LAB 1

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CONTENTS OF LAB 1

- ICE BREAKING ACTIVITIES
- INTRODUCTION TO ACADEMIC READING
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ICE BREAKER

PREPARE SHORT SPEECH

YOU CAN DESCRIBE YOURSELF

WHY DO YOU THINK READING IS IMPORTANT

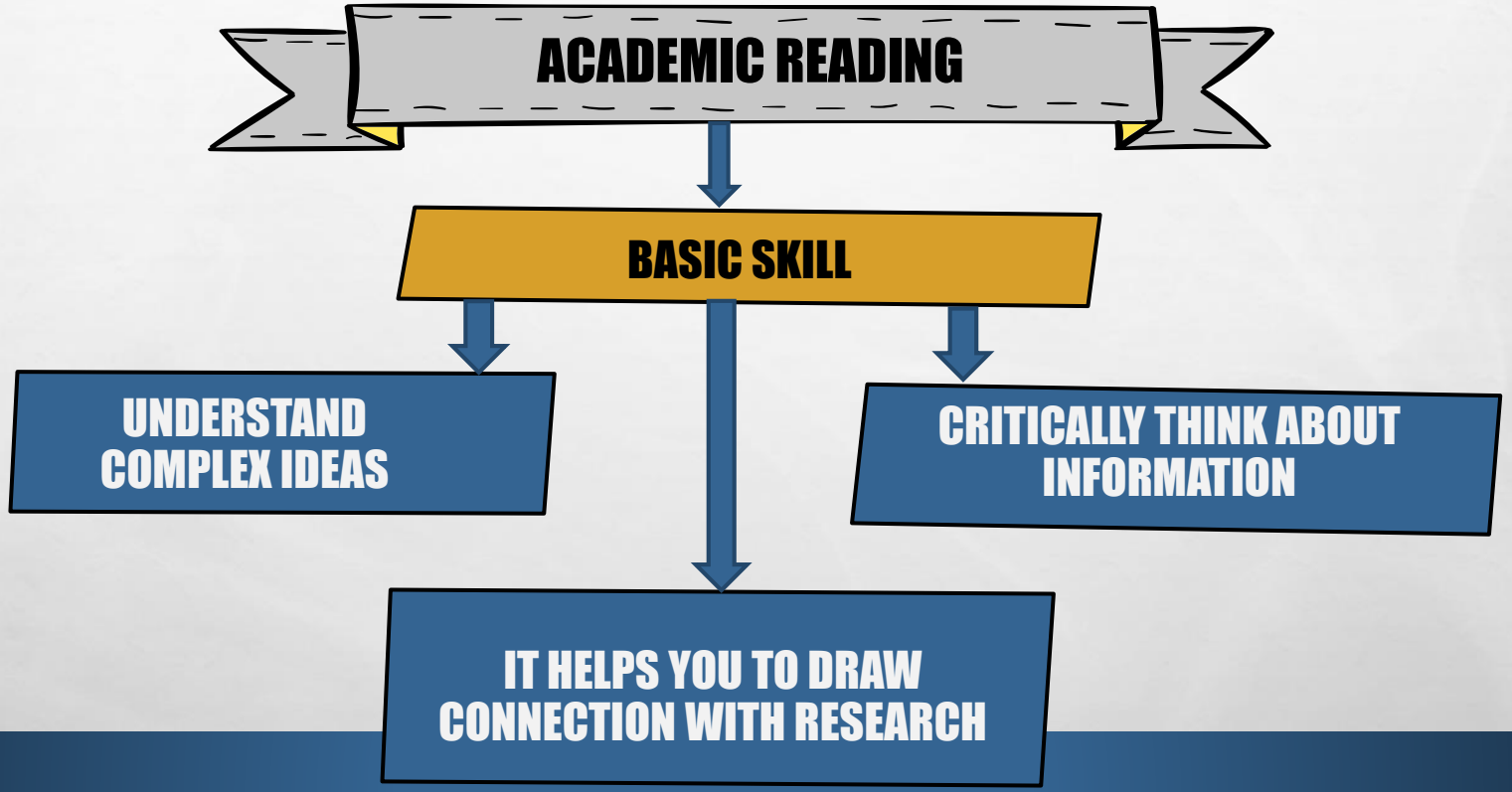
DESCRIBE READING HABITS

HOW MUCH YOU READ

ANY TECHNIQUE TO READ THE BOOK?

"ONCE YOU LEARN TO READ,
YOU WILL BE FOREVER FREE."

—FREDERICK DOUGLASS


ACADEMIC READING
BASIC SKILL
UNDERSTAND COMPLEX IDEAS
CRITICALLY THINK ABOUT INFORMATION
IT HELPS YOU TO DRAW CONNECTION WITH RESEARCH

ACADEMIC READING STRATEGIES

- SKIMMING
- SCANNING
- ACTIVE READING
- CRITICAL ANALYSIS
- CONTEXTUAL UNDERSTANDING
- BUILDING VOCABULARY

SKIMMING

- A quick hunt for the gist.
- Skimming is done at a speed three to four times faster the normal reading.
- People often skim:
  - To read lots of material in a limited amount of time.
  - To understand findings and methodologies in research papers.
  - To interact with API documentation or technical manual.
  - To review code files.

HOW TO SKIM?

- Read the title.
- Quickly study the pictures or any other graphic illustrations (diagrams, etc.) used by the writer.
- Read the subtitles and headings if present.
- Read the introductory paragraph (central idea).
- Read the first and the last sentence of the body paragraphs (main ideas).
- Use connectors as guiding sign posts.
- Read the concluding paragraph.

SCANNING

- A quick hunt for a specific detail..
- People use scanning:
  - To check if a resource would answer their questions.
  - To pinpoint specific error codes, timestamps etc. to resolve software issue.
  - To find specific references to APIs. Libraries, configuration setting from software docs.
  - To identify deadlines, assigned roles etc. from the project.

HOW TO SCAN?

- Scan a book, article, passage, brochure, tables, charts, etc. for specific details following the given guidelines:
  - Move your eyes quickly focusing on certain connectors.
  - Look for the author's organizers, such as, numbers, letters, steps, headings, and subheadings.
  - Look for words that are boldfaced, italicized, or in different font, size, style, or color.
  - Sometimes authors put key ideas in the margin.

Practice Exercise (Scanning)

SKILLSWISE DELIVERY SERVICES

CHRISTMAS JOB OPPORTUNITIES

Aged between 16 and 65 years? Need extra cash for Christmas?
Are you available to work at short notice?
Can you work early, late or night shifts?

We are looking for enthusiastic and reliable people to work on an occasional basis, helping to sort and deliver parcels in the Reading area from late November until the end of December.

Pay rates for weekdays, including Saturdays, will be:-
Ages 16 to 17 - £4.80 per hour.
Age 18 and over - £6.10 per hour.

So if you have good communication skills and are able to work as part of a team, we would like to hear from you.

To obtain an application form please write to:

Elaine Grey, Personnel Officer,
Skillswise Delivery Services, Windsor Road,
Reading, RG5 4BR
Tel: 0118 932 814 (24 hr. answer phone)

Closing date: 10th November.

CLASS ACTIVITY 1: SCANNING PRACTICE

Skillswise Delivery Services is looking for extra staff before Christmas. Scan the advert quickly and try to find the answers to these questions. Remember, you don't need to read every word.

Questions

1. When do these jobs start?
2. The work will last for about a month. True or false?
3. What type of work is on offer?
4. What kind of people is Skillswise Delivery Services looking for?_
5. What shift patterns are available?_
6. Where is the job based?
7. The work involves travel around the UK. True or false?
8. How much will you earn per hour if you are aged 18?_

Cont.

9.True or false? You will be paid extra for working on Saturday. True or false?
10. Whom should you contact at Skillswise Delivery Services to get an application form?
11. You can leave a message on an answering machine. True or false?
12. You need to be able to work at short notice. True or false?
13. It is 1 November. Is there still time to apply for a job?_
14. The minimum age for this job is 18. True or false?
15. Do you need a driving licence to apply for a job with Skillswise Delivery Services?

CLASS ACTIVITY 2: SKIMMING PRACTICE

PASSAGE:
IN RECENT YEARS, THE ADVANCEMENT OF ARTIFICIAL INTELLIGENCE (AI) HAS REVOLUTIONIZED VARIOUS ASPECTS OF COMPUTER ENGINEERING. AI, A BRANCH OF COMPUTER SCIENCE, FOCUSES ON CREATING SYSTEMS CAPABLE OF PERFORMING TASKS THAT TYPICALLY REQUIRE HUMAN INTELLIGENCE. THESE TASKS INCLUDE SPEECH RECOGNITION, DECISION-MAKING, LANGUAGE TRANSLATION, AND VISUAL PERCEPTION.

AI SYSTEMS ARE DESIGNED USING ALGORITHMS AND MATHEMATICAL MODELS THAT ENABLE THEM TO LEARN FROM DATA, RECOGNIZE PATTERNS, AND MAKE DECISIONS WITH MINIMAL HUMAN INTERVENTION. ONE SIGNIFICANT APPLICATION OF AI IN COMPUTER ENGINEERING IS IN THE DEVELOPMENT OF AUTONOMOUS VEHICLES. THESE VEHICLES USE AI ALGORITHMS TO PERCEIVE THEIR ENVIRONMENT, NAVIGATE THROUGH COMPLEX ROAD NETWORKS, AND MAKE REAL-TIME DECISIONS TO ENSURE PASSENGER SAFETY. ENGINEERS INTEGRATE SENSORS, CAMERAS, AND GPS TECHNOLOGY TO GATHER AND PROCESS DATA, WHICH IS THEN ANALYZED BY AI SYSTEMS TO MAKE DECISIONS SUCH AS STEERING, BRAKING, AND ADJUSTING SPEED BASED ON TRAFFIC CONDITIONS.

FURTHERMORE, AI PLAYS A CRUCIAL ROLE IN CYBERSECURITY. WITH THE INCREASING VOLUME AND COMPLEXITY OF CYBER THREATS, AI-POWERED SYSTEMS CAN DETECT AND MITIGATE POTENTIAL SECURITY BREACHES MORE EFFECTIVELY THAN TRADITIONAL METHODS. MACHINE LEARNING ALGORITHMS ANALYZE NETWORK TRAFFIC PATTERNS AND USER BEHAVIOUR TO IDENTIFY ANOMALIES AND POTENTIAL THREATS, THEREBY ENHANCING OVERALL SYSTEM SECURITY.

MOREOVER, AI IS TRANSFORMING HEALTHCARE BY ENABLING PREDICTIVE ANALYTICS AND PERSONALIZED MEDICINE. AI ALGORITHMS ANALYZE VAST AMOUNTS OF PATIENT DATA TO PREDICT DISEASE OUTBREAKS, RECOMMEND PERSONALIZED TREATMENT PLANS, AND IMPROVE DIAGNOSTIC ACCURACY. THESE ADVANCEMENTS HAVE THE POTENTIAL TO REVOLUTIONIZE HEALTHCARE DELIVERY BY MAKING IT MORE EFFICIENT AND PATIENT-CENTERED.

IN CONCLUSION, THE INTEGRATION OF AI INTO COMPUTER ENGINEERING HAS OPENED UP NEW POSSIBILITIES FOR INNOVATION ACROSS VARIOUS DOMAINS. FROM AUTONOMOUS VEHICLES TO CYBERSECURITY AND HEALTHCARE, AI CONTINUES TO DRIVE TECHNOLOGICAL ADVANCEMENTS THAT ENHANCE EFFICIENCY, IMPROVE SAFETY, AND TRANSFORM INDUSTRIES.

CLASS ACTIVITY INSTRUCTIONS:

1. TASK: SKIM THROUGH THE PASSAGE TO IDENTIFY THE MAIN APPLICATIONS OF AI IN COMPUTER ENGINEERING.
2. OBJECTIVE: QUICKLY GRASP THE KEY POINTS WITHOUT DELVING INTO EVERY DETAIL.

QUESTIONS:

3. WHAT ARE THE MAIN APPLICATIONS OF AI DISCUSSED IN THE PASSAGE ON COMPUTER ENGINEERING?

A) ROBOTICS, BLOCKCHAIN, AND QUANTUM COMPUTING
B) AUTONOMOUS VEHICLES, CYBERSECURITY, AND HEALTHCARE
C) AUGMENTED REALITY, FINTECH, AND TELECOMMUNICATIONS
D) GAMING, SOCIAL MEDIA, AND RENEWABLE ENERGY

4. ACCORDING TO THE PASSAGE, HOW DOES AI CONTRIBUTE TO CYBERSECURITY?

A) BY AUTOMATING FINANCIAL TRANSACTIONS SECURELY
B) BY ENHANCING CUSTOMER SERVICE IN RETAIL BANKING
C) BY DETECTING AND MITIGATING SECURITY BREACHES EFFECTIVELY
D) BY OPTIMIZING LOGISTICS AND SUPPLY CHAIN MANAGEMENT

5. IN WHICH INDUSTRIES IS AI MAKING SIGNIFICANT ADVANCEMENTS, AS PER THE PASSAGE?

A) Agriculture And Hospitality
B) EDUCATION AND ENTERTAINMENT
C) MANUFACTURING AND ENERGY
D) AUTONOMOUS VEHICLES, CYBERSECURITY, AND HEALTHCARE

CLASS ACTIVITY 3: SCANNING PRACTICE

PASSAGE:
THE FIELD OF QUANTUM COMPUTING REPRESENTS A PARADIGM SHIFT IN COMPUTATIONAL CAPABILITIES, PROMISING TO SOLVE COMPLEX PROBLEMS EXPONENTIALLY FASTER THAN CLASSICAL COMPUTERS. UNLIKE CLASSICAL COMPUTERS THAT USE BINARY DIGITS (BITS) FOR DATA PROCESSING, QUANTUM COMPUTERS LEVERAGE QUANTUM BITS (QUBITS) WHICH CAN EXIST IN SUPERPOSITION STATES OF 0, 1, OR BOTH SIMULTANEOUSLY. THIS UNIQUE PROPERTY ALLOWS QUANTUM COMPUTERS TO PERFORM MULTIPLE CALCULATIONS SIMULTANEOUSLY, MAKING THEM WELL-SUITED FOR TACKLING COMPLEX OPTIMIZATION PROBLEMS, CRYPTOGRAPHY, AND MATERIAL SCIENCE SIMULATIONS.

ONE OF THE KEY CHALLENGES IN DEVELOPING QUANTUM COMPUTERS LIES IN MAINTAINING COHERENCE AND MINIMIZING ERRORS IN QUBIT OPERATIONS. QUANTUM SYSTEMS ARE HIGHLY SENSITIVE TO EXTERNAL INTERFERENCE AND ENVIRONMENTAL NOISE, LEADING TO DECOHERENCE—THE LOSS OF QUANTUM STATE INFORMATION. RESEARCHERS ARE EXPLORING VARIOUS APPROACHES SUCH AS ERROR CORRECTION CODES, QUANTUM ERROR CORRECTION TECHNIQUES, AND ADVANCED COOLING MECHANISMS TO ADDRESS THESE CHALLENGES AND IMPROVE THE RELIABILITY OF QUANTUM COMPUTING SYSTEMS.

MOREOVER, QUANTUM COMPUTING HOLDS IMMENSE POTENTIAL FOR ADVANCING MACHINE LEARNING ALGORITHMS AND ARTIFICIAL INTELLIGENCE. QUANTUM MACHINE LEARNING ALGORITHMS CAN LEVERAGE QUANTUM PARALLELISM TO PROCESS LARGE DATASETS AND OPTIMIZE COMPLEX MODELS MORE EFFICIENTLY THAN CLASSICAL COUNTERPARTS. THIS CAPABILITY OPENS UP NEW POSSIBILITIES FOR AI APPLICATIONS IN AREAS SUCH AS NATURAL LANGUAGE PROCESSING, IMAGE RECOGNITION, AND DRUG DISCOVERY.

ADDITIONALLY, QUANTUM CRYPTOGRAPHY OFFERS UNPRECEDENTED LEVELS OF SECURITY THROUGH QUANTUM KEY DISTRIBUTION (QKD) PROTOCOLS. QKD UTILIZES QUANTUM PRINCIPLES TO GENERATE AND DISTRIBUTE CRYPTOGRAPHIC KEYS, ENSURING SECURE COMMUNICATION CHANNELS THAT ARE INHERENTLY IMMUNE TO EAVESDROPPING ATTEMPTS. THIS ADVANCEMENT COULD REVOLUTIONIZE CYBERSECURITY BY PROVIDING QUANTUM-SAFE ENCRYPTION METHODS THAT PROTECT SENSITIVE INFORMATION FROM FUTURE QUANTUM ATTACKS.

IN CONCLUSION, QUANTUM COMPUTING REPRESENTS A TRANSFORMATIVE TECHNOLOGY WITH THE POTENTIAL TO REDEFINE COMPUTING CAPABILITIES ACROSS VARIOUS SECTORS. AS RESEARCH AND DEVELOPMENT EFFORTS CONTINUE TO PROGRESS, QUANTUM COMPUTERS ARE POISED TO UNLOCK NEW FRONTIERS IN COMPUTATION, COMMUNICATION, AND SCIENTIFIC DISCOVERY.

WHAT IS QUANTUM KEY DISTRIBUTION (QKD), AS MENTIONED IN THE PASSAGE?
A) A TECHNIQUE TO DISTRIBUTE QUANTUM COMPUTERS GLOBALLY
B) A METHOD TO OPTIMIZE MACHINE LEARNING MODELS
C) A PROTOCOL FOR GENERATING AND DISTRIBUTING CRYPTOGRAPHIC KEYS SECURELY
D) A FRAMEWORK FOR ANALYZING FINANCIAL DATA

5. WHY IS QUANTUM CRYPTOGRAPHY CONSIDERED MORE SECURE COMPARED TO TRADITIONAL ENCRYPTION METHODS?
A) BECAUSE IT USES FEWER COMPUTATIONAL RESOURCES
B) BECAUSE IT IS LESS SUSCEPTIBLE TO QUANTUM INTERFERENCE
C) BECAUSE IT GENERATES KEYS FASTER
D) BECAUSE IT IS INHERENTLY IMMUNE TO EAVESDROPPING ATTEMPTS

6. ACCORDING TO THE PASSAGE, HOW DOES QUANTUM COMPUTING ENHANCE MACHINE LEARNING ALGORITHMS?
A) BY REDUCING COMPUTATIONAL SPEED
B) BY ENABLING MORE ACCURATE PREDICTIONS
C) BY SIMPLIFYING DATA STORAGE

GROUP ACTIVITY : SKIMMING PRACTICE

INSTRUCTIONS:

- MAKE GROUPS OF 5-6 MEMBER.
- WITH THE HELP OF HARDCOPIES DISTRIBUTED AMONG GROUPS BY THE TEACHER, PRACTICE SKIMMING.

SQ3R METHOD

It enhances comprehension and retention through:

1. Survey 〓 Skim
2. Question 〓 Formulate questions
3. Read 〓 Read actively
4. Recite 〓 Summarize
5. Review 〓 Reinforce understanding

USE OF SQ3R:

1. To strengthen the understanding and application of technical knowledge.
2. To absorb and critically evaluate methodologies, experimental findings, and implications of research papers.
3. To enhance comprehension of detailed information critical to software development or system integration projects.

ACTIVE READING

It involves:

1. deliberate engagement with the text,
2. questioning assumptions, summarizing key points,and
3. reflecting on the material.

Purpose?

1. to promote deep comprehension,
2. critical thinking, and
3. application of knowledge.

USE OF ACTIVE READING:

1. To understand the logic, efficiency, and potential optimizations.
2. To evaluate scalability and security considerations, and integrate new concepts with existing systems.
3. To trace code execution, identify root causes of error log or bug issues, and propose effective solutions to them.

Have you ever felt like a detective while reading a novel/story book?

INFERENCE

The process of drawing conclusions, making logical interpretations, or generating hypotheses based on evidence, reasoning, and contextual understanding.

Purpose?

- To deepen understanding.
- To connect ideas.
- To apply knowledge to new situations.

IDENTIFYING THE MAIN IDEA

It involves recognizing the central concept, primary point, or overarching theme of a text, paragraph, or section.

Uses of IMI

- To understand the significance of the research, methodologies used, and potential applications in technological innovation.
- to prioritize information relevant to software implementation, system configuration, or troubleshooting.
- To identifying the main objectives or critical functionalities in client requirements.

CRITICAL READING

- Systematically evaluating information, arguments, and claims presented in a text.
- Analyzing evidence, assumptions, perspectives, and assessing the reliability and validity of information.
- Developing opinions, reasoned judgments and discern the implications of information.

USE OF CRITICAL READING:

- EVALUATING RESEARCH PAPERS INVOLVES ASSESSING THE METHODOLOGY, EXPERIMENTAL DESIGN, STATISTICAL ANALYSIS, AND CONCLUSIONS
- ANALYZING THE EFFECTIVENESS OF ENCRYPTION ALGORITHMS, AUTHENTICATION MECHANISMS, AND DATA PROTECTION MEASURES FOR SECURITY.
- EVALUATING CODE QUALITY, PERFORMANCE BOTTLENECKS, SECURITY VULNERABILITIES, AND PROPOSING TO IMPROVE SOFTWARE EFFICIENCY.

Q1a – Fill in the gaps:

From the following list, use each word only once to complete the sentences below. Remember that in the case of nouns and verbs you may need to change the form of the word:

arbitrary (adj)	assign (v)	context (n)	criterion (n)	data (n)
denote (v)	devise (v)	formulate (v)	ignore (v)	impact (n)
similar (adj)	summary (n)	usage (n)	vertical (adj)	

1. Although not exactly identical, the two books are so_____to each other that oneauthor must have copied much of his book from the other.

2. The Prime Minister set up a committee of financial experts to help him discuss and _____ new policies.

3. It is often possible to guess the meaning of a word from the other words around it — that is to say,the_.

4. In 1990, the British researcher Tim Berners-Lee_____the first browser, and sopaved the way for the development of the World Wide Web.

5. In newspapers, the layout of the columns is_____, while the rows run across thepage horizontally.

6. The_____of drugs has increased significantly in spite of more severe penalties such as longer prison sentences.

7. Students should not try to write down everything they hear in a lecture, but just make a

_____ of the most important points.

8. We use the term "class" to_____groups of people who share the same social and economic backgrounds.

9. In one case, a murderer may go to prison for life, while another may be set free: it all seems completely___.

10. The new journalist was_____to researching the election promises of the mainpolitical parties.

11. Before we can judge a government's success, we have to decide the
, suchas unemployment, defence or taxation.

12. One student failed because he completely_____the instructions on thepaper, although they appeared at the top of every page.

13. Market researchers use_____such as people's spending patterns as wellas information about age and occupation to decide on the most effective marketing strategies.

1b – Finish the sentence

Choose the best ending for each of the sentence extracts below from the list underneath:

1. I like your essay, but I want you to **illustrate**…
2. What will the result be if in the future we **assume**…
3. Students may be asked to compare many **alternative**…
4. The Channel Tunnel between France and England was **constructed**…
5. Everyone wants to be happy, but we probably all **define**…
6. Many universities now have language centers to **facilitate**…
7. Numbers and results are not particularly useful in themselves; we need to **interpret**…
8. In spite of warnings about cancer, many Westerners **equate**…
9. Advertisers use a variety of **techniques**…
10. At first, the police viewed the crimes as **random**…
11. It may be the case that no solution is possible, given the **magnitude**…

12. Although computers are becoming increasingly **complex**,…
13. The investigation was stopped because the witnesses could not **identify**…

List

a. …theories, from which they have to select the most convincing.
b. …happiness in many different ways.
c. …that nearly everyone has access to a motor car?
d. …the programs they use are becoming much easier to operate.
e. …a sun tan with health and youthfulness.
f. …the man they had seen commit the robbery.
g. …language learning for international students.
h. …at a cost of over £8 billion.
i. …of this problem.
j. …them to understand what they actually mean.
k. …events, but realized later that there was a pattern linking them.
l. …to persuade consumers to buy products and services.
m. …your points by providing some supporting examples.

1c – Word substitution

From the list below, choose one word which could be used in place of the language shown in bold without changing the meaning of the sentence. Remember that you may need to change the form or in some cases the grammatical class of the word:

comply with (v)	conclude (v)	equivalent (adj)	guarantee (n)
imply (v)	method (n)	obvious (adj)	presume (v)
proceed (v)	require (v)	specify (v)	sum (n)

1. If a company does not **observe** health and safety laws, it may be fined very heavily if any of its workers are injured. _____

2. For many years, $4 was **equal** to £1. _____

3. University regulations **state** that students must pass 18 modules to graduate. _____

4. Anybody driving a car **is obliged** by law to have insurance. _____

5. On the basis of their examination results, it was **clear** that most students had completely misunderstood the first part of the paper._____ _

6. Many people think that oil will run out in the next 100 years, but they are **assuming** that we will continue to use oil at the same rate as today._____

7. Most electrical products have a one- or two-year **warranty** in case something should go wrong._____

8. One problem facing overseas students is **adapting** to new teaching techniques._____

9. The fact that crime increases when unemployment goes up seems to **suggest** a link between the two._____

10. It may cost an overseas student around £15,000 per year to live and study in Britain, which is a very large **amount** of money._____

11. The lecturer gave the students a 10-minute break before **continuing** with the rest of her lecture._____

12. At the end of her talk, the lecturer **finished** with a brief review of the main points. _____

THANK YOU!