***Cambridge Academic English – An integrated skills course for EAP - Advanced***

**Key to Grammar and Vocabulary & Reading exercises**

**Unit 10 – Communicating science**

**1 Following the argument in a long article**

**1.1.a**

- Research has found a high level of recognition that science brings benefits to society. Evidence for this is found in source A.

- There is a generally positive attitude towards careers in science and engineering. Evidence for this is found in source B.

- It is surprising that scientists as a group are often perceived negatively. Evidence for this is found in source C.

- This perception may partly be the result of how they are presented in the media, such as films. Evidence for this is found in source D.

- Women scientists have often been perceived as subordinate to their male colleagues. Evidence for this isfound in sources E and F.

**1.2.a**

a The Big Bang was the large explosion of a single mass of matter 13.7 billion years ago that most scientists believe created the Universe.

**b** Elicit or Introduce the term creationism, as it is referred to later in the unit. Creationism is the religious belief that the Universe was created by an intelligent power higher than ourselves. In recent years, the term intelligent design has been used in relation to this, adding to the notion that some things in the universe are best explained by reference to an intelligent cause rather than by undirected evolution. Intelligent design is often presented as a theory based on scientific evidence.

**c** A hot issue describes a subject that causes a lot of disagreement or discussion. The phrase might also have been chosen because the Big Bang theory proposes that the Universe was very hot at the time of the Big Bang. The article refers to the hot Big Bang theory in the Introduction.

**d** Astronomy is the study of the Universe and the objects within it. Cosmology deals specifically with the nature and the origin of the Universe.

**1.2.b**

1 d

2 f

3 b

4 a

5 g

6 c

7 e

**1.3**

**1 a** They appear to. Although they acknowledge difficulties with it, they say that it has been "extremely successful" and that "it is the most complete and evidence-based explanation that astronomers currently have.

**1 b** No. They describe the public understanding as a "hit-and-miss affair"; that is, understanding is unreliable or only accurate in places.

**1 c** By producing "confusing and contradictory statements" about the Big Bang theory.

**2 a** No. Although he named it, he was "its strongest critic".

**2 b** The origin ("initial conditions") and "subsequent development" of the Universe.

**3 a** Four (1 = "scientific theory is not limited to one area of science"; 2 = "a scientific theory continues to be tested repeatedly"; 3 = science is taught as If it were facts and "as if everything were already known" - but this is not how the "scientific method" works; 4 = "gaps in our understanding of a scientific theory does not always bring the overall theory into question")

**3 b** The misconceptions are not limited to the Big Bang theory.

**4** "Few readers or listeners will be able to follow all of the arguments or points covered" by scientists, and therefore information will be "lost in translation". In other words, scientific information will be simplified or changed as it is communicated to a non-specialist audience.

**5 a** Most journalists are not able to communicate science effectively; unlike Bill Bryson, they are not able to be "pithy, entertaining and pointed"; they may oversimplify science; in trying to be honest, science writers may fall into the "negativity trap"; that is, they highlight the problems or limitations of a theory.

**5 b** "Simplifications may become oversimplifications and lead to public misconceptions."; negativity "may lead to confusion" as the only part of the discussion the general reader may be aware of ("register") is the fact that the theory is "questioned", rather than explained.

**5 c** Although surnames are used in academic writing, these are usually a 'shorthand' for their publications. We are generally more interested in what they have to say in their publications than themselves as people. Here, however, the writers want to make a point about Terence Dickinson personally: that he is a highly respected science writer.

**5 d** Yes. They accuse him of falling into the "negativity trap" and of "cloud[ing] the waters of understanding".

**6 a** The language used about Van Flandern seems more critical. He is described as "notorious" (= famous for something bad), having "unorthodox views", and for his "unscientific viewpoints",

**6 b** Because the argument about the Big Bang theory is "dressed in scientific clothing" by

writers such as Van Flandern, it "compound(s) the public's understanding of perception

and choice, muddying the waters of public acceptance and understanding" of the theory.

**7 a** They "misunderstand" and "misrepresent the Big Bang theory", and fail to apply

methods which are "consistent with scientific methodology",

**7 b** To the public, they give "the false impression that the Big Bang [theory] is questionable as an explanation of the Universe's origins". However, "the theory is not under threat [from the actions of these communities] within science".

**8** That It assumes that "any difficulties in the relationship between science and society are

entirely due to ignorance and misunderstanding on the part of the public", whereas they found that in fact "public interest in science was high".

**9 a** Yes. They argue that the assumption of the dominant model "is at fault", and that the

public "have more access to [scientific] information" and "thus can be better informed ;

and more educated than ever before".

**9 b** Acceptance of one "standard of science".

**9 c** They are effective In "transmitting certainties about the scientific alternative", which are more easily accepted ("more ideologically suited") by a public audience than are "the necessary uncertainties of the world of science".

**10a** It challenges the security of viewing "humanity [in] a known place In the Universe", placing humanity "adrift In the unfathomable (= incomprehensible) sea of space".

**10 b** They need to replace "one set of meaningful values with [another] of equal meaning"

**10 c** No. Instead, they argue that "a greater understanding of the [creation of the Universe] leads to a more profound respect for the many facets of our Universe both physical and spiritual".

**11 a** "[a]n Inclusive, open-minded and honest appraisal of the state of science and its uses

within politics and society",

**b** There are many possibilities here: for example, evolution; how the dinosaurs became extinct; whether language Is an innate ability or learned through imitation.

**1.4**

a 2

b 1

c 7

d 5

e 8

f 3

g 6

h 4

i 12

j 9

k 13

l 14

m 10

n 11

**2 Working with your supervisor: ending a meeting**

**2.1.b**

**Conversation 1**

Say what you think

you have to do

So can 1 just check – you think 1 should ...

Ask for confirmation

Is that right?

Say that you understand

OK, that's clear.

Request another meeting

What would be a good time for the next meeting?

Confirm the time

Fine. That's great.

Thanks

Thanks for seeing me.

**2.1.c**

**Conversation 2**

Say *what* you think you have to do

What you want me to do, then, is ...

Ask for confirmation

Is that it?

Say that you understand

OK, 1 think 1 can do that.

Request another meeting

What about another meeting ...?

Confirm the time

That'll be fine.

Thanks

Many thanks for your time.

**Conversation 3**

Say what you think you have to do

So by the next meeting I need to have...

Ask for confirmation

Is that OK?

Say that you understand

OK, I'll do my best.

Request another meeting

When should we meet again?

Confirm the time

That's brilliant.

Thanks

Thanks very much.

**2.1.d**

Student 3 (who is working on the Discussion section). Student 1 is writing a Methods section, and Student 4 a Literature review.

**4 Editing your work**

**4.1.a**

a Organisation

b Clarity and relevance

c Claims and evidence

d Use of the literature

eStyle and presentation

**4.1.b**

Other possibilities might include the following.

Does the Introduction show that I am answering the question?

Do I avoid repeating things in my own words that are already said in quotations?

Have I used appropriate reporting verbs and with an appropriate tense?

Is the reference list complete (i.e. are all the works mentioned in the assignment in the

reference list, and vice versa)?

Do I avoid asking rhetorical questions?

Is there enough space for markers to write comments?

Is there consistency in headings (e.g. use of upper/lower case)?

Are any tables and figures neat and accurate?

Does each one have a number and title?

**5 Writing up research: the Abstract**

**5.1.a**

- Introduction, Purpose, Methods, Results, Conclusion

**5.1.b**

It is difficult to write an Abstract before knowing what the conclusions will be (that is, before writing the final section of the thesis).

**5.2**

**Abstract 1**

1 c (purpose)

2 a (methods)

3 b (results)

**Abstract 2**

1 a (introduction)

2 d (purpose and methods)

3 f (results)

4 c (results)

5 e (results)

6 b (conclusion)

**5.3.a**

1 purpose of this work was to determine

2 was conducted

3 results showed

4 analysis also demonstrated

5 a significant role

6 these results it may be stated

**5.3.b**

- Introduction *(compared to ...)*

- Purpose *(this study investigated to evaluate ...)*

- Methods (... were *investigated* were *held ... drawing on data from ...)*

- Results *(the results ... suggest that participantstended to findings also showed that...;)*

- Participants *(demonstrated ... and tended to ...)*

- Conclusion *(if these results are any indication ...)*

**Grammar and vocabulary**

**1) Punctuation: colons and semi colons**

**1.1**

1c, h

2 j

3 e

4 i, b

5 d

6 k

7 h

8 f

9 a

10 g

**1.2**

1 After being interviewed, students were asked to fill in a questionnaire.

2 A conjunction is a word that links two clauses, phrases, or words; a connector links two

separate sentences. A conjunction is a word that links two clauses, phrases, or words. A

connector links two separate sentences.

3 The computer has changed our lives forever, although many people claim that it wastes

people's time.

4 Parents rarely attended meetings. As a result they had little influence on decision-making in the school. Parents rarely attended meetings; as a result they had little influence on decision making in the school.

5 Bullying in the workplace has been found to be very common (Carter, 2001; Rose, 2004; Kester, 2006).

6 There are three main types of radiation: Alpha radiation, Beta radiation, and Gamma radiation.

7 Natural disasters: protecting the public's health

8 There are several negative impacts of inflation including: demands for higher wages, to keep up with consumer prices; people buy and store goods, creating shortages; and civil unrest, such as the demonstrations in 2011.

9 The second theory suggests that children "are positively reinforced when they say something right and negatively reinforced when they say something wrong" (Fromkin and Rodman, 1998: 329).

10As Norman (2002) asks: "What does it mean to be well-educated?"

**2) Conditional expressions**

**2.1 a&b**

1 as if (conjunction)

2 If so (connector)

3 provided that (conjunction)

4 Even if (conjunction)

5 Otherwise (connector)

6 as long as (conjunction)

7 Unless (conjunction)

8 If not (connector)

9 assuming that (conjunction)

10 In the event that (conjunction)

**2.2**

1 A daughter in Ancient Rome was expected to remain loyal to her father, even if it meant disagreeing with her husband.

2 Whether you paraphrase material or write it in your own words you should acknowledge the source. Otherwise, you may be accused of plagiarism.

3 In some accents, words ending in the letter 'a' are pronounced as if the word ended in

-er

4 A group of European astronomers claim to have photographed a planet orbiting another star if so, It would be the first confirmed picture of a world outside our solar system.

5 Synonyms can be nouns, verbs, adjectives or adverbs, as long as both members of the pair are the same part of speech.

6 The Voyager space probes carry audio-visual discs with information about life on Earth, in the event that they are ever found by intelligent life-forms from other planetary systems.

**2.3**

1 Many shops will accept goods for return provided that the customer has a receipt as a

proof of purchase.

2 Doctors should explain treatments simply and clearly. If not, patients can become confused.

3 Total censorship of information on the internet is impossible unless a government has control of all internet-connected computers.

4 Assuming that students have access to a computer, they will be able to read online

journals from the university library at home.