

# BTEC Level 2 Diploma in IT

## Assignment 2010-11



### UNIT 25 - INSTALLING AND MAINTAINING HOME ENTERTAINMENT SYSTEMS

Student Name: .....

Hand Out Date: 20<sup>th</sup> November 2010 Hand In Date: 27<sup>th</sup> May 2011  
 Date: .....

Assessor: Jon Fern Internal Verifier: Gordon Shering  
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Assignment: INSTALLING AND MAINTAINING HOME ENTERTAINMENT SYSTEMS 1/1  
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<b>For a Pass to:</b>		
P1	describe the function and operation of a home entertainment system	
P2	describe the components used in a home entertainment system	
P3	identify potential sources of noise interference found in home entertainment systems	
P4	describe modulation methods and waveforms used for broadcast systems	
P5	install and test a home entertainment system to meet a client requirement	
P6	maintain a given home entertainment system	
<b>For a Merit to:</b>		
M1	compare the features and functions of different home entertainment systems	
M2	describe noise interference and the impact it has on home entertainment systems	
M3	compare analogue and digital modulation methods	
M4	repair faults on a given home entertainment system	
<b>For a Distinction to:</b>		
D1	justify a home entertainment system to meet a client's requirements	
D2	explain ways of reducing noise interference within home entertainment systems	

**Assessor's Comments:**

<b>Task</b>	<b>Criteria</b>	<b>Assessor's Comments</b>	<b>Achieved</b>
<b>Task 1</b>	P1		
<b>Task 2</b>	P2		
<b>Task 3</b>	P3 M2 D2		
<b>Task 4</b>	P4 M3		

<b>Task</b>	<b>Criteria</b>	<b>Assessor's Comments</b>	<b>Assessor Signature</b>	<b>Achieved</b>
<b>Task 5</b>	P5			
	M1			
	D1			
<b>Task 6</b>	P6			
	M4			
<b>Overall Assessor Feedback</b>				

**Assessor's Signature:** .....

**Date** .....

## Assignment Brief

For this assignment you must demonstrate that you have an understanding of:

- Knowing the functions and operations of home entertainment systems
- Knowing the components used in home entertainment systems
- Knowing the modulation methods used in home entertainment systems
- Being able to install and maintain home entertainment systems

The following assignment requires you to design and produce various reports and user guides. In addition, you will perform various practical activities that will re-enforce the theory sessions. You will produce lab reports which detail these activities.

You should include graphics and diagrams that would help the reader understand your descriptions, and remember, if you use 'Jargon', you must also explain the term, in an easy to understand way.

## Assignment Scenario

'Captive' are a local company who specialise in the supply and installation of audio visual systems to businesses. They have a large customer base in the education sector, supplying presentation systems to local schools, colleges and private conference centres. The company has grown steadily over the last six years, and the directors have decided to extend their business into the home market. They have purchased the lease on a large high street shop which will open in three months time.

You have recently applied for, and been successfully appointed, in the post of store manager. Your responsibilities are to:

- lead the design of the new shop and demonstration room
- manage the day to day running of the shop
- assist in the recruitment of sales staff
- oversee the customer installation team
- ensure high levels of customer service and satisfaction

## TASK 1

**(P1)** describe the function and operation of a home entertainment system

The new shop will open in 12 weeks time. Following a meeting with the directors, it has been decided that there will be an opening event, where members of the public will be invited to look at the new showroom and meet the sales staff. Potential customers will have the opportunity to see and hear the new demonstration room which will include the latest generation of home entertainment equipment and accessories.

### **Deliverables:**

#### **Create a poster (P1)**

To ensure the event is a success, you will create a poster to advertise the opening. The poster will be distributed around the town centre and will also appear in the local press.

The poster should:

- explain the basics of what a home entertainment system is and what it does
- include details of any promotions that you wish to offer
- give clear information regarding the date, time and location of the event
- include contact details for additional information
- entice people to come and see what's on offer

**Hand in Date:      Week Ending 3/12/2010**

## TASK 2

**(P2)** describe the components used in a home entertainment system

You have now recruited four members of staff that will join the company, two weeks before the shop opening. Two of the staff are highly knowledgeable and will be involved in sales, system design and installation, while the other two are only experienced in general retail.

You are keen to ensure that as much knowledge is shared between the staff, prior to the shop opening for business.

You have decided to produce two pieces of documentation to help all staff to understand the products you will sell, and to ensure that the customer is given a consistent level of service.

These are:

- 1 *Component Reference Guide*; a guide to home entertainment components
- 2 *Connector Flash Cards*; a guide to associated cables, connectors and connections

Task 2 continued on following page...

## Deliverables

### 1 Component Reference Guide:

You will produce a quick reference guide that clearly states the name and purpose of the home entertainment equipment listed below:

- AV Receiver
- TV LCD/Plasma
- CD player
- DVD player
- Blu-ray player
- Hard Drive Recorder
- Surround sound speakers 5.1 and 7.1
- Games console
- Freeview / Freeview HD

You should clearly describe the function of the component and state what other devices are typically connected to it.

Task 2 continued on following page...

## 2 Connector Flash Cards; a guide to associated cables, connectors and connections

You will produce a set of Flash Cards which will act as a quick reference for the shop staff. They will be of A5 or A6 size. You will keep the cards in a single document. (For example two cards on each page of a word document)

You should include all the connectors you would expect to find on a good home entertainment system. You should include, but not limited to:

1. Coaxial aerial connector
2. Coaxial satellite connector
3. Stereo phono connector
4. Sound jack plugs (for 5.1 and 7.1 systems) from PC
5. Coaxial Digital Sound
6. Optical Digital Sound
7. Composite video phono
8. Component video phono
9. PC VGA
10. PC DVI
11. HDMI connectors
12. SCART
13. Power connector
14. USB connector
15. LAN connector (Ethernet RJ45)
16. S-Video

**Hand in Date:      Week Ending 7/1/2010**

### TASK 3

**(P3)** identify potential sources of noise interference found in home entertainment systems

**(M2)** describe noise interference and the impact it has on home entertainment Systems

**(D2)** explain ways of reducing noise interference within home entertainment systems

As the manager of the shop, you have found that new staff members require guidance on the problems associated with obtaining good quality sound and images on home entertainment equipment. As a result, you need to prepare a leaflet to explain the problems associated with noise interference.

Prepare a leaflet suitable for both the staff and customers. Your leaflet will have the following headings and should explain each clearly.

What is noise interference?	(P3/M2)
Where does noise originate from?	(P3)
What effect will noise have on sound systems?	(M2)
What effect will noise have on video systems?	(M2)
How can we reduce noise in home entertainment systems?	(D2)

When preparing your leaflet you may use diagrams from books or the internet for P3 and M2 items. For D2, you should produce the diagrams/pictures yourself. In particular you will make up a cable with connectors to demonstrate some concepts, so you may take

a picture of that to use in the leaflet. You could also video the process of making the cable.

**Hand in Date:      Week Ending 18/2/2011**

**TASK 4**

**(P4)** describe modulation methods and waveforms used for broadcast systems

**(M3)** compare analogue and digital modulation methods

Write a report describing the meaning of AM, FM and FSK modulation methods (P4). You must also describe the way in which these modulation methods are used current technology.

It is known that analogue TV is to be replaced with digital in the UK.

Explain in simple terms (without mathematics) the following terms and the reasons why they are important.

Sinusoidal waveform.

Fourier theorem.

Sampling theorem

Digitisation and Quantisation

Compare the performance of DAB radio with that of Analogue radio, and Digital TV with Analogue TV. In your comparison take into account the quality of the sound/picture and services provided by each.

NOTE; from 30<sup>th</sup> March 2011, analogue TV will not be available in the Bedfordshire area. Ensure your comparisons data is collected before this date!

**Hand in Date:      Week Ending 8/4/2011**

## TASK 5

**(P5)** install and test a home entertainment system to meet a client requirement

**(M1)** compare the features and functions of different home entertainment systems

**(D1)** justify a home entertainment system to meet a client's requirements

In this task, you will specify, install and test a home entertainment system. You will be given a list of requirements from the customer (your tutor), and you will perform the following tasks:

- Select and provide pricing information for the system. You must justify the inclusion of the equipment (M1,D1)
- Install, configure and test the installation in the class labs. You must provide video or photographic evidence of your installation lab in addition to an installation checklist. (P5)
- Produce a user guide for the equipment you have installed. Your guide must cover all the basics of operation; i.e. controlling the volume, bass, treble and TV Guide, through to the more advanced options such as configuring the surround sound. You must make the guide accessible for novice home entertainment system users. (D1)

**Hand in Date: Week Ending 29/4/2011**

**TASK 6**

**(P6)** maintain a given home entertainment system

**(M4)** repair faults on a given home entertainment system

In task 5 you installed a home entertainment system. In this task, you will perform the following labs, which will include the maintenance and enhancement of your system:

- Check the configuration of the system to ensure it is operating at optimum performance. (P6)
- Suggest additional add-ons for the system to the customer, which would give additional functions and features. (P6)
- Add an additional external signal source, and ensure its operation. (P6)
- Demonstrate an ability to perform basic soldering techniques. (M4)
- Create the following cables to use on your lab kit. You must demonstrate a working cable for the following: (M4)
  - Audio connection
  - RF TV signal connection
- Your tutor will introduce some 'faults' to the system. You will attempt to diagnose the fault and correct it. You must document the process of fault rectification. (M4)

**Hand in Date:      Week Ending 27/5/2011**

## **End of assignment "INSTALLING AND MAINTAINING HOME ENTERTAINMENT SYSTEMS"**