

Dried Tube Specimen (DTS) Panel Preparation for Xpert MTB/RIF Training

Marking Guide

Name of the participant:

Date of Examination:

Total marks possible: 50

Total marks achieved:

Percentage:

- 1) List rapid methods used to detect Mycobacterium tuberculosis complex and resistance to rifampicin within 72 hours. (2 marks) (write two methods)

Ans: MTBDR+ Line Probe Assay, Xpert MTB/Rif/Ultra, TrueNat

- 2) Tick the PPE needed for DTS preparation. (4 marks)

- Surgical mask
- Back closing gown
- Shoe covers
- Laboratory coat
- Gloves
- Hair cover
- N-95

Ans: back closing gown, gloves, shoe covers, N-95

- 3) Why is it important to verify the purity of MGIT cultures before inactivation and what medias are used? (3 marks)

Ans: Ensuring cultures are not mixed with NTMs or contaminants that may affect results, LJ and nutrient agar

- 4) Tick the tools and instruments required to prepare DTS samples for Xpert MTB/RIF/Ultra performance evaluation ? (7 marks)

Biosafety cabinet
GT Blot
Safety centrifuge
PCR hood
20-200 µl adjustable automatic pipette
Thermocycler
Gel electrophoresis system
Splash-proof liquid discard container
Thermometer
Genexpert instrument
Vortex mixer
Refrigerator set at 2-8 °C

Ans: Biosafety Cabinet, Safety centrifuge, 20-200 µl pipette, splash proof discard container, GeneXpert, Vortex, Refrigerator set at 2-8 °C

- 5) Correctly number the steps for testing DTS with Xpert MTB/Rif /Ultra (4 marks)

Step 1 Addition of 2.5 ml SR to the sample
Step 3 Vortex; incubate 5 min
Step 4 Addition of 2ml sample to Xpert MTB/RIF/Ultra cartridge
Step 2 Vortex; incubate 10 min

- 6) What is the purpose of using Hot air oven for producing DTS stock? (3 marks)

Ans: Inactivation of mycobacteria,

- 7) What is the storage condition for GeneXpert Cartridges? (2 marks)

Ans: 2- 28°C

- 8) What are the storage conditions for dry DTS samples (2 marks)

Ans: 2-25 °C, in the dark

- 9) List three preventive maintenance steps for GeneXpert and how often each should be performed? (6 marks)

Ans: Disinfect the exterior instrument surface

Disinfect the cartridge bay interior

Disinfect the syringe plunger rod

Back-up and archive testing data

Annual calibration with Xpert check

10) Why are aerosol tight safety cups required for a bench top centrifuge used for TB specimen processing and culture? (3 marks)

Ans: b) To prevent aerosol release into the lab outside the BSC

11) Why is it important to ensure MGIT cultures are incubated 4-6 days immediately post MGIT positivity before inactivated for DTS? (3 marks)

Ans: to ensure enough growth is present to obtain good Ct results from prepared DTS, yet ensuring there is not over-growth that SR will be unable to inactivate

12) Why is it important to vortex DTS stock for 5 minutes before preparing dilutions? (3 marks)

Ans: to ensure an even distribution of organisms and enhance precision or consistency of mycobacteria (DNA) across all aliquots

13) Which 2 computer software programs are utilized during result analysis, determination of aggregate results, and report generation? (2 marks)

Ans: Microsoft Excel, PDF and Word

14) Describe the validation procedure and criteria for DTS panels for Xpert MTB/RIF- Ultra (3 marks)

Ans: 10% of all DTS aliquots prepared are tested with Xpert MTB/RIF/Ultra
Determine the SD and mean of probe A Ct values. SD must be < 3 and Mean Ct must be 23 or less. Accuracy must be 100%

15) List one quality control measure used in packing panels or PT packets to ensure all PT packets have all required components. (2 marks)

Ans: placing labeled tubes in bags of 100 and counting out 100 bags, then pouring 100 of each sample into containers and ensuring exact matching between all samples and bags

Or

Count out the needed panels in advance for one country/region and while packing ensure there is an exact match between the country/region specific result forms and counted panels at end of PT packet building