|  |  |
| --- | --- |
| Candidate Surname |  |
| Other Names |  |
| Centre Number |  |
| Learner Registration Number |  |

**Pearson BTEC L3 Nationals**

**Engineering**

**31725H**

**Unit 6: Microcontroller Systems for Engineers Part S**

**Window for supervised period: 23 April – 7 May 2019**

**Controlled Hours: 12 hours**

**Electronic Task Booklet**



**Complete your work in this task booklet. Activity 1**

**Task Planning and system design changes**

You are advised to spend no longer than 1.5 hours on this activity.

At the start of the task, create a short project time plan/Gantt chart and use it to monitor your progress throughout the rest of the task and make any adjustments as required.

During the other activities (2 to 5), you should also **record in the Activity 1 section** of your electronic task booklet:

* + What you did in the session
  + Details of any issues encountered in this session and solutions discovered
  + Action points for the next session.

## (10)

Initial Task Plan



Instruction – during each session, please complete the following logbook, duplicating the table as required for each session (cut and paste the table as required).

|  |
| --- |
| Remember to update the project time plan/Gantt chart at the start of each session |
| Date: |
| What I have done this session: |
| Issues encountered this session and solutions with justification: |
| Action points for the next session: |



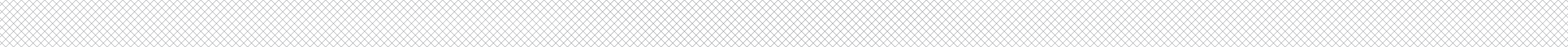
## Activity 2

**Analysis of the brief**

You are advised to spend no longer than 1.5 hours on this activity.

* By interpreting the client brief into operational requirements, prepare a technical specification for a user friendly system that can handle some unexpected events.
* Prepare a test plan to check the functionality of the final solution against the technical specification and include some unexpected events.

## (9)



**12**

\*W61581\*

**Test Plan Template (Activity 2)**

Tests can include unexpected events (i.e. non-routine) that are outside the normal operation of the system.

|  |  |  |  |
| --- | --- | --- | --- |
| **Test number** | **Purpose of test** | **Test condition** | **Expected result** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |



## Activity 3 System design

You are advised to spend no longer than 2.5 hours on this activity.

Prepare a user friendly system design that can handle some unexpected events, including:

* The selection and justification of suitable input and output devices.
* A description of the system design covering input and output devices and microcontroller connections.
* A plan for the program structure detailing key system operations.

For **Activity 3** you could provide: written notes, annotated diagrams, flow charts, images, schematics, pseudocode and tables.

## (16)



**Activity 4**

**System assembly and programming**

You are advised to spend no longer than 2.5 hours on this activity.

Develop a user friendly system that is well organised, structured and formatted, including:

* Producing the software program and annotating the code.
* The assembly of any hardware (if required).
* Refining the system so that it operates as expected and can handle some unexpected events.

Once completed insert the annotated code into the electronic task booklet.

For **Activity 4** you could provide: written notes, screenshots, annotated programs/ flow charts and images.

## (16)

**14**



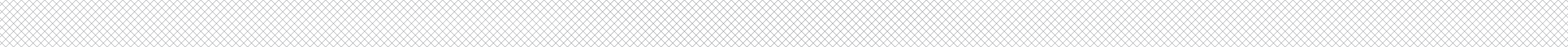
**Activity 5**

**System testing and results analysis**

You are advised to spend no longer than 1.5 hours on this activity.

* Test the system using the test plan (from Activity 2) and include some unexpected events.
* Record the outcome of each test in the template provided.
* Analyse the test results and evaluate the system for conformance against the client brief.

## (9)



**16**

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**Test Plan Template (Activity 5)**

Tests can include unexpected events (i.e. non-routine) that are outside the normal operation of the system. Copy and paste your test plan from Activity 2 into the table below and complete the Activity 5 columns.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Activity 2** | | | | **Activity 5** | |
| **Test number** | **Purpose of test** | **Test condition** | **Expected result** | **Actual result** | **Comments and justification** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |



## Activity 6

**System in operation**

You are advised to spend no longer than 2.5 hours on this activity.

Produce an audio-visual recording that demonstrates the system in operation, which should include:

* Your name, learner registration number and centre number at the start.
* A commentary explaining the operation of the user friendly system and how its behaviour is linked with your chosen hardware and software program.
* Recorded evidence of the outcome from suitable tests including some unexpected events (from Activity 5).

## Please note that the evidence for this activity should be in a separate audio-visual recording of no more than three minutes.

**Do not add any comments for Activity 6 into this electronic task booklet.**

**(20)**