The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Electrical & Computer Engineering

Study Programme	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	: EEI6360 Software Project Management
Academic Year	: 2021/22
Date	: 4th March 2023
Time	: 09:30-12:30hrs
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **TWO (2) parts. (Part A & Part B)** in **Six (6)** pages.
3. Part A contains a case study. Answer all questions.
4. Part B contains four (4) questions. Answer any two (2) questions.
5. Answer for each question should commence from a new page.
6. This is a Closed Book Test (CBT).
7. Answers should be in clear hand writing.
8. Do not use red colour pen.

Part A – Case Study

Answer all questions.

National Fuel Pass

The Ministry of Power and Energy announced the launch of the "National Fuel Pass" to provide the public a convenient and easily accessible solution to obtain fuel and facilitate an allocation-based fuel distribution method. Developed together with technology partner, Information and Communication Technology Agency (ICTA), this solution has been implemented at all outlets managed by the Ceylon Petroleum Corporation and Lanka IOC.

To register for a Fuel Pass, visit fuelpass.gov.lk and follow the registration process, after which a unique Fuel Pass in the form of a QR code will be displayed – which can be saved on a mobile device or printed to be produced at fuel outlets. As per the newly introduced system, each vehicle, once registered for the Fuel Pass, will be allocated a weekly quota of fuel, which will be refreshed every Sunday night (any unutilized quota will not be carried forward).

In order to obtain fuel, simply produce the QR code at the fuel station, where the staff at the station will scan the QR code and validate the eligibility and allocation of fuel, and provide fuel within the available balance. Once the requested liter quantity is processed, users will receive a confirmation message on their registered mobile number.

(Source: https://www.icta.lk/national-fuel-pass/)

The little black dots and white spaces, jumbled in a square grid, have become a treasure for every vehicle owner since last week, as they are the only hope for fuel when the tank runs dry. The "QR Code" has become a new household word in Sri Lanka, as pumping fuel at any shed is no longer possible without it.

Under the fuel rationing system in place, amidst a very limited fuel supply across the country in the face of the current Foreign Exchange scarcity, a weekly quota has been assured for all users with the help of the QR Code.

Thanks to this technology, the lengthy fuel queues have eased, the black market for fuel has dwindled, and thuggery, other irregularities and altercations at pumping stations have subsided. For a country, which has already seen the deaths of about a score of people in fuel queues, this is a relief. Many people were heard saying it should have been introduced much earlier.

The success of the QR Code-based National Fuel Pass speaks that the Sri Lankan people, in general, are tech literate enough to use this system for many other purposes as well. As the QR Code has become a practical and effective way of managing the fuel crisis, the same technology can be applied in an innovative way to deal with many other problems or to make everyday tasks more convenient for the people. What has been lacking is not the capacity, but the initiative coupled with the will.

(Source: https://www.dailynews.lk/2022/08/13/features/284900/benefits-cost-free-qr-code)

Assume you were the Project Manager representing ICTA to lead the activities of developing and implementing the above project. Answer the following questions based on the above case study.

(a) Identify five (5) main stakeholders of this project. **(5 marks)**

(b) List the following information needed to create the Project Charter for the Project.

i. High-level requirements (with at least 5 requirements) **(5 marks)**
ii. Summary milestone schedule (with at least 5 milestones) **(5 marks)**
iii. Project approval requirements (how to define project success, who decides its' success and who signs off on the project) **(10 marks)**

(c) Subdividing project deliverables and project work into smaller, more manageable components provides a structured vision of what must be delivered. Project scope can be decomposed by identifying and analyzing the deliverables and related work.

Using a suitable tool / diagram, subdivide the project to at least 3 or more components. Further subdivide each of these first level components to at least 3 or more sub-components. Use an appropriate numbering system for the components. **(15 marks)**

(d) Prepare the Risk Register for the Project with five (5) major risks which include four (4) negative risks and one (1) positive risk. The Risk Register should include the following columns:

i. Risk
ii. Owner
iii. Reason / Cause
iv. Effect
v. Probability as a percentage
vi. Impact in measurable terms
vii. Level of Risk as Low, Medium or High
viii. Type of Risk Response Strategy (Avoid, Mitigate etc.)
ix. Risk Response **(20 marks)**

Part B - Answer any 2 questions.

Question 1

You are working from home for an IT company. You received the following WhatsApp message from your manager. "We need to discuss some changes needed for the design. Please call me in Microsoft Teams when you are free". As soon as you open the message, WhatsApp automatically flags the message, so the sender of the message knows that you have received and viewed it. After seeing the message, you called your manager in Microsoft Teams.

Apply the above scenario to the 'Basic Communication Model'. Using this scenario, explain the 5 factors of the model, while emphasizing where the effective communication could be affected. Use appropriate diagrams. **(20 marks)**

Question 2

A research was done on Cost of Quality (COQ) for 4 similar products made by 4 software development companies. Following table shows the Cost of Quality and Sales Revenue in USD for companies A, B, C and D.

"Quality Sales Index" is calculated as a percentage of the Total Cost of Quality from Sales Revenue.

	Company			
	A	B	C	D
Prevention Cost	27,000 (3%)	28,500 (3%)	74,600 (12%)	112,300 (21%)
Appraisal Cost	155,000 (19%)	170,300 (20%)	113,400 (18%)	107,000 (20%)
Internal Failure Cost	38,6400 (48%)	469,200 (55%)	347,800 (54%)	219,100 (40%)
External Failure Cost	24,2000 (30%)	192,000 (22%)	103,500 (16%)	106,000 (19%)
Total COQ	**810,400**	**860,000**	**639,300**	**544,400**
Sales Revenue	4,360,000	4,450,000	5,050,000	5,190,000
Quality Sales Index	18.59%	19.33%	12.66%	10.49%

(a) Using at least two (2) examples from Software Development, explain the following terms.

i. Prevention Cost

ii. Appraisal Cost

iii. Internal failure cost

iv. External failure cost **(12 marks)**

(b) By inspecting the cost of quality and the sales revenue of Company A and D:

i. Explain what could have been the strategy of company D that resulted in an increase of the sales revenue? **(3 marks)**

ii. How do you think they have implemented the strategy identified in part (i)? Explain your answer with examples of actions taken by company D. **(3 marks)**

iii. Should they continue the same strategy identified in part (i), or should they try a different strategy? If they are to continue the same strategy, what do they need to concentrate on? **(2 marks)**

Question 3

Based on the news article below and the Case Study in Part A, as the Project Manager responsible for implementing the "National Fuel Pass" project, list down and explain at least 5 possible actions you would suggest ensuring the Privacy and Data Security of the project and the QR based system.

ICTA clarifies reports on misuse of personal data on fuel pass system

The Information and Communication Technology Agency (ICTA) yesterday (11) addressed what it called "inaccurate news articles" regarding the use of personal data collected to issue and manage the National Fuel Pass (NFP) system. In a statement, the agency said the fuel pass system is operated and managed by the Ministry of Power and Energy, with technical assistance from ICTA. "The NFP was launched in order to facilitate the implementation of a fuel quota allocation system for citizens in order to reduce the consumption of fuel, thus reducing importation costs during the economic crisis, while ensuring a convenient and easily-accessible solution to obtain fuel for citizens," it read further. The fuel pass system also helps to manage a crisis, hitherto never experienced in the country, the ICTA added, explaining that it provides the ministry and its stakeholders transparency and visibility to manage the fuel distribution supply chain in a more effective and efficient manner. The agency assured the public that any personal data provided online through the registration process on fuelpass.gov.lk is processed only for the purpose of facilitating the use of the NFP system. The data collected is processed by the Ministry or on its behalf to prevent fraud, by cross-referencing the vehicle number with the chassis number or the revenue license number through the Department of Motor Traffic, the ICTA continued. The agency reiterated that the data is used only for verification purposes through an Application Programming Interface (API) which only verifies the data to offer the NFP service. "No data is taken away from the Department of Motor Traffic by either the Ministry neither by ICTA," the statement read further. The statement also noted that the Ministry of Power and Energy, together with ICTA, is taking all necessary steps to maintain and manage personal data collected in an effective and secure manner. "The data is solely used to validate information provided by users and manage

the QR system and for no other purpose whatsoever, and the Ministry and ICTA have taken steps to ensure compliance with the Personal Data Protection Act No: 09 of 2022."

(Source: https://www.themorning.lk/articles/213980)

Question 4

Write short notes on topics given below. Give practical examples where necessary.

(a) Contingency Reserves

(b) Change Request

(c) Recognition and Rewards

(d) Stakeholder Register

(e) Work Performance Data **(5 x 4 =20marks)**

END OF THE PAPER