Question 28

(a)(i) Audio compression can be undertaken in two ways: lossy or lossless. Lossless compression involves the use of a complicated algorithm to compress the audio file and thus reduce the size of the file without any loss of quality. Lossless compression involves reducing attributes of the audio file such as the sampling rate, bitrate, number of channels. Once combined with standard compression techniques, this can deliver a very much reduced file size.

(ii) Once again, video compression can be either lossy or lossless. In a lossless compression the resolution and framerate of the file must stay the same. The video compression is undertaken through the following process: Instead of consisting of a very long stream of picture files (which would be very big!), a video files are generally present in formats such as mpeg, avi, asf, mov. The differences between only frames are recorded, rather than the images being stored. This results in a much smaller filesize. In lossy compression, in addition to compressing the file details are reduced. It can be presented in a lower resolution, and at a lower framerate or frames per second. Carrying less detail like this on can make a file much smaller.
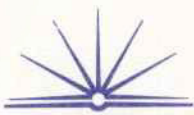
(b) (i) Project manager: The project manager will co-ordinate the people working on the project. They will decide on things such as time frame and alloting different people different tasks.

Data entry: The data on the encyclopaedia needs to be entered into a computer in an appropriate format for the CD-ROM

Content Developer: Since multimedia can be utilised on a computerised version of the CD-ROM, a content developer would be needed to acquire these images, movies and sounds.

Multimedia creator: Someone / people would need to be employed to create and edit the multimedia provided on the CD-ROM version. Movies would be recorded, sound would be recorded, images to accompany them would need to be taken.

(ii) Path-based animation would be the most appropriate form of animation in this case as most of the image seen by the users would remain still. The path of the object could be drawn / planned out on a computer and the leaf would follow the path. This would result in an extremely compact file, and would not take long to create.

A cell-based animation of the falling object would still work,
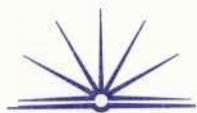
although it is not as appropriate as a path-based animation. A cell-based animation would take longer to create as the animator would have to redraw the scene for every frame frame in the movie. This would also result in a much larger file size.

(C)

Dial-up networking: This is the traditional method of connecting to the internet, and is generally the slowest. Being restricted to download at 56 kilo-bits per second, (7 kilobytes per second) a multimedia file or files would take a long period of time to download, depending upon its type and compression. While images compress into formats such as .jpg may download in a matter of seconds, an audio stream at a reasonable quality lasting three minutes would require a minimum 500 seconds (just under 10 minutes). At these restrictions, the usability and practicality of a multimedia is not very high. Even a very low quality movie lasting a short period of time would take a long time to download. At these speeds only the determined downloaders that will leave a download running in the background are likely to have access to multimedia. A large percentage of people will not bother. However, with new and emerging broadband technology downloading and viewing multimedia will be much
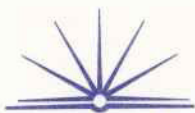
quicker and easier.

Broadband: Consisting of technologies such as fibre-optic cable, satellite connections and DSL (Dialup subscriber line), broadband internet connections in the future will be much quicker. Allowing massive download of up to 350 kilobytes per second depending upon its source, broadband internet connections are making multimedia on the internet much more viable. An item such as a 3-minute movie trailer could be downloaded as quickly as 30 seconds, depending upon compression and the location of the server. Connections such as satellite have their restrictions, however, as they still require a dial-up speed connection to allow the user to connect and upload with their ISP. Once broadband connections become commonplace multimedia will be much more available on the internet as all people will be able to download it just as quickly as they can watch it.