Number of pages	2
Number of questions	6

UNIVERSITY OF SRI JAYEWARDENEPURA

Faculty of Technology

Bachelor of Information and Communication Technology Honours Degree

Fourth Year Second Semester Examination

June 2022

ITC 4172: Entrepreneurship and Small Business Management

Time allowed: Two (02) Hours   **Answer ALL questions**

Read and follow the instructions given below:

- **"Index number" and course code "ITC 4172"** should be written on top of each page of the answer script, and pages must be **numbered appropriately**.

Question 1   **Total Marks 20**

a) "All entrepreneurs are businessmen, but not all businessmen are entrepreneurs" Briefly explain this statement based on nature, goals, risk margin, market position and operation of the entrepreneurs' and businessmen.'   *(10 marks)*

b) An etrepreneurial process is very important for the success of a business. Briefly describe the six (06) steps in the entrepreneurial process.   *(6 marks)*

c) "Entrepreneurs are born, not made." Do you agree with this statement? Justify your answer.   *(4 marks)*

Question 2   **Total Marks 20**

a) Briefly describe the three (03) ways of identifying business opportunities. *(12 marks)*

b) Explain four (04) ethical and legal issues faced by a new firm.   *(8 marks)*

Question 3   **Total Marks 15**

a) State three (03) importance of the business models.   *(3 marks)*

b) Justify the importance of the concept "Disruptive Business Model" with given examples.

(12 marks)

Question 4   **Total Marks 15**

a) The Government of Sri Lanka recognizes Small and Medium Enterprises (SMEs) as the backbone of our economy. However, there are several limitations faced by the SMEs in Sri Lanka. Identify eight (08) such limitations faced by SMEs in Sri Lanka.   *(8 marks)*

b) Explain four (04) factors that impact small business failure and recommend three (03) good practices that can be followed by the entrepreneur to safeguard the business.

(7 marks)

Question 5   **Total Marks 15**

The Effective Executive, Peter Drucker stated that "Efficiency is doing things right, effectiveness is doing the right thing." Differentiate efficiency and effectiveness using five (05) factors.   *(15 marks)*

Question 6   **Total Marks 15**

a) Explain how digital transformation can help the growth of a business. *(6 marks)*

b) "Digital Transformation is a modern phenomenon that many companies struggle with" Briefly explain six (06) common factors that impacts, failures of digital transformation in business.   *(9 marks)*

**********End of the Question Paper**********

| Number of pages | 5 |
| Number of questions | 4 |

UNIVERSITY OF SRI JAYEWARDENEPURA
Faculty of Technology
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Fourth Year Second Semester End Examination

June 2022

ITC 4182 – Professional Practices in ICT

Time allowed: Two (02) Hours   **Answer ALL questions**

Read and follow the instructions given below:

- This paper contains four (4) questions and five (5) pages.
- Answer **all** the questions.
- **Index number** should be written on top of each page of the answer script, and pages must be **numbered appropriately**.
- This is a **closed book** examination.

Question 1: Answer the following questions briefly.   **[Total 25 Marks]**

    a) What is 'Intellectual Property'?   (2 marks)

    b) What is 'Copyright'?   (2 marks)

    c) Name five (5) different categories of copyrightable works.   (5 marks)

    d) Name three (3) categories of works which are not protected under
       copyright law.   (3 marks)

    e) What are the main types of economic rights protected under the
       Copyright law?   (3 marks)

    f) What is a moral right of a copyrightable work?   (2 marks)

    g) For how long a moral right relating to copyrightable work will be
       valid?   (1 mark)

    h) What are the main factors required to be considered in successfully
       resorting to the defence of 'fair use' against the use of copyrighted
       work?   (5 marks)

    i) Can a copyright relating to a work be registered in Sri Lanka?   (1 mark)

    j) What is the method an author of a copyright can use to transfer an
       economic right relating to a work to a third party?   (1 mark)

Question 2   **[Total 20 Marks]**

Aero Space (Pvt) Ltd. has designed a survey drone which is capable of scanning the minerals and soil composition on the ground. The drone contains a unique design allowing it stay on air for three times more than a normal drone of similar nature. The most unique feature of this drone is its ability to scan the soil up to 50 metres from the surface. Artificial intelligence is used to analyse the data obtained from the drone scans to draw final conclusions on the mineral deposits and soil compositions. This drone is expected to revolutionize the mining survey and agriculture industry due its unique features.

Aero Space has hired you to formulate the strategy for protecting the intellectual property relating to this drone project. You are required to present a paper to the board of directors answering the following key questions.

    a) Can the intellectual property relating to this drone project be protected
       using the industrial design protection? Your answer should identify any

elements of the project which can be protected under the industrial design protection of law and the advantages and disadvantages of using the industrial design registration as a strategy from protecting the intellectual property relating to the project. (5 marks)

b) Can the intellectual property relating to this drone project be protected using the patent protection? Your answer should identify any elements of the project which can be protected under the patent protection of law, necessity requirement under law to obtain a patent for an invention and the advantages and disadvantages of using the patent registration as a strategy from protecting the intellectual property relating to the project. (5 marks)

c) Based on the description given, what are the intellectual property relating to this project which can be protected using a method other than the industrial design registration or patent registration? (5 marks)

d) What is your overall strategy to protect the intellectual property relating to this drone project? (5 marks)

Question 3 **[Total 35 Marks]**

ABC (Pvt) Ltd. is an IT start-up company. It is in the process of developing a new software for supply chain management. Once this new software is developed, the company intends to sell the software to companies which are engaged in large scale retail businesses such as supermarkets all around the world. The Board of Directors of ABC (Pvt) Ltd. is interested in understanding the best way to protect the intellectual property of this software and the company's related intellectual property before it is introduced to the market.

Consider that you are the Information Technology Business Manager of ABC (Pvt) Ltd. and you have been asked to submit a report to the Board of Directors evaluating the available options for protecting this software under the intellectual property law in Sri Lanka. Prepare a report to the Board of Directors answering the following specific questions raised by the Board of Directors and suggest the best strategy for protecting the intellectual property of the software.

a) What are the types of works/elements belonging to an IT company like ABC (Pvt) Ltd. you consider protectable under the intellectual property law? (5 marks)

b) What is the method you suggest protecting each item you listed above under the intellectual property law? (5 marks)

c) In your view, how can the company use the trademark protection as a strategy to secure its intellectual property? Your answer should be supported by explaining the elements of trademark protection and advantages and disadvantages of using the strategy. (5 marks)

d) Do you think the company can use the laws relating to trade secrets/ undisclosed information to protect the intellectual property rights relating to the software developed by ABC (Pvt) Ltd.? If yes, state the basic measures you think that ABC (Pvt) Ltd. would take to protect the software using the law relating to trade secrets/undisclosed information. If your answer is no, justify your answer by showing weaknesses of the protection available under the trade secrets. (5 marks)

e) In your view, what are the main contractual conditions you should include in the licence contract between ABC (Pvt) Ltd. and the buyer of this software? (5 marks)

f) Can the licence contract between ABC (Pvt) Ltd. and the third-party buyer be entered in electronic form? (1 mark)

g) What are the main elements of legally valid electronic signature recognized under the Electronic Transaction Act No. 19 of 2006? (2 marks)

h) In your opinion what is the best strategy that ABC (Pvt) Ltd. should adopt in order to protect the software? (7 marks)

Question 4   [Total 20 Marks]

Zoom Game Solutions Pvt Ltd ("Zoom") is a successful independent IT company that was established in Colombo, Sri Lanka in 2018. The business provides various IT services to its clients and most importantly, it is involved in designing, developing, and publishing video games and other related software for PCs, web, and mobile phones. Zoom employed Achala, a software engineer who developed in her spare time with the help of another employee named Amith, a video game that can be played on Android. Achala spent two years researching video

games and developed a game named "Zero's Adventure" that is fun and easy to play by all ages. Achala, being a good professional, kept all her work relating to this game well documented. Achala designed an attractive logo for the Game and released it to the Google Play Store. Zoom got to know about this new game developed by its employee and wanted Achala to release the source code to Zoom.

Realising the value of her game, Achala decided not to give the source code to Zoom for free.

Achala's employment contract contains a clause preventing all intellectual property created in "the course of her employment" belonging to Zoom. Achala contends that she did not develop the game in the course of her employment.

Assume you are the IT Manager of Zoom and the Board of Directors of Zoom wanted you to negotiate with Achala to get the "Zero's Adventure" to Zoom. To this end Zoom would like to work with Achala and improve her game's business potential. The board requires you to answer the following questions.

a) Based on the description above, identify the different categories of literary, artistic, and scientific works relating a development of a game of this nature which would attract protection under the intellectual property law.   (7 marks)

b) What are the different types of intellectual property protections available for each category of works you identified under the question above?   (5 marks)

c) Do you consider Zoom has intellectual property relating to the Zero's Adventure Game under Achala's employment contract? Give reasons for your answer.   (5 marks)

d) Assuming Achala agrees to give Zero's Adventure to Zoom for a payment of a continuous royalty in return, what is the type of legal agreement Achala should sign with Zoom?   (3 marks)

*** End of the Paper ***

Number of pages	2
Number of questions	4

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Fourth Year Second Semester End Examination

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ITS4202 Emerging Technologies

ime allowed: Two (02) Hours   **Answer ALL questions**

1   **20 Marks**

a. Provide an example for the following NLP applications.   **6 Marks**
    a. Machine translation
    b. Answering questions
    c. Sentiment analysis

b. i. Define the process of stemming.   **2 Marks**

    ii. Identify the stemming word out of the following group of words.   **3 Marks**
    a.   Car,Cars
    b.   Run, Ran, Running
    c.   Stemmer, Stemming, Stemmed

c. Describe the *stopword*, with an example?   **4 Marks**

d. Explain the requirement of Part of Speech (POS) tagging using an example   **5 Marks**

2   **30 Marks**

a. Briefly describe the benefits of the following IoT applications with an example.   **4 Marks**
    i.   Profitability
    ii.   Safety
    iii. Society
    iv. Environment

b. What are the layers of technology stack in IoT?   **6 Marks**

c. Assume that you have been hired as a technologist to design an IoT based an agricultural smart application.

    i. Identify the problem in the agriculture sector which can be addressed by IoT application, relevant to the following functionalities. (You need to select at least four (4)). **8 Marks**

    Data acquisition, Data processing, Communication, Cloud storage, Data analytics, Data representation, Security, Updates, Maintainability, Power management, Durability

    ii. Illustrate the system architecture of the proposed IoT application and explain its process. **12 Marks**

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3 **30 Marks**

a. Feature selection checks the correlation of the independent variable to the target variable. **3 Marks**

    i. Explain the independent and dependent variables with an example? **3 Marks**

    ii. State the three (3) categories of feature selection methods?

b. Draw the graphs to illustrate the monotonic, non-monotonic and monotonic with linear relationships **6 Marks**

c. ANOVA correlation coefficient is used to check the means of two or more groups that are significantly different from each other.

A school dataset has data about student's performance with a few attributes and the final grade. The final grade of a student is predicted by the attributes such as age, guardian, study time, marks of assignments and study materials (YouTube, lecture note and library book).
Answer the following questions, if you have been asked to determine the impact of the study materials on the final grade using ANOVA.

    i. Write the Null Hypothesis (H0) and alternative hypothesis(H1). **6 Marks**

    ii. How do you reject the null hypothesis in ANOVA? **12 Marks**

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4 **20 Marks**

a. i. What are the challenges, and opportunities in the web search? **3 Marks**

    ii. State the basic search engine technologies and describe one out of them. **4 Marks**

b. i. Describe the difference between Pull Mode (search engines) and Push Mode (recommender systems) for text data. **4 Marks**

    ii. Explain the difference between querying and browsing in a search engine **4 Marks**

c. What essential factors/points should be considered when designing a Ranking function? **5 Marks**