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**ECONOMICS**

Paper 1

**3 hours 15 minutes**

Additional Materials: Answer Paper

**9808/01**  
**19 Sep 2014**

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**READ THESE INSTRUCTIONS FIRST**

Write your student registration number and name on all the work you hand in.

Write in dark blue or black pen on both sides of the paper.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use paper clips, highlighters, glue or correction fluid.

**Section A**

Answer **all** questions.

**Section B**

Answer **two** questions.

**Begin each question on a fresh sheet of paper.**

At the end of the examination, staple a cover sheet on top of each answer and submit the answer to each question separately.

Indicate all the required information on the cover sheet.

The number of marks is given in brackets [ ] at the end of each question or part question.

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This paper consists of **10** printed pages, including the cover sheet.

## Section A

Answer **all** questions in this section.

### 1. The Battle of Patents & Innovation

Figure 1: Patent Applications

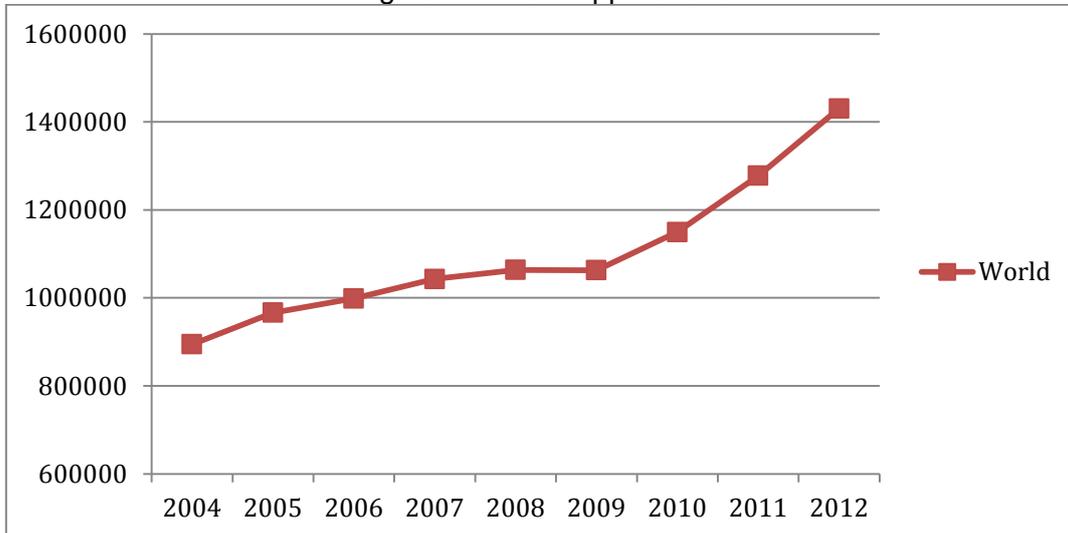
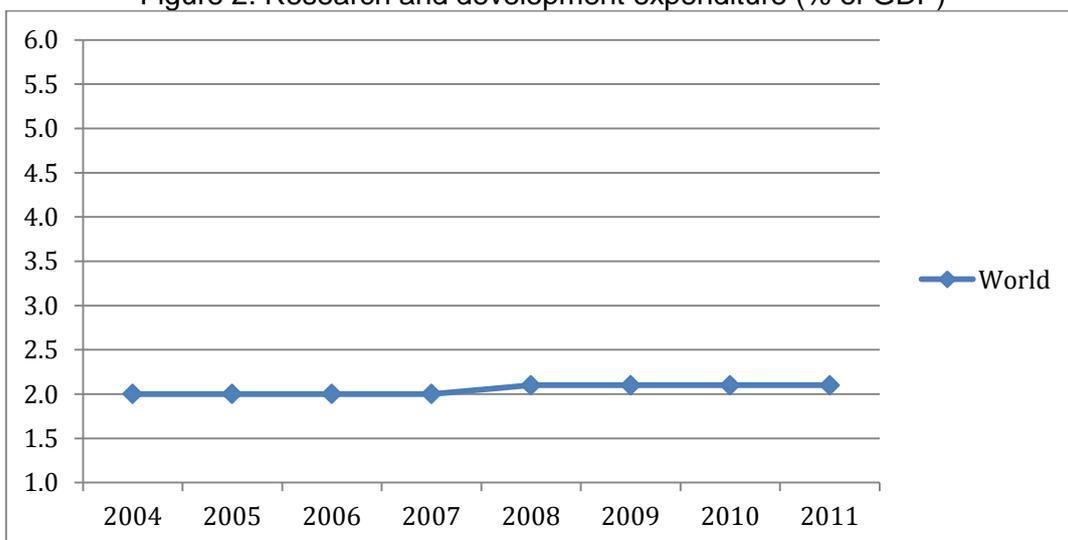


Figure 2: Research and development expenditure (% of GDP)



Source: <http://data.worldbank.org>

#### Extract 1: Samsung references Alice Corporation's court case to challenge two Apple patents

Samsung Electronics has asked a court in California to hold invalid claims of two Apple patents in the wake of a U.S. Supreme Court decision that tightened standards for patentability.

A jury ordered Samsung in May to pay Apple about \$119 million for infringing the iPhone maker's patents. The two patents whose validity Samsung is now challenging had figured in the trial.

Some Samsung devices were found to infringe the "slide-to-unlock" patent, also known as the '721 patent, which describes the motion on an unlock image on phone home screens to unlock a device.

The jury found Samsung did not infringe in its devices Apple's "universal search" patent, referred to as the '959 patent, which is the second Apple patent that Samsung aims to get the court to declare invalid in view of the standards outlined by the Supreme Court. The '959 patent refers to a universal interface for retrieval of information in a computer system.

In the court case of Alice Corporation versus CLS Bank, the Supreme Court ruled in June that an abstract idea is not patentable simply because it is tied to a computer system. It said that abstract ideas are not patentable unless the claim contains an 'inventive concept' sufficient to transform the claimed abstract idea into a patent-eligible application.

The claims of the two Apple patents attempt "to claim an abstract idea, implemented with generic computer functions that do not state any technical innovation," Samsung wrote about the two Apple patents in a filing Thursday to the U.S. District Court for the Northern District of California, San Jose division.

Regarding the "slide-to-unlock" patent, Samsung has argued in the filing that "simply using a computer to implement the abstract idea of moving a lock from locked to unlocked position does not render the idea patentable."

Apple could not be immediately reached for comment.

*Adapted from Computerworld.com, July 4<sup>th</sup> 2014*

## **Extract 2: Clayton Christensen's 'Disruptive Innovation'**

Ever since he published *The Innovator's Dilemma*, in 1997, Clayton Christensen's theory of "disruptive innovation" has been gospel in management thinking. It holds that established industries tend to be blindsided and then overthrown by upstart new technologies that are simpler and less costly and, at first, not as good.

A disruptive innovation is an innovation that helps create a new market and value network, and eventually disrupts an existing market and value network, displacing an earlier technology. Disruptive innovations improve a product or service in ways that the market does not expect, typically first by designing for a different set of consumers in a new market. In contrast to disruptive innovation, a sustaining innovation does not create new markets or value networks but rather only evolves existing ones with better value, allowing the firms within to compete against each other's sustaining improvements.

Historian Jill Lepore writes that the theory is largely wrong. She says Christensen's "sources are often dubious and his logic questionable," and he "tends to ignore factors that don't support his theory."

The word "theory" can mean, in general, an idea attempting to explain something or, more specifically, it means a scientific theory. Both Lepore and Christensen use the word in the latter meaning, implying that the idea of disruptive innovation can be subjected to the same scrutiny as theories in physics and is expected to show predictive power. Lepore says disruptive innovation "makes a very poor prophet." Recounting how Christensen predicted in 2007 that Apple won't succeed with the

iPhone, she reminds us that “the strength of a prediction made from a model depends on the quality of the historical evidence and on the reliability of the methods used to gather and interpret it.”

Christensen explained away in a Bloomberg Businessweek interview his prediction that the iPhone will fail: “What I missed is that the smartphone was competing against the laptop disruptively. I framed it not as Apple is disrupting the laptop, but rather [the iPhone] is a sustaining innovation against Nokia. I just missed that.”

At Slate.com, Will Oremus writes that “Lepore’s cherry-picked counterexamples don’t definitively overthrow Christensen’s theory any more than his own cherry-picked examples definitively prove it.”

*Adapted from Forbes.com, June 2014*

### **Extract 3: The target of Patent trolls: Retail businesses that adopt e-commerce innovative practices**

E-commerce is a big pain point for patent litigation, among others.

When hamburger chain White Castle started updating digital menu boards at its restaurants remotely last year by sending a signal from a computer at headquarters rather than in person at each location, it was thrilled to find a more efficient way of doing things.

But soon enough, it received a letter from a company holding a patent it claimed covered the act of sending such a computer signal and demanded compensation from the hamburger chain. The case is in litigation. If White Castle loses, it will have to go back to delivering a thumb drive with the programming information to each restaurant.

The 400-store chain also heard from a company saying its inclusion of a hyperlink to White Castle’s website in its customer emails and tweets was a business method that infringed on its intellectual property. All told, White Castle has heard from patent holders four times in the last 15 months, before which it had never faced any patent claims.

“For us, it’s really been disruptive,” said Jamie Richardson, a White Castle vice president. “It really does feel like a form of extortion.”

The number of new patent cases in U.S. District Courts rose 12.4% to 6,092 last year. Many cases are brought by so-called “patent trolls,” a relatively small set of companies that don’t sell or own products or services but make most of their money from the enforcement or licensing of often old patents they buy on the open markets just as they are set to expire. They then assert them, even though many times the uses of the patent are so basic. The trolls are also known, less pejoratively, as non-practicing entities, or NPE’s. And according to the National Retail Federation, an industry lobby group, they lose 90% of the time.

According to Patent Freedom, as of February, 3,775 patent complaints had been filed against retailers, compared to 3,681 against electronics companies.

*Adapted from Fortune.com, July 1<sup>st</sup> 2014*

#### **Extract 4: Novartis Cancer-Drug Patent Denied by India Supreme Court**

India's Supreme Court denied Novartis AG (NOVN)'s request for patent protection for its Gleevec cancer treatment, allowing the nation's generic-drug makers to continue to sell copies of the drug at a lower price.

In a decision watched by non-profit groups seeking to expand access to medicines and drugmakers concerned about India's position on intellectual property, the court today upheld regulatory rulings dating to 2006 that the drug wasn't sufficiently innovative to merit a patent.

"The worst thing about this is that international pharmaceutical companies won't want to partner with Indian pharma or generic players, because they'll be significantly concerned about protection of their intellectual property," said Navid Malik, an analyst with Cenkos Securities Plc (CNKS) in London. "The government is basically trying to create an industry with no investment as generics don't require much R&D."

The Indian Patent Office in 2006 denied a patent to Novartis, a decision upheld by the Indian Intellectual Property Appellate Board. The board cited a provision of Indian law that aims to prevent "patent evergreening," in which companies make an incremental change to a drug's chemical makeup, without any real medical benefit, and apply for new patents. This effectively 'extends' the life of their existing patents and prevents the introduction of low-cost generic copies.

*Adapted from Bloomberg.com, April 2<sup>nd</sup> 2013*

#### **Extract 5: European Union-India FTA may hit generic medical industry**

The free trade agreement that European Union is pushing India to sign could put an end to India's status as the main provider of affordable medicines, especially HIV drugs to countries like Brazil, Thailand, South Africa, Zimbabwe and several others. The negotiations with EU are on at a feverish pace this week in Brussels even before the parliamentary standing committee looking into the free trade agreements (FTAs) has submitted its report.

So far, the text of the FTA has not been made public, but the leaked text of the agreement is widely available on the internet. The provisions in the leaked text show that the free trade agreement with EU has provisions which will force intellectual property (IP) rights enforcement beyond what is stipulated in the World Trade Organisation agreement on patents (TRIPS\*) that India signed in 2005 which would severely affect the functioning of India's generic medicines industry.

*\*Trade-Related Aspects of Intellectual Property Rights*

*Adapted from The Times of India, March 21<sup>st</sup> 2013*

## Questions

- (a) Explain the relationship between the trends of patent applications and research and development expenditure in Figure 1 and Figure 2 respectively. [6]
- (b) Assess the credibility and usefulness of the theory of “disruptive innovation”. [6]
- (c) Using game theory, explain how the presence of patent trolls may influence a firm’s decision to adopt innovative practices. [8]
- (d) Suppose you are an economic advisor to the Indian government. What recommendations would you present to the Indian government on the decision to proceed with the signing of the European Union-India FTA, in the light of the need to balance profitability and efficiency in the pharmaceutical industry with the welfare of its citizens? [10]

**[Total: 30]**

## Section B

Attempt **TWO** questions from this section.

- 2 Economics is built on a very strong assumption that economic agents are fully rational. Critics have often warned against blind faith in human rationality because of many “behavioural anomalies” observed in the real world. [35]

In the light of these “behavioural anomalies”, discuss the usefulness of economics.

- 3 Given that the minority of the population is risk loving, there are few who would pay to participate in risky activities such as rock-climbing and sky-diving. Explain why firms still provide such services and discuss the impact of the strategies they may adopt in light of the risks, on consumers. [35]

- 4 Singapore saw its worst air pollution reading of the year as the island was shrouded in haze from Indonesian forest fires. [35]

*Source: BBC News, September 7<sup>th</sup> 2014*

Explain the difficulties in dealing with the global problem of environmental pollution and evaluate policies which attempt to solve it.

- 5 Discuss the extent to which efficiency can be achieved in the online retail markets for eBooks, second-hand goods and travel insurance. [35]

- 6 Comparative advantage has lost its relevance in explaining international trade patterns in an increasingly dynamic and interconnected world. Discuss. [35]

- 7 Discuss whether increasing flows of foreign direct investment and labour are necessarily beneficial to the country which receives them and harmful to the country from which they originate. [35]