



DEPARTMENT OF ENGLISH

MAIN EXAMINATION: MAY 2020

COURSE: ENGLISH 1C **TIME: 3 HOURS**

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MARKS: 100

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THIS PAPER CONSISTS OF 6 (SIX) PAGES

INSTRUCTIONS:

1. THIS PAPER CONSISTS OF TWO SECTIONS: SECTION A AND SECTION B.
2. YOU ARE REQUIRED TO ANSWER ALL THE QUESTIONS IN BOTH SECTIONS.

SECTION A [50 MARKS]

Read through the following text and answer questions that follow

Characteristics of the Innovation Process

1. A high rate of innovation requires a mix of market and nonmarket institutions, with the mix reflecting the nature of the innovation process. There are several basic characteristics of this process that we would highlight.
2. First, innovation is science based. This implies a great deal of importance for higher education as a fundamental feature of a national innovation strategy. Critically, higher education does not take place anywhere in the world without a major investment by government.
3. Second, innovation is an increasing returns to scale process, which means that ten scientists isolated on ten separate desert islands will produce much less scientific and technological progress than the ten scientists stuck together on one island. That is why scientists like to congregate in islands or valleys like Silicon Valley or Route 128. This is also why we have 170 Jeffrey D. Sachs and John W. McArthur universities—because it is helpful for scientists to talk to each other so that they can develop good ideas with the help of the person next door. Creating an innovation system requires creating scale.
4. Third, innovation depends on market-based incentives, and most importantly on the scope of the market itself (just as Adam Smith emphasized in regard to the division of labor). Paul Romer and others have put great stress on the importance of the scope of the market in promoting innovation. Developing a new idea requires a significant onetime investment of research and development (R&D), and **this** ‘must be recouped through subsequent sales. If the potential market for the innovation is large, it is obviously easier to recoup the one-time R&D expenses. A small market, on the other hand, will not justify the high onetime costs of R&D. That is one reason why it is vital to be an open economy. When an economy is export oriented, **it** has the whole world as a potential market. A closed economy, on the other hand, will not only fail to get new ideas from outside, but will also not generate incentives for innovation based on a limited domestic market.
5. Fourth, and vitally, there is a fundamentally mixed public and private good nature to the innovation process. A central characteristic of knowledge is what economists call “nonrivalness,” which means that if one person discovers a new idea (such as a new scientific discovery) and shares the new idea with others, the idea isn’t lost to the first person. Ideas are not like a barrel of oil or a ton of steel, where use of the commodity by one person means that less is available for others. With ideas, everybody can partake of the advancement of knowledge without depriving others of the knowledge. This nonrivalness has a critical implication. Society benefits through the wide-spread diffusion of ideas. To this end knowledge-based economies aim at the free and broad distribution of basic scientific knowledge, new mathematical theorems, and the like. There is of course a major problem with the free dissemination of knowledge: Discoverers may lack a financial incentive to make their discoveries in the first place if **their** ideas will be freely available throughout the society. For this reason, scientists are encouraged by social status, fame, and prizes, as well as by direct market incentives. **They** are also encouraged by the temporary monopoly privileges granted by a patent to a new invention. But *patents* are imperfect instruments for giving incentives to make new discoveries. Patents offer financial benefits to the inventor for a temporary period (now generally 20 years from the date of filing) but limit the ability of others in the society to make use of the knowledge. In the face of **these**

tensions, innovative societies have found the following pragmatic compromises. Basic scientific discoveries, in general, are not patentable. They are to be freely available for use throughout society. Patents are limited to specific new technologies. Also, patents are given for a limited period of time, so that eventually the knowledge can be freely used throughout society. The costs of permanent monopoly rights in slowing the diffusion of new ideas would be too great. Meanwhile, governments support basic scientific discovery through direct subsidization of primary research in universities, government research laboratories, and even private companies that qualify for government grants.

6. Fifth, special financing mechanisms beyond the banking sector help to accommodate knowledge creation in the private sector. A lot of knowledge is intangible and noncollateralizable. Banks often won't lend to people with good ideas because the banks require collateral to guarantee loans. With new ideas there is frequently no collateral available. This is what makes venture capital a distinctive industry. Venture capital is not lending against collateral, but against someone's hope that the technology is going to work commercially. That is not what bankers do for a business, nor is it what one would want banks to do because banking has other risky features that require tight regulation. Thus, since banks do not and should not lend mainly for noncollateralized ideas, the innovation process requires somebody else who will: venture capitalists.
7. Sixth, innovation generates destruction of older technologies and business sectors in a process Joseph Schumpeter ([1942] 1984) famously termed "creative destruction." New advances are not painless to those using and producing older technologies. Thus, economic death of old sectors is part and parcel of the advance of new sectors. One of the reasons that the Soviets could never develop a new industry is that they never let an old one die. There really was lifetime employment protection (other than for the millions sentenced to the gulag). Although people could lose their jobs (and indeed sometimes their lives) for political reasons, they did not lose their job for economic reasons. With no sectors ever declining, no new sectors could ever grow.
8. Seventh, the innovation process is characterized by specific forms of organization that develop, test, and prove ideas. Innovation first requires networks to bring different kinds of knowledge together. It also requires a great deal of risk taking and decentralization within larger enterprises to allow entrepreneurs within the firm to be entrepreneurial. It furthermore requires a great deal of learning. The most advanced innovation systems are comprised of enterprises investing heavily in their workers' knowledge, which is not a traditional activity in many economies.
9. Eighth, many technologies exhibit characteristics of site specificity, which means if you want to solve problems in agriculture, health, energy use, and so forth, local ecological characteristics are so important that the relevant problems need to be solved at home. Not all technologies can be adopted from abroad, which is another reason why the technological adopters stay behind the technological leaders: Much of what the technological leaders are producing is not necessarily relevant to the adopter's needs if the local ecological settings are quite different. If U.S. inventors for example, develop new processes for raising wheat productivity, that may have little direct benefit for cassava growers in Africa. Local needs require local innovations in many sectors.

Extracted from an article titled "*Technological Advancement and Long-Term Economic Growth in Asia* which was written by Jeffrey D. Sachs and John W. McArthur, was published in 2002 and is available at <https://www.researchgate.net>

QUESTION 1**[14 marks]**

- 1.1 In the introductory paragraph, the writers state that they are going to highlight several basic characteristics of the innovation process; how many specific characteristics are highlighted in the text? (1)
- 1.2 Give ANY TWO examples of signals used by the writer to highlight these characteristics throughout the text. (2)
- 1.3 What are these signals called in academic language? (1)
- 1.4 The writer describes innovation as 'an increasing returns to scale process', in your own words, briefly explain what this means? (2)
- 1.5 Briefly define each of the following words/phrases, using the context in which each word/phrase is used:
- (i) Recoup (paragraph 4) (2)
 - (ii) Open economy (paragraph 4) (2)
 - (iii) Not patentable (paragraph 5) (2)
 - (iv) Creative destruction (paragraph 7) (2)

QUESTION 2**[12 marks]**

The words highlighted in bold in each of the following sentences are nominalised. For each sentence, (i) write the word from which each nominalised word originates and (ii) rewrite the sentence using the form of the word you gave in (i).

- 2.1 Paul Romer and others have put great stress on the **importance** of the scope of the market in promoting innovation. (3)
- 2.2 There is of course a major problem with the free **dissemination** of knowledge. (3)
- 2.3 Governments support basic scientific discovery through direct **subsidization** of primary research in universities. (3)
- 2.4 Many technologies exhibit characteristics of site **specificity**. (3)

QUESTION 3**[12 marks]**

- 3.1 Find two instances of informal language (one in paragraph 4 and another in paragraph 5) and rewrite each of these in a formal way. (4)
- 3.2 What do the following devices of reference (highlighted in bold in the text) refer to?
- (i) this (paragraph 4) (1)
 - (ii) it (paragraph 4) (1)
 - (iii) their (paragraph 5) (1)
 - (iv) they (paragraph 5) (1)
 - (v) these tensions (paragraph 5) (2)
- 3.3 The following two phrases (underlined italics) are used redundantly in the text, give a reference that can be suitably used to replace each phrase.
- (i) The new idea (paragraph 5) (1)
 - (ii) The banks (paragraph 6) (1)

QUESTION 4

[12 marks]

Write paraphrases of ONLY the first six characteristics of the process of innovation discussed in the above text.

[End of section A]

SECTION B [50 marks]

QUESTION 5

[12 marks]

5.1 Use the dictionary extracts provided below to identify the meaning that is applicable to each of the following words in the text:

- | | | |
|-------|---------------------------|-----|
| (i) | Nature (paragraph 1) | (1) |
| (ii) | Market (paragraph 4) | (1) |
| (iii) | Benefits (paragraph 5) | (1) |
| (iv) | Instruments (paragraph 5) | (1) |

DICTIONARY EXTRACTS

Nature^{1 (n)} the phenomena of the physical world collectively

Nature^{2 (n)} the basic or inherent features or qualities of something

Market^{1 (n)} an area or arena in which commercial dealings are conducted

Market^{2 (n)} a regular gathering of people for the purchase and sale of provisions and other commodities.

Market^{3 (v)} advertise or promote (something)

Benefits^{1 (n)} an advantage or profit gained from something.

Benefits^{2 (n)} a payment made by the state or an insurance scheme to someone entitled to receive it.

Instruments^{1 (n)} a tool or implement, especially one for precision work

Instrument^{2 (n)} a measuring device used to gauge the level, position, speed, etc. of something.

5.2 Find an example of a qualifier that has been used by the writer in paragraph 4 to indicate that it is important for innovative products to be sold. (1)

5.3 Find a cohesive device that the writer has used to indicate contrast in paragraph 4. (2)

5.4 Name the two things/ideas that are contrasted where the phrase in 5.3 appears. (2)

5.5 Find a phrase that has been used to indicate the significance of local ecological settings to innovation in paragraph 9. (1)

5.6 Find TWO terms/words used in paragraph 5 which are specific to the discipline of economics. (2)

QUESTION 6

[15 marks]

The citation in each of the following extracts is not written in Harvard style.

Extract 1 Paul Romer and others have put great stress on the importance of the scope of the market in promoting innovation.

Extract 2 Sixth, innovation generates destruction of older technologies and business sectors in a process Joseph Schumpeter ([1942] 1984) famously termed

“creative destruction.”

6.1 What is wrong in the citation of Extract 1? (3)

6.2 Use the bibliographic details provided below to write **an integral citation** for Extract 1. (3)

Romer, Paul M. 1990. “Endogenous technological change.” *Journal of Political Economy* 98 (October): 71–102.

6.3 What is wrong in the citation of Extract 2? (3)

6.4 Use the bibliographic details provided below to write a **non-integral citation** for Extract 2. (3)

Schumpeter, Joseph A. 1984. *The Theory of Economic Development*. Cambridge: Harvard University Press.

6.5 From what type of source was

(i) extract 1 taken? (1)

(ii) extract 2 taken? (1)

6.4 By whom was extract 2 published? (1)

QUESTION 7

[15 marks]

7.1 Write a summary of the main ideas contained in Paragraph 5 **in your own words**. (7)

7.2 What is the main argument made by the writer in the last paragraph of the text? (2)

7.3. Identify TWO ways in which the writer supports the argument made in the final paragraph. (4)

7.4 What is the main conclusion that the writer makes to the argument in the final paragraph? (2)

QUESTION 8

[8 marks]

8.1 According to paragraph 6, which financing mechanism other than banks can be used to finance new innovations? (2)

8.2 List the THREE forms of organisation needed by the innovation process, according to paragraph 8. (6)

[End of Section B]

[End of Assessment -100 marks]