

Level 3 Advanced Technical Diploma in Electrical Installation (8202-30)

Synoptic Assignment 2019 - V2.2

Version and date	Change detail	Section
2.0 November 2018	Additional Guidance provided to candidates in the assignment brief	Assignment Brief
	Additional Guidance provided to candidates in tasks	Tasks
	Additional Guidance provided to assessors in the instructions for centres, including timings	Task instructions for centres
	Clarity on the circuits used for inspection in task 2	
2.1 January 2019	Clarity on which job cards to use	
	Additional clarity provided on circuit in task 1	Tasks
2.2 February 2020	Job cards and Guidance on faults removed to prevent guidance for live assessments	Task instructions for centres

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

General guidance for candidates

General guidance

This is a formal assessment that you will be marked and graded on. You will be marked on the quality and accuracy of your practical performance and the written work you produce. It is therefore important that you carry your work out to the highest standard you can. How well you know and understand the subject, and how you have used your knowledge and skills together to complete the tasks must be clear to the marker. This means you will have to explain your thinking and the reasons behind the way you have carried out the tasks and how/why you have made your decisions within your written work e.g. as part of your planning, reflections, or evaluations.

Plagiarism

This is an assessment of your abilities, so the work must be all your own work and carried out under the conditions stated. You will be asked to sign a declaration that you have not had any help with the assessment.

Your tutor is allowed to give you some help understanding the assignment instructions if necessary, but they will record any other guidance you need and this will be taken into account during marking.

Plagiarism is the failure to acknowledge sources properly and/or the submission of another person's work as if it were your own. Plagiarism is not allowed in this assignment.

Where research is allowed, your tutor must be able to identify which work you have done yourself, and what you have found from other sources. It is therefore important to make sure you acknowledge all sources and clearly reference any information taken from them.

Timings and planning

Where you have to plan your time, you should take care to make sure you have divided the time available between tasks appropriately. In some assignments, there are specified timings which cannot be changed and which need to be taken into account. You should check your plan is appropriate with your tutor.

If you have a good reason for needing more time, you will need to explain the reasons to your tutor and agree a new deadline date. Changes to dates will be at the discretion of the tutor, and they may not mark work that is handed in after the agreed deadlines.

Health and Safety

You must always work safely, in particular while you are carrying out practical tasks.

You must always follow any relevant Health and Safety regulations and codes of practice.

If your tutor sees you working in a way that is unsafe for yourself or others, they will ask you to stop immediately, and tell you why. Your tutor will not be able to continue the assessment until they are sure you are ready for assessment and can work safely.

Presentation of work

Presentation of work must be neat, legible and appropriate to the task.

You should make sure that each piece of evidence, including any forms, is clearly labelled with your name and the assignment reference.

All electronic files must be given a clear file name that allows your tutor to identify it as your work.

Written work e.g. reports may be word processed or hand written unless stated otherwise.

All sketches and drawings should be neat and tidy, to scale, and annotated.

Calculations should be set out clearly, with all working shown, as well as any assumptions made. You should use appropriate units at all times, and answers must be expressed to a degree of accuracy consistent with the requirements of the task.

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Assignment Brief

You have been asked by your employer to design sections of the electrical installation for a new building on a large site, the floor plan for this new building is shown in the Drawing 8202-35-2019-1. There is also a boiler supply and outbuilding distribution box that needs considering that is not shown on the drawing.

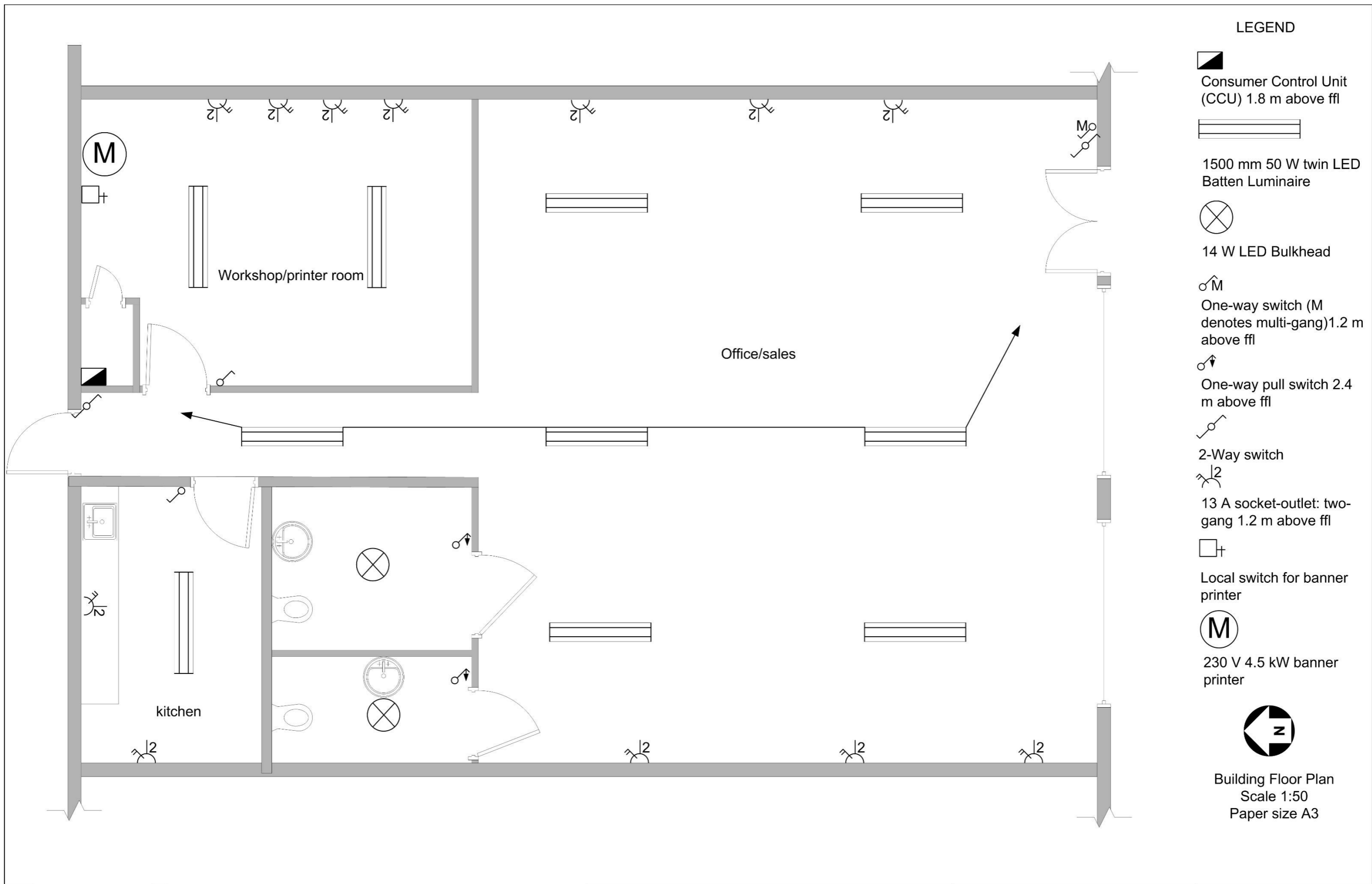
When putting together a design for the installation, you have also been asked to consider a plan for the resource (labour and material) requirements. Your employer has provided you with the initial high level requirements which you will need to present within a critical path network, labour resource bar chart and a take-off sheet.

Also onsite are a number of pre-existing buildings, and as part of the contract you are required to carry out inspection and testing of the electrical installations installed within these buildings. In addition to this, the client has reported several faults which need to be diagnosed and rectified.


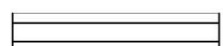








Once you have completed the inspection, verification and fault rectification, you will need to complete a self-evaluation reflecting on the work you've carried out. You will need to consider what went well and what you would do differently if you were to carry out a job like this again in the future.

Labour Requirements

	<u>Task</u>	<u>Duration</u>	<u>Operatives</u>
1	Install ceiling cable trunking	16 hours	2
2	Builders to erect internal stud walls	20 hours	N/A
3	Install conduit drops for switches	4 hours	2
4	Pull in lighting cables trunking/conduit drops	8 hours	2
5	Builders screed floor (no other works allowed during period)	36 hours	N/A
6	Install DADO trunking for all sockets and data	4 hours	1
7	Suspended ceiling to be installed by others	18 hours	N/A
8	Pull power cables into trunking	6 hours	2
9	Fix Distribution Board (DB)	4 hours	1
10	Terminate DB	4 hours	1
11	Install luminaires	8 hours	2
12	Terminate all luminaires	4 hours	1
13	Install and terminate wall sockets and switches	4 hours	1
14	Initial verification	8 hours	2



LEGEND

-  Consumer Control Unit (CCU) 1.8 m above ffl
-  1500 mm 50 W twin LED Batten Luminaire
-  14 W LED Bulkhead
-  One-way switch (M denotes multi-gang) 1.2 m above ffl
-  One-way pull switch 2.4 m above ffl
-  2-Way switch
-  13 A socket-outlet: two-gang 1.2 m above ffl
-  Local switch for banner printer
-  230 V 4.5 kW banner printer
-  Building Floor Plan
Scale 1:50
Paper size A3

Tasks

Task 1 – Designing an electrical system

- 1a. Produce a critical path network, labour resource bar chart and take-off sheet needed in the planning of the installation.
- 1b. Complete the design criteria within the design grid (template found within the Synoptic Assignment Recording Forms) using the scale A3 drawing 8202-2019-1.
- 1c. Determine, for circuit 5,
 - a) the total earth fault loop impedance, assume the cpc to be one of the cores
 - b) the suitability of this cpc for thermal constraints, using the formula contained in Regulation 543.1.3 in BS 7671.
- 1d. Annotate the drawing 8202-2019-1 showing where self-contained standalone emergency luminaires should be positioned.
Ensure you have indicated if they are maintained or non-maintained.
- 1e. Determine the maximum demand for this installation before and after the application of diversity.

Conditions of assessment:

- The time allocated for this task is 5 hours.
- You must carry out the task on your own, under controlled conditions.
- You may refer to both BS 7671 and IET On-site Guide alongside any relevant resource materials, including internet use, during supervised conditions.

What must be produced for marking and submitted for moderation (if applicable):

- Planning and design documentation
- Completed Design Criteria Grid
- Marked-up A3 to scale Drawing 8202-2019-1
- Calculation sheets.

Task 2 – Inspection and testing

- 2a. Carry out an inspection on an installation.
- 2b. Carry out a range of tests to the circuits on an installation.
You must obtain permission from your tutor before proceeding with any tests involving switching on the supply.

Conditions of assessment:

- The time allocated for this task is 3 hours.
- You must carry out this task on your own, under controlled conditions.
- You may refer to both BS 7671 and IET On-site Guide during supervised conditions.

What must be produced for marking and submitted for moderation (if applicable):

- 2a. Schedule of Inspections.
- 2b. Schedule of Test Results.
- Electrical Installation Certificate.

Additional evidence of your performance that must be captured for marking and submitted for moderation (if applicable):

- your assessor's notes of your working practice describing the quality, consistency and accuracy of the finished work.

Task 3 – Fault diagnosis and rectification

Carry out a minimum of **six** fault diagnosis and rectification procedures.

Conditions of assessment:

- The time allocated for this task is 3 hours.
- You must carry out the task on your own, under controlled conditions.
- You may refer to both BS 7671 and IET On-site Guide.

What must be produced for marking and submitted for moderation (if applicable):

- Report sheets.

Additional evidence of your performance that must be captured for marking and submitted for moderation (if applicable):

- your assessor's notes of your working practice describing the quality, consistency and accuracy of the finished work

Task 4 – Self Reflection

Carry out a reflective evaluation of the work you've completed.

Consider what has gone well and what you may change if you were to complete a job like this again in the future.

Conditions of assessment:

- you must carry the task out on your own under supervised conditions.

What you must produce for marking:

- a written reflective evaluation that considers all tasks you've carried out within the assignment. It is recommended that your evaluation is a minimum of 500 words

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Task instructions for centres

Resources

Candidates must have access to a suitable range of resources to carry out the tasks and to have the opportunity to select tools/equipment or materials in order to demonstrate understanding of appropriate selection.

Time

The recommended time allocated for the completion of the tasks and production of evidence for this assessment is a maximum of **12** hours. Suggested timings for completion of specific tasks are outlined below. Actual time spent loading material is not included in the eleven hours.

It is the centre's responsibility to arrange how this time is managed to fit with timetables during the assessment period.

Suggested timings are given below per task, candidates should be made aware of the time they have available to ensure they formulate an appropriate plan.

The following timings are provided to support centre planning.

Total – 12 hours.

Task 1 – 5 hours

Task 2 – 3 hours

Task 3 – 3 hours

Task 4 – 1 hour

Timings are recommended, where the candidates require extra time this should be captured within the tutors notes and reflected in the marks awarded.

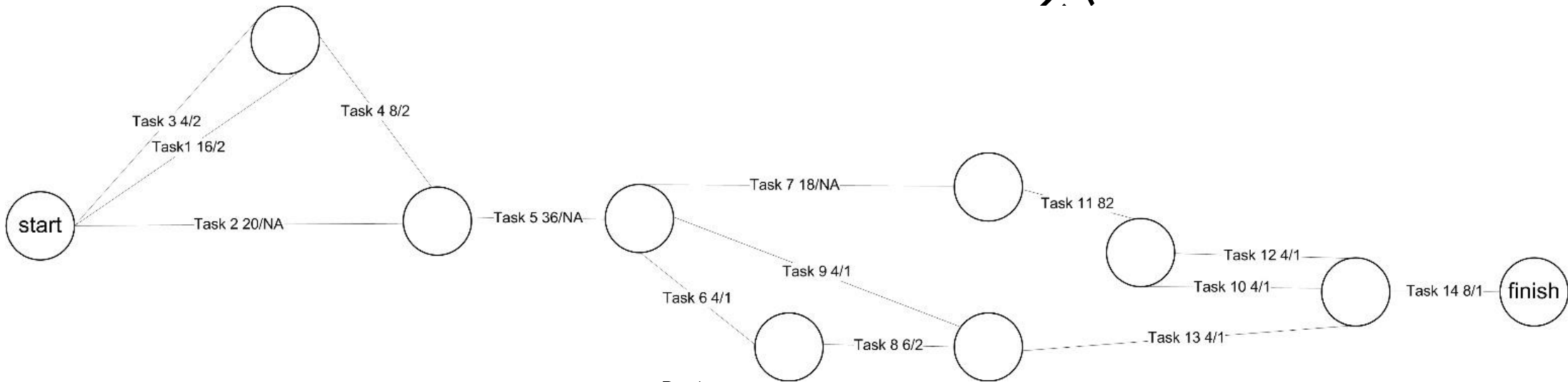
Task 1

Candidates should be provided with A3 printed copies of the scale Drawing 8202-2019-1 for this task, found in this document.

Model answers;

- 1a. An example of how this CPN can be arranged is below. Candidate's versions may differ but certain tasks must follow another. Some tasks should overlap. A single line CPN would not be acceptable.

ASSESSMENT



PAST ASSIGNMENT (2019)

1a. Bar chart should show an efficient use of labour and tasks should reflect CPN.

	Task	Days (8 hours per day)															
		1	2	3	4	5	6	7	8	9	10	11	12				
1	Install lighting trunking	■	■	■													
2	Builders to erect internal walls	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3	Install conduit drops switches		■														
4	Pull in lighting cables			■	■												
5	Builders screed				■	■	■	■	■	■	■	■	■	■	■	■	■
6	Install dado trunking									■							
7	Suspended ceiling to be installed								■	■	■	■					
8	Pull in power cables									■	■						
9	Affix DB								■								
10	Terminate DB											■					
11	Install Luminaires										■	■					
12	Terminate all luminaires											■					
13	Install and terminate s/o and switches												■				
14	Initial verification													■	■		
	Task needing 1 person	People needed per day															
	Tasks needing 2 people	2	4	2	0	0	0	0	3	2	2	1	1				

1a. Suitable take-off sheet showing all symbols on drawing with correct quantities.

1b. The model answers shown on the design grid (Design Grid Mark Scheme) are based on the approximate circuit lengths. Candidates may determine a slightly different value for circuits and value tolerances may differ slightly due to this. Estimated circuit lengths with differ to those provided must be justified.

1c. Answers may deviate by a) 0.1 Ω and b) 0.2 mm²

a) Line-cpc = 14.82 mΩ/m so

$$\frac{14.82 \times 27 \times 1.2}{1000} = 0.48 \Omega$$

As $Z_e = 0.3$

$$Z_s = 0.3 + 0.48 = 0.78 \Omega$$

b) Actual fault current = $\frac{230}{0.78} = 295 A$ or using appendix 3 $I_a = 160 A$ so

disconnection < 0.1 seconds

$$\frac{\sqrt{295^2 \times 0.1}}{115} = 0.81 \text{ mm}^2 \text{ or } \frac{\sqrt{160^2 \times 0.1}}{115} = 0.44 \text{ mm}^2$$

So 2.5 mm² is suitable as a cpc

1d.

A good spread of luminaires should be shown on the drawing with maintained luminaires above each exit door and in main room for route to back door. Non-maintained luminaires in escape routes such as main area, kitchen, and toilets.

1e.

Maximum demand before diversity = 87.8 A

With the application of diversity using Business Premises as table A2; IET On-site Guide

Lighting = $1.6+0.7$ at 90% = 2.1 A

Sockets = $22\text{ A} + (15+9 \times 0.4) = 31.6\text{ A}$

Printer = 19.5 A (No diversity applied)

Boiler = 4 A

Outbuilding = 16 A

Total after diversity = 73.2 A

The figures above are approximations. Candidates need to show an understanding and application of diversity using factoring.

If candidates apply assumed diversity based on assumed demands as an overall factor, with justifications, this is acceptable to a minimum assumed load of 60 A.

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Design Grid Mark Scheme

Estimated cable length will affect voltage drop values

Consumer unit located in workshop VOLTAGE DROP TO COMPLY WITH BS 7671		Nominal Voltage (U) 230 V			Earthing Arrangement TN-C-S		External Earth Fault Loop Impedance (Z_e) 0.3 Ω	
Circuit	1	2	3	4	5	6	7	8
Description	Ring-final office	Radial-final sockets workshop	Radial-sockets kitchen x2 twin	Boiler supply (not shown on diagram)	Outbuilding DB (not shown on diagram)	4.5 kW printing machine	Lighting office	Lighting workshop/kitchen/toilets
No. outlets	6 x 2-gang	4 x 2-gang	2 x 2-gang	1	1	1	7	5
Type of wiring	70 °C thermoplastic single-core non-sheathed	70 °C thermoplastic single-core non-sheathed	70 °C thermoplastic single-core non-sheathed	70 °C thermoplastic multi-core flat profile	70 °C thermoplastic 3-core PVC SWA	70 °C thermoplastic 3-core PVC SWA	70 °C thermoplastic single-core non-sheathed	70 °C thermoplastic single-core non-sheathed
Design Current (I_b)	22 A	15 A	9 A	4 A	16 A	19.5 A	1.6 A	0.7 A
Type and Nominal rating (I_n)	32 A B	20 A B	20 A B	16 A B	16 A C	20 A B or C	6 A C	6 A C
Length (metres)	50 m loop	12 m	10 m	8 m	27 m	5 m	29 m	20 m
Installation method	B	B	B	B	C	C	B	B
Ambient temperature °C	25 °C	25 °C	25 °C	30 °C	30 °C	30 °C	30 °C	30 °C
Rating Factor Ambient air temp. C_a	1.03	1.03	1.03	1	1	1	1	1
Total circuits in group	2	2	2	1	1	1	2	2
Rating factor grouping C_g	0.8	0.8	0.8	1	1	1	0.8	0.8
Minimum current capacity (I_t)	24.3	24.3	24.3	16	16	20	7.5	7.5
mV/A/m	18(/4)	11	11	29	18	29	29	29
Actual Voltage drop	4.5	1.98	0.99	0.93	7.8	2.8	1.3	0.4
Minimum conductor csa mm ²	3	4	4	1.5	2.5	1.5	1.5	1.5

Task 2

The practical testing should be undertaken in a simulated test area. The assessment can be carried out in the same area that is used for training and practice, however no training or practice should be in progress whilst assessments are taking place.

Details of the test rig can be found in the document 'Assessors Guide for Test Rigs 2015 V1 pdf' which is available for download from the 8202 City & Guilds webpage under Level 3 > Additional Documents. Please ensure you check this document in advance of assessment, to ensure no updates have been made.

All fault finding work must be undertaken with the installation fully isolated.

Candidates are allowed up to 3 hours for this task. However if a candidate is completing documentation, they may be given additional time to complete at the discretion of the tutor. This assessment may be carried out over two sessions.

All work must be to current standards and carried out in accordance with all health and safety requirements. Any unsafe actions will result in termination of this assessment. The purpose of this task is for candidates to demonstrate knowledge of the process of initial verification. Candidates are required to safely undertake an initial verification on the section of the test rig as below. The section will include a minimum of three circuits.

Section	Circuits	Notes
Workshop DB	<ul style="list-style-type: none">• Lighting• Ring final circuit• Motor circuit• Main Protective bonding within office DB	Requires x1 schedule of test results

The rig must not contain any faults during this assessment.

Candidates must be provided with suitable test equipment, tools, guidance documentation, (such as GN3) and any appropriate PPE.

The candidate should complete a Schedule of Inspection for initial verification, as contained in BS 7671, prior to testing. The sections verified must be applicable to the installation.

The candidate is to carry out a full range of tests on the circuits identified. First candidates must perform the safe isolation procedure on the installation.

Once the installation is safely isolated they will continue to carry out the following tests:

- continuity of main protective bonding conductors
- continuity of cpc to obtain an R1+R2 result
- continuity of ring final circuit
- insulation resistance
- polarity.
- With the supply to the DB under test and energised, but installation isolated:
 - supply polarity check
 - external earth fault loop impedance (Z_e)
 - total earth fault loop impedance (Z_s) by calculation
 - prospective short-circuit current (I_{pf}).
- With the installation energised:

- additional protection / RCD (by instrumentation at a safe point within the installation)
- functional tests.

When a candidate is observed working unsafely, the assessor must intervene and stop the assessment immediately. This should be captured within observation forms and reflected in marking.

Once a candidate has completed the practical element of testing they must then complete a Schedule of Test Results and Electrical Installation Certificate as contained within BS 7671. Centres should provide simulated details relating to:

- client and their address
- supply characteristics (which are not apparent)
- sections relating to design and construction (for multi-signatory certificates)

Task 3

The same assessment rig should be used within this task, as is used within Task 2. Details of the test rig can be found in the document 'Assessors Guide for Test Rigs (2015)' which is available for download from the City & Guilds website.

The candidates must fully isolate the installation prior to carrying out any fault-finding tests. Any unsafe actions will result in termination of this assessment.

Candidates are allowed up to 3 hours for this task. However, if a candidate is on their final job card they may be given additional time to complete at the discretion of the tutor. This assessment may be carried out over two sessions.

The purpose of this task is for candidates to demonstrate knowledge of the process of diagnosing faults. Candidates are required to safely diagnose and suggest a suitable method of rectification of a range of faults by interpreting the given symptoms. Candidates are required to provide a brief written report indicating the fault and giving recommendations on how the fault should be rectified along with suggested materials. Candidates are not required to implement the rectification work needed.

Candidates must select a job card from a range offered by the tutor. On completion of that job, the candidate must then select another card from the range. There must be only one fault introduced to the rig at any one time. Candidates must not be shown the details of the job cards prior to selection. There is an expectation that within 3 hours candidates are likely to have diagnosed and suggested rectification for approximately six or seven faults.

The selection offered to the candidate should only include job cards for either the main office installation (OA) or the boiler (BH).

Report sheets in the candidates pack should be photocopied as required.

Example report sheet

Fault reference number: EX1
Symptoms of fault: Office water heater does not work

Report sheet	
Job card reference number: EX1	
Candidate name: Mr. Lou Skinection	Date of assessment: 15/05/2018
Description of work done/ tests carried out to locate fault (if any) Continuity tests of all conductors on water heating circuit.	
The nature of the fault Open circuit on the neutral in the circuit cable	
Brief description including materials required to fix the fault. Cable is replaced as appropriate 2.5 mm ² the nopolastic, flat twin and cpc	
Actions required to ensure rectification is suitable. Reset circuit continuity (repair) Full initial verification (replacement) Functional testing of water heater	

Job cards

Job Cards have been removed to prevent guidance being given to live assessments.

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Job Cards have been removed to prevent guidance being given to live assessments.

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Job Cards have been removed to prevent guidance being given to live assessments.

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Guidance for faults

Guidance for faults has been removed to prevent guidance being given to live assessments.

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Task 4

The purpose of this task is for candidates to reflect upon the work they've carried out, in a classroom environment. As a minimum, it is expected that candidates will produce a minimum of 500 words (approximately a page of A4) written self-evaluation, it is recommended that candidates have access to a computer suite to allow them to type-up their evaluations. Candidates should reflect on their own performance and consider how they would change what they did if they were to carry out the activity again. Candidates must complete this activity after to carrying out the works.

PAST ASSIGNMENT (2019) - DO NOT USE FOR LIVE ASSESSMENT

Centre guidance

Guidance provided in this document supports the administration of this assignment. The following documents, available on the City & Guilds website, provide essential generic guidance for centres delivering technical qualifications and **must** be referred to alongside this guidance:

- **Technical qualifications – marking**
- **Technical qualifications – moderation** (updated annually)
- **Technical qualifications – teaching, learning and assessment**

This synoptic assessment is designed to require the candidate to make use of the knowledge, understanding and skills they have built up over the course of their learning to tackle problems/tasks/challenges.

This approach to assessment emphasises to candidates the importance and applicability of the full range of their learning to practice in their industry area, and supports them in learning to take responsibility for transferring their knowledge, understanding and skills to the practical situation, fostering independence, autonomy and confidence.

Candidates are provided with an assignment brief. They then have to draw on their knowledge and skills and independently select the correct processes, skills, materials, and approaches to take to provide the evidence specified by the brief.

During the learning programme, it is expected that tutors will have taken the opportunity to set shorter, formative tasks that allow candidates to be supported to independently use the learning they have so far covered, drawing this together in a similar way, so they are familiar with the format, conditions and expectations of the synoptic assessment.

Candidates should be made aware during learning what the assessment objectives are and how they are implemented in marking the assignment, so they will understand the level of performance that will result in high marks.

Candidates should not be entered for the assessment until the end of the course of learning for the qualification so they are in a position to complete the assignment successfully.

Health and safety

Candidates should not be entered for assessment without being clear of the importance of working safely, and practice for doing so. The tutor must immediately stop an assessment if a candidate works unsafely. At the discretion of the tutor, depending on the severity of the incident, the candidate may be given a warning. If they continue to work unsafely however, their assessment must be ended and they must retake the assessment at a later date.

Compliance with timings

The timings provided are estimates to support centre planning. They refer to assessment time, not any additional setting up the centre needs to carry out to create an appropriate assessment environment.

It is the centre's responsibility to plan sufficient assessment sessions, under the appropriate conditions and within the assignment window, to allow candidates reasonable time to complete the assessment tasks.

Where candidates are required to plan their work they should have their plans confirmed for appropriateness in relation to the time allocated for each task.

Candidates should be allowed sufficient time to fully demonstrate the range of their skills, however this also needs to be reasonable and practicable. Candidates should be allowed to overrun their planned timings or professional service times (where they exist) in order for evidence of a range of their skills to be captured. If, however, the time required exceeds reasonably set assessment periods, or the tolerance suggested for professional service times, the centre may stop the assessment and base the marking on the evidence up to that point, including the tutor's notes of how far over time the task has taken.

Observation evidence

Where the tutor is required to carry out observation of performance, detailed, descriptive notes must be recorded on the practical observation form (POF) provided. The centre has the flexibility to adapt the form to suit local requirements (e.g. to use a tablet, hand-written formats, or to ease local administration) as long as this does not change or restrict the type of evidence collected.

The number of candidates a tutor will be able to observe at one time will vary depending on:

- the complexity of evidence collection for the task
- local conditions e.g. layout of the assessment environment,
- amount of additional support available (e.g. to capture image/ video evidence), staggered starts etc,
- whether there are any peak times where there is a lot of evidence to collect that will need additional support or any that are quieter.

It is advisable to trial the planned arrangements where possible during formative assessment, reviewing the quality of evidence captured and manageability. It is expected that for straightforward observations, and unless otherwise specified, no more than eight candidates will be observed by a single tutor at one time, and that the number will usually be fewer than this maximum. The key factor to consider is the logistics of collecting sufficient evidence.

As far as is possible, candidates should not be distracted, or their performance affected, by the process of observation and evidence collection.

Observation notes form part of the candidate's evidence and must describe **how well** the activity has been carried out rather than stating the steps/actions the candidate has taken. The notes must be very descriptive and focus on the **quality** of the performance in such a way that comparisons between performances can be made. They must provide sufficient, appropriate evidence that can be used by the marker (and moderator) to mark the performance using the marking grid.

Identifying what it is about the performances that is **different** between candidates can clarify the quantities that are important to record. Each candidate is likely to carry out the same steps, so a checklist of this information would not help differentiate between them. Qualitative comments on **how well** they do it, along with quantitative records of accuracy and tolerances, would, however.

The tutor should refer to the marking grid to ensure appropriate aspects of performance are recorded. These notes will be used for marking and moderation purposes and so must be **detailed, accurate** and **differentiating**.

Tutors should ensure that any required additional supporting evidence, including e.g. photographs or video, can be easily matched to the correct candidate, and are clear, well-lit and showing the **areas of particular interest** in **sufficient detail** and **clarity** for assessment (i.e. taken at appropriate points in production, showing accuracy of measurements where appropriate).

If candidates are required to work as a team, each candidate's contribution must be noted separately. The tutor may intervene if any individual candidate's contribution is unclear or to ensure fair access (see below).

The **Technical qualifications guides on marking and moderation** are essential guidance documents and are available on the City & Guilds website. These provide further information on preparing for assessment, evidence gathering, standardisation, marking and moderation, and must be referred to when planning and carrying out assessment.

Minimum evidence requirements for marking and moderation

The sections in the assignment:

- **What you must produce for marking**, and
- **Additional evidence of your performance that must be captured for marking**

list the minimum requirements of evidence to be submitted for marking and the moderation sample.

Evidence produced during assessment above and beyond this may be submitted, as long as it provides useful information for marking and moderation and has been produced under appropriate conditions.

While technological methods which support the capturing or creating of evidence can be helpful, e.g. pinboard style websites for creating mood boards, the final evidence must be converted to a suitable format for marking and moderation, which cannot be lost/deleted or amended after the end of the assessment period (e.g. screen prints, pdf files). Considerations around tracking authenticity and potential loss of material hosted on such platforms during assessment are the centre's responsibility.

Where candidates have carried out some work as a group, the contribution of each candidate must be clear. It is not appropriate to submit identical information for each candidate without some way for the marker and moderator to mark the candidates individually.

Note: Combining candidates' individual pieces of evidence into single files or zip files may make evidence management during internal marking more efficient and will greatly simplify the uploading of the moderation sample.

Where the minimum requirements have **not been submitted** for the moderation sample by the final moderation deadline, or the **quality of evidence is insufficient** to make a judgement, the moderation, and therefore any subsequent adjustment, will be based on the evidence that *has been* submitted. **Where this is insufficient to provide a mark on moderation, a mark of zero may be given.**

Preparation of candidates

Candidates should be aware of which aspects of their performance (across the AOs) will give them good marks in assessment. This is best carried out through routinely pointing out good or poor performance during the learning period, and through formative assessment.

During the learning programme, direct tutor instruction in how to tackle practical tasks through modelling, support, guidance and feedback are critical. However gradual removal of this support is necessary in preparation for summative assessment. This supported approach is **not** valid for summative assessment.

The purpose of summative assessment is to confirm the standard the candidate has reached as a result of participating in the learning process. Candidates should be encouraged to do the best they can and be made aware of the difference between these summative assessments and any formative assessments they have been subject to. Candidates may not have access to the full marking grids, as these may be misinterpreted

as pass, merit and distinction descriptors. Refer to the **Technical qualifications – teaching, learning and assessment** centre guidance document, available on the City & Guilds website, for further information on preparing candidates for technical qualification assessment.

Guidance on assessment conditions

The assessment conditions that are in place for this synoptic assignment are to:

- ensure the rigour of the assessment process
- provide fairness for candidates
- give confidence in the outcome.

They can be thought of as the rules that ensure that all candidates who take an assessment are being treated fairly, equally and in a manner that ensures their result reflects their true ability.

The conditions outlined below relate to this summative synoptic assignment. These do not affect any formative assessment work that takes place, although it is advised that candidates are prepared for the conditions they will need to work under during summative assessment.

The evidence for the tasks that make up this synoptic assignment must be completed under the specified conditions. This is to ensure authenticity and prevent malpractice as well as to assess and record candidate performance for assessment in the practical tasks. Any aspect that may be undertaken in unsupervised conditions is specified. It is the centre's responsibility to ensure that local administration and oversight gives the tutor sufficient confidence to be able to confirm the authenticity of the candidate's work.

Security and authentication of candidate work

Candidate evidence must be kept secure to prevent unsupervised access by the candidate or others. Where evidence is produced over a number of sessions, the tutor must ensure candidates and others cannot access the evidence without supervision. This might include storing written work or artefacts in locked cupboards and collecting memory sticks of evidence produced electronically at the end of each session.

Candidates are required to sign declarations of authenticity, as is the tutor. The relevant form is included in this assignment pack and must be signed after the production of all evidence.

Where the candidate or tutor is unable to, or does not confirm authenticity through signing the declaration form, the work will not be accepted at moderation and a mark of zero will be given. If any question of authenticity arises e.g. at moderation, the centre may be contacted for justification of authentication.

Accessibility and fairness

Where a candidate has special requirements, tutors should refer to the *Access arrangements and reasonable adjustments* section of the City & Guilds website.

Tutors can support access where necessary by providing clarification to **any** candidate on the requirements or timings of any aspect of this synoptic assignment. Tutors should **not** provide more guidance than the candidate needs as this may impact on the candidate's grade; see the guidance and feedback section below.

All candidates must be provided with an environment, time frame and resources that allows them reasonable access to the full range of marks available.

Where candidates have worked in groups to complete one or more tasks for this synoptic assessment, the tutor must ensure that no candidate is disadvantaged as a result of the performance of any other team member. If a team member is distracting or preventing another team member from fully demonstrating their skills or knowledge, the tutor must intervene.

Guidance and feedback

To support centre file management, tutors may specify a suitable file format and referencing format for evidence (unless otherwise specified e.g. if file naming is an assessment point for the assignment). Guidance must only support access to the assignment and must not provide feedback for improvement. The level and frequency of clarification & guidance must be

- recorded fully on the candidate record form (CRF),
- taken into account along with the candidate's final evidence during marking
- made available for moderation.

Tutors **must not** provide feedback on the quality of the performance or how the quality of evidence can be improved. This would be classed as malpractice.

Tutors **should** however provide general reminders to candidates throughout the assessment period to check their work thoroughly before submitting it, and to be sure that they are happy with their final evidence as it may not be worked on further after submission.

Candidates can rework any evidence that has been produced for this synoptic assignment during the time allowed. However, this must be as a result of their own review and identification of weaknesses and not as a result of tutor feedback. Once the evidence has been submitted for assessment, no further amendments to evidence can be made.

Tutors **should** check and be aware of the candidates' plans and designs to ensure management of time and resources is appropriate, and so any allowed intervention can take place at an appropriate time.

Tutors **should** ensure that candidates' plans for completion of the tasks distribute the time available appropriately and may guide candidates in a general way on where they should be up to at any point. Any excessive time taken for any task should be recorded and should be taken into account during marking if appropriate.

It is up to the marker to decide if the guidance the candidate has required suggests they are lacking in any AO, the severity of the issue, and how to award marks on the basis of this full range of evidence. The marker must record where and how guidance has had an impact on the marks given, so this is available should queries arise at moderation or appeal.

What, and is not, an appropriate level of guidance

A tutor **should intervene with caution** if a candidate has taken a course of action that will result in them not being able to submit the full range of evidence for assessment. However, this should **only** take place once the tutor has prompted the candidate to check that they have covered all the requirements. Where the tutor has to be explicit as to what the issue is, this is likely to demonstrate a lack of understanding on the part of the candidate rather than a simple error, and full details should be recorded on the CRF.

- The tutor **should not** provide guidance if the candidate is thought to be able to correct the issue without it, and a prompt would suffice. In other words, only the minimum support the candidate actually needs should be given, since the more tutor

guidance provided, the less of the candidate's own performance is being demonstrated and therefore the larger the impact on the marks awarded.

- A tutor **must not** provide guidance to the effect that the candidate's work is not at the required standard or on how to improve their work. This gives candidates the chance to identify and correct any errors on their own, providing valid evidence of knowledge and skills that will be credited during marking.
- The tutor **must not** produce any templates, pro-formas, work logs etc., unless instructed to by the assignment guidance. Where instructed, these materials must be produced as specified and contain no additional guidance. Templates forming part of the assignment should be used as provided, and not adapted.

All specific prompts and details of the nature of any further guidance must be recorded on the relevant form and reviewed during marking and moderation.

Guidance on marking

Please refer to the *Technical qualifications – marking*, and – *moderation* centre guidance documents for further information on gathering evidence suitable for marking and moderation, and on using the marking grid and forms.

The candidate record form (CRF) is used to record:

- Details of any guidance or the level of prompting the candidate has received during the assessment period.
- Rough notes bringing together relevant evidence from across tasks during marking.
- Summary justifications when holistically coming to an overall judgement of the mark.

The practical observation form (PO) is used to record:

- Descriptive information and evidence of candidate performance during an observation. Although descriptions of the quality of performance should support decisions against the AOs, the notes should follow the flow of the observation, rather than attempting to assign evidence against the AOs at this point.

PAST ASSIGNMENT (2019). DO NOT USE FOR LIVE ASSESSMENT

Marking grid

For any category, 0 marks may be awarded where there is no evidence of achievement

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
15	AO1 Recall of knowledge relating to the qualification LOs <ul style="list-style-type: none"> Does the candidate seem to have the full breadth and depth of taught knowledge across the qualification to hand? How accurate is their knowledge? Are there any gaps or misunderstandings evident? How confident and secure does their knowledge seem? 	<p style="text-align: center;">(1-3 marks)</p> <p>Recall shows some weaknesses in breadth and/or accuracy. Hesitant, significant gaps, inaccuracy</p>	<p style="text-align: center;">(4-6 marks)</p> <p>Recall is generally accurate and shows reasonable breadth. Inaccuracy and misunderstandings are infrequent and usually minor. Sound, minimal gaps</p>	<p style="text-align: center;">(7-9 marks)</p> <p>Consistently strong evidence of accurate and confident recall from the breadth of knowledge. Accurate, confident, complete, fluent</p>
		<p>Examples of types of knowledge expected: Works to safe procedures, identification of methods, techniques, materials and their properties, use of documents, legislation and information to find regulatory requirements, roles and responsibilities, use of correct terminology.</p>		
		<p>The candidate has shown a range of knowledge from across the qualification, with some insecurity in some areas.</p>	<p>The candidate has shown a good range of knowledge from across the qualification which is sound and often detailed.</p>	<p>The candidate shows in-depth and detailed knowledge across the whole qualification range, showing a high degree of confidence and accuracy.</p>

MENT

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
20	<p>AO2 Understanding of concepts theories and processes relating to the LOs</p> <ul style="list-style-type: none"> Does the candidate make connections and show causal links and explain why? How well theories and concepts are applied to new situations/the assignment? How well chosen are exemplars – how well do they illustrate the concept? 	<p>(1-4 marks)</p> <p>Some evidence of being able to give explanations of concepts and theories. Explanations appear to be recalled, simplistic or incomplete.</p> <p>Misunderstanding, illogical connections, guessing</p>	<p>(5-8 marks)</p> <p>Explanations are logical. Showing comprehension and generally free from misunderstanding, but may lack depth or connections are incompletely explored.</p> <p>Logical, slightly disjointed, plausible</p>	<p>(9-12 marks)</p> <p>Consistently strong evidence of clear causal links in explanations generated by the candidate. Candidate uses concepts and theories confidently in explaining decisions taken and application to new situations.</p> <p>Logical reasoning, thoughtful decisions, causal links, justified</p>
		<p>Examples of understanding expected: Interprets workplace risks assessments, interpretation of diagnostic test results, explanations/comparisons related to material and component specifications and performance, why and when to use different methods, techniques and materials are used, application of principles and calculations, understanding of drawing information and information already provided for design process.</p>		
		<p>Some concepts are referred to, but explanations are typically weak; little ability to show a chain of cause and effect – ie explain why.</p>	<p>There is good understanding shown across the qualification, explanations are clear and often show good links between cause and effect – ie can explain 'why' in familiar contexts well.</p>	<p>Concepts and understanding across the qualification are extremely well understood and can be applied consistently and effectively in new contexts.</p>

ASSIGNMENT

ASSIGNMENT

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
30	AO3 Application of practical/ technical skills <ul style="list-style-type: none"> How practiced/fluid does hand eye coordination and dexterity seem? How confidently does the candidate use the breadth of practical skills open to them? How accurately/ successfully has the candidate been able to use 	<p align="center">(1-6 marks)</p> <p>Some evidence of familiarity with practical skills. Some awkwardness in implementation, may show frustration out of inability rather than lack of care.</p> <p>Unable to adapt, frustrated, flaws, out of tolerance, imperfect, clumsy.</p>	<p align="center">(7-12 marks)</p> <p>Generally successful application of skills, although areas of complexity may present a challenge. Skills are not yet second nature.</p> <p>Somewhat successful, some inconsistencies, fairly adept/ capable.</p>	<p align="center">(13-18 marks)</p> <p>Consistently high levels of skill and/or dexterity, showing ability to successfully make adjustments to practice; able to deal successfully with complexity.</p> <p>Dextrous, fluid, comes naturally, skilled, practiced,</p>
<p>Examples of skills expected: Working in a safe manner, use of tools, instruments and equipment, use of diagnostic equipment, planning work programmes, presenting estimating work times, interpreting material schedules, checking and following safety systems, initial inspections, completing documentation, carrying out tests, systematic planned approach, instrument checks.</p>				

PAST ASSIGNMENT (2019) - DO NOT REUSE

MENT

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
	skills/achieve practical outcomes?	<p>The candidate has completed the tasks but exceeded the allocated time by no more than 10%. Candidates show low confidence in practical skills and are carried out with some awkwardness. Measurements and calculations are sometimes inaccurate.</p> <p>Access to higher marks: Candidate has completed the tasks but exceeded the allocated time by no more than 10%. Candidate has limited confidence in performing practical skills but has the ability to carry out basic tasks.</p>	<p>The candidate has planned and completed the tasks within the allocated time. The candidate's practical skills are reasonably well developed allowing most calculations, measurements and readings to be obtained but some inconsistencies exist.</p> <p>Access to higher marks: The candidate has planned and completed the tasks within the allocated time. Practical skills are of a good standard and shows a good level of confidence on all basic tasks.</p>	<p>The candidate has planned and completed the tasks within the allocated time. Candidates show a high degree of confidence and efficiency along with a methodical approach to completing tasks. All findings are accurate and justified.</p> <p>Access to higher marks The candidate has planned and completed the tasks well within the allocated time. A high level of attention is demonstrated toward calculations, measurements and readings. A high degree of quality is shown in all areas of the tasks</p>

MENT ASSIGNMENT (2019)



<p>20</p> <p>AO4 Bringing it all together - coherence of the whole subject</p> <ul style="list-style-type: none"> • Does the candidate draw from the breadth of their knowledge and skills? • Does the candidate remember to reflect on theory when solving practical problems? • How well can the candidate work out solutions to new contexts/ problems on their own? 	<p>(1-4 marks)</p> <p>Some evidence of consideration of theory when attempting tasks. Tends to attend to single aspects at a time without considering implication of contextual information.</p> <p>Some random trial and error, new situations are challenging, expects guidance, narrow. Many need prompting.</p>	<p>(5-8 marks)</p> <p>Shows good application of theory to practice and new context, some inconsistencies.</p> <p>Remembers to apply theory, somewhat successful at achieving fitness for purpose. Some consolidation of theory and practice</p>	<p>(9-12 marks)</p> <p>Strong evidence of thorough consideration of the context and use of theory and skills to achieve fitness for purpose.</p> <p>Purposeful experimentation, plausible ideas, guided by theory and experience, fit for purpose, integrated, uses whole toolkit of theory and skills.</p>
	<p>Examples of bringing it all together: Applying knowledge and understanding to a practical scenario or problem – justifying decisions and approaches taken e.g. materials, techniques, adapting practice to meet contextual challenges, understands risks and how to design out such risks, uses reference material within industry publications and applies them in design/inspection procedures, justifies test methods employed based on evidence analysed.</p>		
	<p>There is limited evidence of the candidate using their knowledge, understanding and skills together. Candidates shows the ability to recall but lacks understanding.</p>	<p>The candidate typically brings together their knowledge, understanding and skills well when solving problems that arise when presented with the context, although they may deal with these separately.</p>	<p>The candidate works with confidence and uses knowledge and understanding well in complimenting their skills to solve challenges. Candidates have the ability to draw on all of their learning from across the qualification to successfully adapt to new situations.</p>

MENT

<p>15 AO5 Attending to detail/perfecting</p> <ul style="list-style-type: none"> • Does the candidate routinely check on quality, finish etc. and attend to imperfections/omissions? • How much is accuracy a result of persistent care and attention (e.g. measure twice cut once)? • Would you describe the candidate as a perfectionist and wholly engaged in the subject? 	<p>(1-3 marks)</p> <p>Easily distracted or lack of checking. Insufficiently concerned by poor result; little attempt to improve. Gives up too early; focus may be on completion rather than quality of outcome.</p> <p>Careless, imprecise, flawed, uncaring, unfocussed, unobservant, unmotivated.</p>	<p>(4-6 marks)</p> <p>Aims for satisfactory result but may not persist beyond this. Uses feedback methods but perhaps not fully or consistently.</p> <p>Variable/intermittent attention, reasonably conscientious, some imperfections, unremarkable.</p>	<p>(7-9 marks)</p> <p>Alert, focussed on task. Attentive and persistently pursuing excellence. Using feedback to identify problems for correction.</p> <p>Noticing, checking, persistent, perfecting, refining, accurate, focus on quality, precision, refinement, faultless, meticulous.</p>
	<p>Examples of attending to detail: housekeeping, storage of tools, working within tolerances, detail of drawings, drawings and documentation are accurate, attention to accuracy during work, thinking about and attending to specific requirements of the task, attention to detail in risk management and risk reduction/method statements, calculations precise and well presented, results obtained analysed and accurately recorded, checking certification documentation is accurate and precise.</p>		
	<p>There is superficial attention to detail. The drawings and documents show some inaccuracies or gaps. The task requirements are interpreted in a generic rather than personal way with basic attention to their aims.</p>	<p>There is an adequate attention to detail – drawings and documentation are accurate. Task requirements are considered sufficiently to meet their needs in the most straightforward/conventional way.</p>	<p>The candidate has been highly focused on the task showing extreme care in the accuracy and usability of drawings and document preparation. They have been very attentive to the implied requirements of the task and thoughtful in using this insight in achieving an outcome that is highly focussed.</p>

Y. T ASSIGNM

