**Pearson BTEC L3 Nationals**

**Engineering**

**31725H**

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

**Window for supervised period: 23 April – 4 May 2018**

**Controlled Hours: 12 hours**

**Electronic Task Booklet**



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

**Task Planning and system design changes**

* 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: |

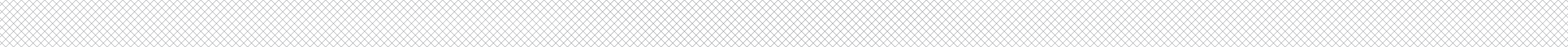


## Activity 2

**Analysis of the brief**

* 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**

\*W51753A01217\*

**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

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**

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)

\*W51753A01417\*

**14**

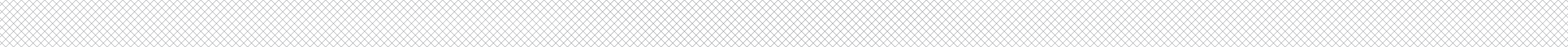


**Activity 5**

**System testing and results analysis**

* 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**

\*W51753A01617\*

**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**

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)**

\*W51753A01717\*

**17**