a 47 year old man presented in the Accident and Emergency department with symptoms of acute onset pyrexia, lethargy, fatigue, myalgia aching and nausea in the last week of March 2020. He had returned from a hiking trip to the Black Forest in Germany 10 days earlier. He did not report any respiratory symptoms or contact with a known COVID-19 patient.

- a. List the viral infections which would be suspected in this case and state which samples should be collected for laboratory investigations. (20 marks)

Results from the initial tests:
NO viral infections detected

GH was discharged from hospital and appeared to recover, but in mid-April he was re-admitted with recurrence of the pyrexia and nausea, along with a stiff neck, photophobia and some signs of confusion. When asked for more information about his movements on holiday, the man mentions that he was bitten by a tick while walking through a forest. He removed it and took a photograph on his phone camera. He sent the photo to his cousin who is an entomologist. The cousin identified the species of tick as *Ixodes ricinus*.

- b. Which viral infection would be suspected and how could this be confirmed in the laboratory? (20 marks)
- c. Outline the epidemiology of this infection in Europe. (20 marks)
- d. Infection with this virus is associated with a 25% case fatality rate. How could GH have avoided the risk from this illness? (20 marks)
- e. Discuss the epidemiology and clinical picture of another disease which is prevalent in Europe and transmitted by *I. ricinus* ticks. (20 marks)

UNSEEN CASE STUDIES

2.

Mrs AB is a 29 year old woman who is 13 weeks pregnant. She has presented to her GP with a red rash, which she noticed about 24 hours ago. She reports a headache and feeling nauseous for two days before the rash appeared. On examination, she is pyrexial. She attended the Antenatal Clinical at her local hospital for a routine appointment five days ago.

- a. List all the possible causes of Mrs AB's symptoms. (15 marks)
- b. Which samples should be collected from her and which tests should be carried out on them? (15 marks)

The results obtained included the following:

Rubella virus IgM: Not detected, IgG: Not detected
Parvovirus B19 IgM Equivocal; IgG Not detected

- c. Comment on these findings, including the implications of each result and the advice that should be given to the patient. (40 marks)
- d. How should potential contacts at the ANC be followed up? (30 marks)

3.

It is mid-December and the paediatric ward of a district general hospital has recently introduced a POCT assay for testing for Respiratory Syncytical Virus (RSV) in respiratory samples. One of the staff nurses has brought a nasopharyngeal aspirate from a 14month old boy up to the laboratory, asking for urgent tests. The boy is experiencing symptoms of severe dyspnoea, wheezing, along with a cough and pyrexia (38.5°C).

However, the nurse reports that the POCT test result was 'negative', which surprised the paediatrician, who was on the point of prescribing ribavirin to treat the presumed RSV infection.

- a. Which tests would you carry out on this sample, and why? (30 marks)

Your testing gives a result of RSV RNA DETECTED in a real-time PCR assay, with a Ct result of 24.25.

- b. How would you follow up this event after providing the diagnosis for this individual patient? (70 marks)