T Level Technical Qualification in Healthcare Science

Occupational specialism assessment (OSA)

Assisting with Healthcare Science

Assignment 4

Assignment brief

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Contents

Guidance for students

Student instructions

- read the task briefs carefully before starting your work
- you must work independently and make your own decisions as to how to approach the tasks within the extended written tasks
- you must clearly name and date all of the work that you produce during the supervised session
- you must hand over all of your work to your tutor at the end of the supervised session

Student information

- the maximum time you will have to complete all tasks for this extended written assessment is 2 hours:
  - it is recommended that you should dedicate 10 minutes to read the materials provided in the assignment brief
  - it is recommended that you should then read all the tasks and split your time accordingly, planning time to check your work
- at the end of the supervised session, your tutor will collect all assessment materials before you leave the room
- you must not take any assessment materials outside of the room, for example, via a physical memory device
- you must not upload any work produced to any platform that will allow you to access materials outside of the supervised sessions (including email)
- you can fail to achieve marks if you do not fully meet the requirements of the task, or equally if you are not able to efficiently meet the requirements of the task

Plagiarism

You must complete all tasks in this assignment independently. You are required to sign a declaration of authenticity to confirm that the work is your own. This is to ensure authenticity and to prevent potential malpractice and maladministration. If any evidence was found not to be your own work, it could impact your overall grade.

Presentation of work

- any work not produced electronically must be agreed with your tutor, in which case the evidence you produce should be scanned and submitted as an electronic piece of evidence
- all of your work should be clearly labelled with the relevant task number and your student details, and be legible, for example, front page and headers
- electronic files should be given a clear file name for identification purposes – see tasks for any relevant naming conventions
- all pages of your work should be numbered in the format page X of Y, where X is the page number and Y is the total number of pages
- you must complete and sign the assessment cover sheet (ACS) and include it at the front of your assessment task evidence
- you must submit your evidence to the supervisor at the end of the supervised session

Extended written task 1: maintenance of complex medical equipment

Scenario

You are working as a healthcare science assistant in the medical physics and clinical engineering department.

You are asked to assist a healthcare scientist in the radiology department, checking a maintenance schedule of a computed tomography (CT) scanning system within a restricted clinical area. You are aware that CT system maintenance is performed by an external engineering contractor and its maintenance is not within your remit. However, your team are responsible for performing daily routine checks and must also ensure that the planned preventative maintenance (PPM) and servicing of the system is carried out by a contracted engineer at regular intervals. Your team must also ensure that the department complies with Ionising Radiation Regulations 2017 and Ionising Radiation (Medical Exposures) Regulations 2017 in relation to use, maintenance and servicing of equipment.

Task

Discuss the importance of adhering to a CT system maintenance schedule considering existing regulations detailed in the scenario.

You should consider how CT systems operate when being used on patients and the risk associated with clinical staff working within this environment when maintenance schedules are not maintained.

Give some examples of how regular maintenance of complex medical equipment limits the risks associated with CT equipment.

Consider the levels of maintenance performed by different teams and the purpose of specific regulations as discussed in the scenario and how they support healthcare professionals in using and managing specialist CT equipment.

(20 marks)

Record your response here:

Extended written task 2: testing equipment calibration

Scenario

As part of the routine 6-monthly calibration check carried out by the clinical engineering department, you are asked to assist a healthcare scientist in testing calibration of portable baby scales (figure 1) using:

- 1kg, 5kg and 10kg precision weights
- accuracy test (which is measuring objects actual mass in comparison to the displayed mass; accuracy tests help spot any drifts outside of the tolerance)
- the scale's maximum capacity is 15kg and resolution is 0.05kg (resolution is the smallest increment of measurement that the scale is capable of measuring)
- acceptable error tolerance for the scale is ±0.05kg to ensure the required accuracy of the scale

You have performed required steps of accuracy testing of the scales using provided precision weights. You recorded results as follows:

Figure 1

Scale weight used (kg)	Recorded mass (kg)
1	1.00
1	1.00
1	1.05
5	5.00
5	5.10
5	5.30
10	9.85
10	10.00
10	10.15

Task

Using the information provided in the scenario explain in a step-by-step manner the calibration testing procedures using the masses.

Using the information in the above table, identify if the scales are accurate or not. Provide an explanation for your decision.

Explain the advantage of a 3-point calibration test compared to single-point calibration test method when testing accuracy of scales.

Discuss how correctly calibrated devices contribute to clinical safety and consider why this is important for clinical areas, patients, quality and safety.

(20 marks)

Record your response here:

Extended written task 3: escalation of issues related to equipment

Scenario

You are working as a healthcare science assistant in a hospital medical laboratory.

You are asked to perform a daily maintenance cycle on a urine analyser used in the laboratory. When running a daily maintenance check on the analyser you found that it is showing an error message that impacts upon the analysis of patient samples. You followed appropriate operating procedure to test if equipment is fit for use. Unfortunately, the analyser continued to show error messages. You have not been trained to conduct any further checks on a fault such as this one and you have concluded that the equipment is not fit for use and this situation requires escalation.

Task

Describe how to perform a basic (daily) maintenance cycle on a urine analyser and discuss the actions you should take to address this situation. Your response should include the possible impact of the analyser not working on the collection and labelling of samples and on patients.

You should consider how you are going to handle the faulty device, what information should you record and who should be notified.

(20 marks)

Record your response here:

Extended written task 4: research and innovation

Scenario

You are working as a healthcare science assistant in a blood clinic.

You have been given an opportunity to contribute to a diagnostic research project led by your department.

The study will compare three point-of-care testing (POCT) glucometers with an established laboratory procedure for diagnosis of type 2 diabetes.

A randomised group of adults will be subjected to finger-prick tests – using POCT glucometer X, POCT glucometer Y and an established glucometer and normal laboratory procedure. There will also be a sample group completing the same finger-prick test who do not have type 2 diabetes – who will also use POCT glucometer X, POCT glucometer Y and an established glucometer using laboratory procedure.

Study participants have been previously identified as at risk of type 2 diabetes and referred by their doctors.

The study will be carried out in the blood clinic over a period of 8 weeks. Results from both groups will be compared. Researchers will then be able to determine whether POCT glucometer X, POCT glucometer Y or an established glucometer and normal laboratory procedures are the more reliable test for type 2 diabetes.

The research lead must prepare the study participant information sheet and consent form for the Health Research Authority (HRA) approval showing that the study proposal is safe, legal and ethical. You have been asked to contribute to the participant information leaflet.

Task

Discuss the information that should be included in the document, considering the following:

- study information
- patient involvement
- possible effects for patients
- additional supporting information
- information about consent and participation
- information about use of patient data
- accessibility requirements

(20 marks)

Record your response here:

Document information

Owner: Head of Assessment Design