



T Level Technical Qualification in Healthcare Science

Occupational specialism assessment (OSA)

Assisting with Healthcare Science

Assignment 4

Assignment brief

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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 insert
 - 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

Copying may result in the external assessment task being awarded a U grade. For further guidance, refer to your student handbook – plagiarism guidance and maladministration and malpractice policy located at www.qualhub.co.uk.

Presentation of work

- clearly show where sources have been used to support your own ideas and opinions
- clearly reference all sources used to support your own ideas and opinions, including any quotations from websites
- 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 scientist assistant in the medical physics and clinical engineering department.

You are asked to assist a healthcare scientist in the radiology department, checking an x-ray system maintenance schedule within a restricted clinical area. You are aware that x-ray machine maintenance is performed by an external engineering contractor and its maintenance is not within your remit. Your team are responsible for daily routine checks. Teams must comply with Ionising Radiation Regulations 2017 and Ionising Radiation (Medical Exposures) Regulations 2018 in relation to use, maintenance and servicing of equipment.

Task

Discuss the importance of adhering to an x-ray machine maintenance schedule with reference to the existing regulations detailed in the scenario. You should consider how medical x-rays operate when being used on patients, and the risks 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 x-ray 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 x-ray equipment.

(20 marks)

Record your response here:

Extended written task 2: testing equipment calibration

Scenario

As part of a quality assurance and audit within a laboratory, you are asked to assist a healthcare scientist in testing calibration of automatic pipettes using a balance and the density of water.

- if the accuracy value lies in the 99 to 101% range, the pipette is considered normal and calibrated – calculating accuracy is done by using the formula $A = 100 \times V_{\text{avg}}/V_0$, where A is the accuracy of the pipette, V_{avg} is the average calculated volume, and V_0 is the theoretical volume you tried to dispense
- you have performed the required steps of pipette calibration for a volume of 10 μ L of water at a temperature of 23°C (item A)
- the formula for calculating the volume dispensed by the pipette is $V = w * Z$, where w is the weight of the water, Z is the conversion factor based on the density of the water, and V is the calculated volume of how much water was dispensed (item B)

Task

Using the formulas provided as well as the information in item A and item B from the insert provided, calculate the accuracy of the pipette and recommend if the device is in calibration or not. You should also explain the difference between accuracy and precision.

Discuss how audits contribute to the accreditation process 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 asked to perform a functional check on some devices stocked in the medical equipment library. You have found that one of the tympanic thermometers is showing an error message after turning it on and its audible alarm is very quiet. You have spoken to the user who has confirmed the device has not been dropped. The user has stated that there are no spare devices in their clinical area and this item is needed for the next clinic. You decided to replace the batteries but that has not resolved the issue. You have not been trained to conduct any further checks on a fault such as this one.

Task

Describe how to perform a basic (daily) functional check on a tympanic thermometer and discuss the actions you should take to address this situation. 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 respiratory clinic. You have been given an opportunity to contribute to a diagnostic research and innovation project led by your department.

The study will examine if 30 minutes of light intensity physical activity (for example, fast paced walk) performed 2 hours before sleep has a positive effect on the sleep quality of the patients with sleep apnoea (a type of a sleep disorder). Only adults with a mild condition will be included in the study. Sleep quality will be assessed in an overnight study (using a finger probe pulse oximeter). The study will be carried out over a period of 8 weeks.

Research lead must prepare the study participant information sheet and consent form for the Health Research Authority 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

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Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Post approval, updated for publication.		January 2021
v1.1	NCFE rebrand.		September 2021