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The Open University of Sri Lanka
DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING
Bachelor of Software Engineering
ECJ4160 Communication Skills for Engineers
FINAL EXAMINATION 2014/2015 (*CLOSED BOOK*)

Index No. : .....

DATE : 07-09-2015 **Time : 0930 - 1230**

Answer all questions. Write your answers on the question paper itself.
Please follow the instructions carefully. Marks will be deducted if instructions have not been followed properly.

Vocabulary

1. Complete the passage by **writing** the correct form of the given word in each gap.

Lots of people write programmes. People in business write spreadsheet programmes to simplify their jobs; scientists and engineers write programmes to process their (1) ..... (experiment) data; and hobbyists write programmes for their own interest and (2) ..... (enjoy). However, the vast majority of software development is a (3) ..... (profession) activity where software is developed for specific business purposes, for (4) ..... (include) in other devices, or as software products such as information systems, CAD systems etc. Professional software, (5) ..... (intend) for use by someone apart from its (6) ..... (develop), is usually developed by teams rather than individuals.

Many people think that software is simply another word for computer programmes. However, when we are talking about software (7) ..... (engineer), software is not just the programme themselves, but also associated (8) ..... (document) and configuration data that is required to make these programmes operate (9) ..... (correct). A professionally developed software system is often more than a single programme. The system usually consists of a number of separate programmes and (10) ..... (configure) files that are used to set up these programmes.

(10 marks)

Language in use

2. **Write** the correct form of the verb within brackets to complete the SRS extract.

2.1 Scope of project

This software system is a Web Publishing System for a local editor of a regional historical society. The software (1) ..... (will design) to maximise the editor's productivity by (2) ..... (provide) tools to assist in (3) ..... (automate) the article review and publishing process, which would otherwise have to be performed manually. By (4) ..... (maximise) the editor's work efficiency and production, the system (5) ..... (meet) the editor's needs, while remaining easy to understand and use.

More specifically, this system (6) ..... (design) to allow the editor to manage and communicate with a group of reviewers and authors to publish articles in a public website. The software (7) ..... (facilitate) communication between authors, reviewers and the editor via e-mail. Preformatted reply forms (8) ..... (will use) in every stage of the article's progress through the system to provide a uniform review process; the location of these forms (9) ..... (be) configurable via the application's maintenance options. The system (10) ..... (also contain) a relational database containing a list of authors, reviewers and articles.

2.2 Overview of document

The next chapter, the Overall Description section of this document, (11) ..... (give) an overview of the functionality of the product. It (12) ..... (describe) the informal requirements and (13) ..... (use) to establish a context for the technical requirements specification in the next chapter.

The third chapter, Requirements Specification section, (14) ..... (write) primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document (15) ..... (describe) the same software product in its entirety, but are intended for different audiences and thus use different language.

(15 marks)

3. Complete the passage with the linking words/phrases given in the box. You may use one word/phrase more than once.

while	whereas	but also	as well as
not only	for instance	also	however

Software piracy can, and does occur just about anywhere; (1) ....., piracy rates and the associate dollar losses vary widely across countries. (2) ..... , China, Indonesia and Vietnam maintain some of the highest software piracy rates (typically around 90%), (3) ..... the US has one of the lowest rates (around 21%). Compared to those estimated for Europe, the relative size of piracy markets in developing countries, (4) ..... , is small. Indonesia and China, (5) ..... , account for losses of $ 350 million and $ 96 million respectively, (6) ..... losses in the US ($ 8.1 billion) and Western Europe ($ 10.6 billion) are considerably higher.

The accelerating growth of new software users in emerging markets, (7) ..... the increase in the availability of bogus software through the internet and peer-to-peer networks could very well sustain the rates of piracy. Lack of enforcement and awareness might (8) ..... potentially exacerbate the problem. These trends seem to indicate that we may continue to see high rates of piracy and much greater financial losses.

But, software piracy is even more menacing than the preceding text suggests. It (9) ..... diminishes revenues and profits for companies, (10) ..... changes the competitive landscape.

(10 marks)

Reading

5. Read the text on artificial intelligence and answer the questions.

A What was once just a **figment of the imagination** of some of our most famous science fiction writers, artificial intelligence (AI) is taking root in our everyday lives. We're still a few years away from having robots at our beck and call, but AI has already had a profound impact in more subtle ways. Weather forecasts, email spam filtering, Google's search predictions, and voice recognition, such as Apple's Siri, are all examples. What these technologies have in common are machine-learning algorithms that enable **them** to react and respond in real time. There will be **growing pains** as AI technology evolves, but the positive effect it will have on society in terms of efficiency is immeasurable.

B AI isn't a new concept; **its** storytelling roots go as far back as Greek antiquity. However, it was less than a century ago that the technological revolution took off and AI went from fiction to very **plausible reality**. Alan Turing, British mathematician and WWII code-breaker, is widely credited as being one of the first people to come up with the idea of machines that think in 1950. He even created the Turing test, which is still used today, as a benchmark to determine a machine's ability to "think" like a human. Though his ideas were ridiculed at the time, **they** set the wheels in motion, and the term "artificial intelligence" entered popular awareness in the mid- 1950s, after Turing died. American cognitive scientist Marvin Minsky **picked up the AI torch** and co-founded the Massachusetts Institute of Technology's AI laboratory in 1959, and he was one of the leading thinkers in the field through the 1960s and 1970s.

C But it took a couple of decades for people to recognize the true power of AI. High-profile investors and physicists, like Elon Musk, founder of Tesla, and Stephen Hawking, are continuing the conversation about the potential for AI technology. While the discussion occasionally turns to **potential doomsday scenarios**, there is a consensus that when used for good, AI could radically change the course of human history. And **that** is especially true when it comes to big data.

D Nowhere has AI had a greater impact in the early stages of the 21st century than in the office. Machine-learning technologies are driving increases in productivity never before seen. From workflow management tools to trend predictions and even the way brands purchase advertising, AI is changing the way we do business. In fact, a Japanese venture capital firm recently became the first company in history to nominate an AI board member for its ability to predict market trends faster than humans.

E Big data is a goldmine for businesses, but companies are practically drowning in it. Yet, it's been a primary driver for AI advancements, as machine-learning technologies can collect and organise massive amounts of information to make predictions and insights that are far beyond the capabilities of manual processing. Not only does it increase organisational efficiency, but it dramatically reduces the likelihood that a critical mistake will be made. AI can detect irregular patterns, such as spam filtering or payment fraud, and alert businesses in real time about suspicious activities. Businesses can "train" AI machines to handle incoming customer support calls, reducing costs. **It** can even be used to optimise the sales funnel by scanning the database and searching the Web for prospects that exhibit the same buying patterns as existing customers.

F There is so much potential for AI development that it's getting harder to imagine a future without it. We're already seeing an increase in workplace productivity thanks to AI advancements. By the end of the decade, AI will become **commonplace** in everyday life, whether it's self-driving cars, more accurate weather predictions, or space exploration. We will even see machine-learning algorithms used to prevent cyber terrorism and payment fraud, albeit with increasing public debate over privacy implications. AI will also have a strong impact on healthcare advancements due to its ability to analyse massive amounts of genomic data, leading to more accurate prevention and treatment of medical conditions on a personalised level.

G But don't expect a machine takeover any time soon. As easy as it is for machine-learning technology to self-improve, what it lacks is **intuition**. There's a gut instinct that can't be replicated via algorithms,

making humans an important piece of the puzzle. The best way forward is for humans and machines to live harmoniously, leaning on one another's strengths. Advertising is a perfect example, where machines are now doing much of the purchasing through programmatic exchanges to maximise returns on investment, allowing advertisers to focus on creating more engaging content.

H While early science fiction writers might have expected more from AI at this stage, the rest of the world is generally satisfied with our progress. After all, not everyone is ready for humanoid robots or self-learning spaceships.

5.1) Match the headings with the paragraphs. (Write the letter of the paragraph against the heading)

(i) AI's impact on the business world
(ii) The effects of AI on society
(iii) AI in the future
(iv) The ongoing dialogue about AI
(v) Humans vs machines
(vi) The history of AI

(6 marks)

5.2) Decide if these statements are True (T) or False (F). Write (T) or (F) against the statement.

1. AI is yet to become a part of our lives.
2. The notion of AI has been in existence for centuries.
3. The concept of 'thinking machines' was first introduced by Alan Turing.
4. The world came to know about AI in mid 20th century, just before Turing died.
5. Minsky established the AI laboratory in the Massachusetts Institute of Technology in the 1960s.
6. By the late 20th century people started to acknowledge the power of AI.
7. Well-known businessmen and scientists agree that AI could revolutionise human existence.
8. The current work place has seen the biggest influence of AI.
9. Japan is already using AI to forecast developments in financial markets.
10. Even though AI is able to improve productivity, it cannot prevent critical errors from being made.
11. Machine-learning algorithms are now used in preventing cyber terrorism.
12. There is a growing discussion about privacy issues of AI.
13. Very soon machines will take over humans.
14. AI is yet to meet the expectations of early science fiction writers.

(14 marks)

5.3) Decide which meaning is the most appropriate for the given expressions. **Place a tick** against the correct option.

1. figment of the imagination
   a) something unreal
   b) something real

2. growing pains
   a) increasing hassle
   b) mounting problems

3. plausible reality
   a) unlikely to happen
   b) very likely to happen

4. picked up the AI torch
   a) started AI research and development from where it was left off
   b) made it easy for researching and developing AI

5. potential doomsday scenarios
   a) possible failure of AI
   b) possible dangers of AI

6. commonplace
   a) freely available
   b) hardly available

7. intuition
   a) perception
   b) spontaneous

(7 marks)

5.4) What do these words refer to in the text?

1. them (paragraph A) .....
2. its (paragraph B) .....
3. they (paragraph B) .....
4. that (paragraph C) .....
5. it (paragraph E) .....

(5 marks)

5.5) Choose the most appropriate title for the text. **Place a tick** against the correct option.

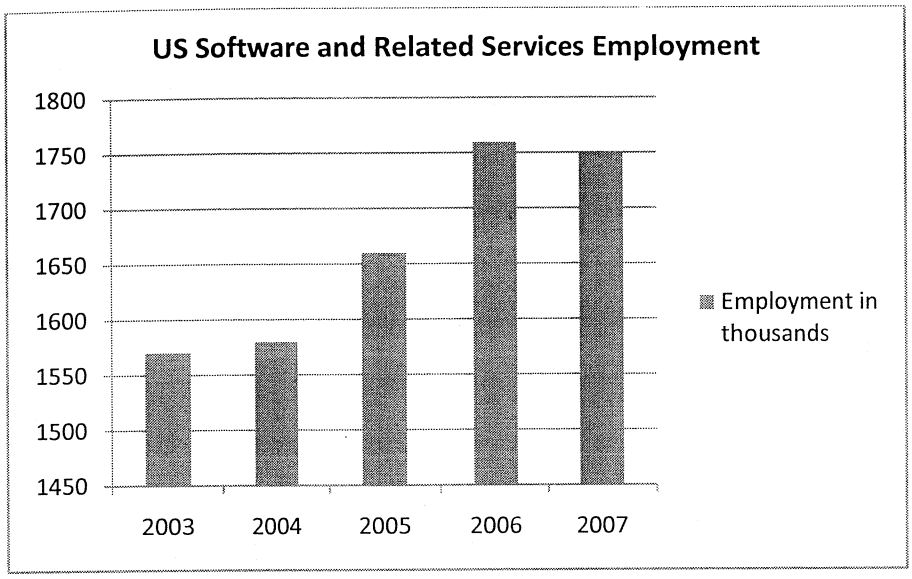
1. The evolution of Artificial Intelligence .....
2. The history of Artificial Intelligence .....
3. The future of Artificial Intelligence .....

(3 marks)

Writing

6. The graph below shows the total employment in software and related services in the US from 2003 to 2007.

Write a report describing the information.



(Source: OECD, STAN Database for structural analysis ed. 2008)

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7.

(10 marks)

7. You have been appointed to lead a software project undertaken by your company. You receive the following email from your boss.

> Dear ..... ,
>
> I understand the web publishing project for ABC is getting late. Why? We can't lose the client.
>
> Please reply ASAP.
>
> Kumar Weerasekera

You have not been able to keep to the timeline due to three major reasons. The addition of two new programmers mid-project and the ongoing expansions according to client requirements, as well as problems faced in debugging the system have extended the original time limit.

Write a reply email to your boss explaining why you have not been able to keep to schedule. Invent details as necessary. You may expand on the reasons using your own knowledge. (Copied content from the question will lose marks.)

(20 marks)