Module A.4a The Web Part 1 – Answers

1. Sir Tim Berners-Lee invented the World Wide Web in 1989.
2. Sir Tim worked at CERN, a large particle physics laboratory near Geneva, Switzerland..
3. The fact that scientists all over the world had difficulty sharing their findings and information with each other was Sir Tim’s inspiration. His problem was that there was different information on different computers, but you had to log on to different computers to get that information. Sometimes, you also had to learn a new program on each computer.
4. The three fundamental technologies he invented were the HTML (HyperText Markup Language), URI (Uniform Resource Identifier) and HTTP (Hypertext Transfer Protocol).
5. The decision was that CERN would agree to make the underlying code available on a royalty-free basis, forever.
6. The five “revolutionary ideas” are:
   1. Decentralisation: No permission is needed from a central authority to post anything on the web, there is no central controlling node, and so no single point of failure … and no “kill switch”! This also implies freedom from indiscriminate censorship and surveillance.
   2. Non-discrimination: If I pay to connect to the internet with a certain quality of service, and you pay to connect with that or a greater quality of service, then we can both communicate at the same level. This principle of equity is also known as Net Neutrality.
   3. Bottom-up design: Instead of code being written and controlled by a small group of experts, it was developed in full view of everyone, encouraging maximum participation and experimentation.
   4. Universality: For anyone to be able to publish anything on the web, all the computers involved have to speak the same languages to each other, no matter what different hardware people are using; where they live; or what cultural and political beliefs they have. In this way, the web breaks down silos while still allowing diversity to flourish.
   5. Consensus: For universal standards to work, everyone had to agree to use them. Tim and others achieved this consensus by giving everyone a say in creating the standards, through a transparent, participatory process at W3C.
7. These principals are giving rise to exciting new approaches in fields as diverse as information (Open Data), politics (Open Government), scientific research (Open Access), education, and culture (Free Culture). It also helping The Web Foundation in advancing the Open Web as a means to build a just and thriving society by connecting everyone, raising voices and enhancing participation.
8. When you click on a link, the computer takes this URL. It wants to get a copy of the web page. To get this, the computer will understand small parts of the URL, creates a packet and then sends it to the Ethernet connections. This is where it connects with many different computers until it gets to its destination.
9. Sir Tim did not invent the internet. When he was inventing the World Wide Web, most of the bits he needed were already done. He just had to take the hypertext idea and connect it to the TCP and DNS ideas. Other people already made created these things and just used them to combine it. For example, Vint Cerf and the people he worked with had figured out the Internet Protocol, and also the Transmission Control Protocol (TCP). Paul Mockapetris and his friends had figured out the Domain Name System (DNS).
10. The web connects with vectors, algebra, matrix, calculus, transformations, vectors and matrices, vector fields, eigenvectors, physics and the math of prime numbers.
11. The internet is a bad idea because it can negatively impact people. For example, it is bad when downloading pictures of horrible, gruesome, violent or obscene things, or ways of making bombs which terrorists could use. It can be bad when cyberbullying people. However, at the same time it is a good idea because it can help people. For example it has helped how people save their lives because they found out about the disease they had on the Web, and figured out how to cure it. Another reason is that the Web is a tool for communicating. The Web can help people understand each other.