THE OPEN UNIVERSITY OF SRI LANKA

Faculty of Engineering Technology
Department of Electrical & Computer Engineering
Bachelor of Software Engineering

FINAL EXAMINATION – (2015/2016)

ECI6260 – Software Project Management

Time Allowed: **3 hours**

Date: 14 December 2016   **Time: 0930 – 1230 hours**

INSTRUCTIONS TO CANDIDATES

1. This question paper contains ten (10)) questions in **PART A** and six (06) questions in **PART B.**
2. Total no of pages of this question paper is nine (09)
3. Answer **ALL** questions in **PART A** using the attached MCQ answer sheet.
4. Attach this MCQ answer sheet with your *PART B* answer scripts.
5. Answer **any FOUR** (04) questions from **PART B**.
6. Clearly show all the calculations used to reach the answer.
7. Clearly state assumptions (if any).

PART A: Answer ALL questions

1.   Which of the following statements best describes the Project scope
     a. All the work that must be done in order to deliver a product according to the specified features and functions, only.
     b. The features and functions that are to be included in a product or service.
     c. A narrative description of work to be performed under contract.
     d. a and b

2.   Which of the following denotes a collective name for the set of unique identifiers assigned to each item of a WBS:
     a. The work package codes
     b. The project identifiers
     c. The code of accounts
     d. The element accounts

3.   Consider the following three statements related to Change Requests.
     A. An external event such as a change in government regulation.
     B. An error or omission in defining the scope of the product.
     C. An error or omission in defining the scope of the project.

     Which of the above statements are valid.
     a. A only
     b. B only
     c. A and C only
     d. All of them

4.   Which of the following most correctly describes the human needs identified by Maslow ranked from the lowest to highest
     a. Self actualization; self promotion; social; security and physiological needs
     b. Self esteem; self actualization; social; security and physiological needs
     c. Self actualization; self esteem; social; security and physiological needs
     d. Self fulfillment; self esteem; social; security and physiological needs

5.   You are the project manager for a project with the following network diagram. Nodes represent activities and numbers represent days taken to complete the activity.
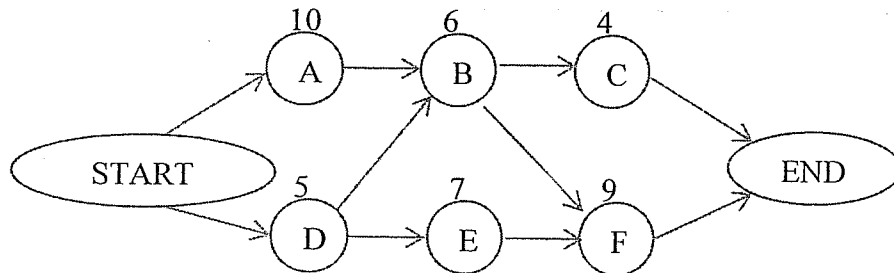
     Total project duration is
     a. 20 days
     b. 41 days
     c. 25 days
     d. 30 days

6. Which of the following events will have an impact on the total duration of the project
   a. Completion of activity D delays by 3 days
   b. Completion of activity E delays by 1 day
   c. Completion of activity C delays by 4 days
   d. Completion of activity F delays by 1 day

7. Which of the following is not an advantage of the Accounting Rate of Return (ARR) method of investment appraisal?
   a. It takes into account the time value of money by allowing for depreciation in the equation
   b. It is easy to understand
   c. The ratio takes account of the overall profit that is generated by the investment
   d. There is comparability between the ARR and the ROCE ratio used in financial accounting

8. A project would normally be undertaken if its net present value is:
   a. Positive
   b. Exactly the same as the NPV of existing projects
   c. Negative
   d. Zero

9. An asset initially costs LKR 1,000,000. It is expected to last for 5 years and it will be worthless at the end of this time. Depreciation is charged on a straight line basis over the assets useful life. Given the following profits from the investment what is its net present value assuming a discount rate of 10%?

   Year 1   LKR 75,000
   Year 2   LKR 125,000
   Year 3   LKR 160,000
   Year 4   LKR 140,000
   Year 5   LKR 125,000

   a. LKR 625,000.00
   b. - LKR 535,064.98
   c. −LKR 375,090.00
   d. LKR 1,624,790.00

10. According to Herzberg which of the following factors, if present, will lead to increased motivation.
    a. Good supervision
    b. Job security
    c. Regular promotions
    d. Good salary

[2 x 10 = 20 Marks]

PART B:

Answer any FOUR (04) questions.

Read the following description about the failure in UK Government sanctioned e-Borders project and answer the questions given below:

> The e-Borders project commenced in 2003 by the Home Office, which aimed to deliver an immigration control model in the UK that was modern and efficient. Raytheon Systems was awarded the contract in 2007 to implement the £750 million project. However, the contract was terminated in 2010 after the Home Office expressed dissatisfaction towards the execution of the project. No milestone based on the timeline of the project had been achieved by that time. Following the termination of the contract, Raytheon sued the Home Office for wrongful termination. The proceedings led to the award of £150 million to Raytheon plus legal charges by the UK government. The project has cost the UK government more than £830 million for a project that was yet to be delivered according to the original mandate. According to Analysis: Danny Shaw, BBC home affairs correspondent This is a devastating critique of a project presented by the Home Office, first under Labour, as the key to securing Britain's borders. In fact, as the report reveals, the programme has been torpedoed by its ambition.
> (Source: http://pmworldlibrary.net/wp-content/uploads/2016/03/pmwj44-Mar2016-Alami-uk-eborders-project-failure-featured-paper.pdf)

> A BBC report on the same issue has noted that collecting and assessing advance passenger information on more than 200 million journeys a year was always going to be hard task - involving co-ordinating the supply of data from 600 air, ferry and rail carriers and 30 government agencies.

> Add in creaking computer systems, a high turnover of key staff and a draining legal dispute with the private contractor, and it's clear that ministers and officials over-reached themselves.

> There's little doubt more advance passenger information is available now than in 2003, when the scheme was first developed, but the costs have risen hugely with some border checks still being conducted using scraps of paper.

> The Warning Index operates alongside another system called semaphore, but the NAO said the failure to integrate them meant staff still had to check passports manually and consult printed A4 sheets when probing suspicious vehicle registrations.

> Amyas Morse, head of the NAO, said e-borders had not "delivered value for money"."Some valuable capabilities have been added to our border defences during the life of this project, though their efficiency is impaired by a failure to replace old IT systems," he added.

> Keith Vaz, chairman of the Home Affairs Select Committee, described the report as a "devastating indictment" of the e-borders project. "With the terrorism threat level currently at severe, a failure to properly cover millions of people entering the country without having passenger information in advance gives a green light to people who wish to come to the UK for illegal or dangerous activity," he said.

The National Audit Office, it is attributed that the Home Office did not have in place a consistent strategy to deliver the project on such a scale and failed to develop an integrated system that could process all the information it collected. The e-Borders program failed because it did not survive the conditions of its ecosystem, failed to execute the delivery process, and exhibited poor project management practice. (Source; http://www.bbc.com/news/uk-34988913).

Another article on the same issue notes that according to the National Audit Office (2015), it is attributed that the Home Office did not have in place a consistent strategy to deliver the project on such a scale where it failed to develop an integrated system that could process all the information it collected.

The importance of the stakeholder was underestimated, where during the period of the project, unrealistic assumptions were given in relation to delivery. This was in disregard of the importance of managing an enormous portfolio of stakeholders who were estimated to be over 600. Despite this, it was indicative that plane, ferry, and rail carriers experienced improved relationships (BBC, 2015). The ability to make decisions was incapacitated because of the existence of gaps in resourcing and capability. The National Audit Office established that the eBorders scheme had a total of eight program directors between the period of 2003 and 2015. The project solely relied on having IT systems other than including staff in the project that are well resourced and properly trained (Khan, 2015).

(Source: http://pmworldlibrary.net/wp-content/uploads/2016/03/pmwj44-Mar2016-Alami-uk-eborders-project-failure-featured-paper.pdf)

Question 1

(a) Identify key reasons why the E-Borders project failed. Discuss how the use of a proper project management strategy could have helped to eliminate the reasons for the failure.

[4 Marks]

(b) Explain four different types of documents that would have helped the project manager to avoid the failure. Give samples for each type of document.

[8 Marks]

(c) As a project management professional, what would you recommend as the best Software Development Methodology to implement e-Borders system? Justify why you have selected this methodology over other similar methodologies.

[8 Marks]

Question 2

(a) From the case study of e-Borders project, identify the items where the cause of the failure could have been related to a problem in Communication? Justify your answer.

[8 Marks]

(b) In relation to e-Borders program, describe different types of networks for communication that the Company may have used to avoid the problems identified in part (a).

[8 Marks]

(c) Are there communication network type(s) that could have negatively affected the teams during the development of the portal site? Elaborate your answer.

[4 Marks]

Question 3

(a) What are the key activities involved in Project Management?

[3 Marks]

(b) Prepare a staffing plan for the e-Borders project given in the case study.

[6 Marks]

(c) High turnover of key staff has been identified as one of the reasons for the failure of the e-Borders project. It was also noted that during the life time of the project there have been 8 different project managers. Analyse this situation and prepare a memo to the Secretary, Home Office suggesting actions that could have taken to remedy the situation. Justify why you believe these actions will solve the problem. Your memo should not exceed one page.

[5 Marks]

(d) Which conflict resolution technique would you use in the following situation? Explain why.

> " My boss, a division manager for Walmart, asked me to develop a marketing plan aimed at increasing online sales for certain product lines. The plan was to be developed in cooperation with corporate's Internet marketing department. A deadline of two weeks was set for plan development. After speaking with the internet marketing team, I realized a two week deadline was not going to be realistic. I informed my boss that based on my conversation with the Walmart internet marketing team a two week deadline was not possible. He said he understood and asked me to get it to him as soon as possible. Exactly two weeks later my boss send me an urgent memo requesting the plan so he could present it at a board meeting the next day. When I reminded him that he had extended the deadline following our previous conversation, he said he had no recollection of extending the deadline and blew up at me. "

[6 Marks]

Question 4

(a) What is a project management standard?

[2 Marks]

(b) Why are project management standards important?

[4 Marks]

(c) Briefly describe three standards commonly followed in software project management.

[6 Marks]

(d) You have been appointed as a consultant to a newly established mid-sized software development company. The CEO asked you to ensure that the company is compliant with a project management standard. Select a suitable project management standard you described in the answer to part (c) of this question and explain how you would achieve this task.

[8 Marks]

Question 5

Read the following description and answer the questions. Clearly show all calculations and state all assumptions.

QuickSoft, a Software Development Company has been contacted by three different companies for implementing projects. Given its resources, QuickSoft can only accept one project. Cash flows and the applicable discount rates are given in Table 1. All projects require an initial capital investment of Rs. 2,000,000.00

Cash Flows	Project M	Project N	Project O
Year one	RS. 500,000	RS. 600,000	Rs. 300,000
Year two	RS. 500,000	RS. 600,000	Rs. 500,000
Year three	RS. 500,000	RS. 600,000	Rs. 700,000
Year four	RS. 500,000	RS. 600,000	Rs. 900,000
Year five	RS. 500,000	RS. 600,000	Rs. 1,100,000
Discount Rate	6%	9%	20%

(a) Compare and contrast the following in relation to investment appraisal
   (i)   Discount rate vs IRR
   (ii)   Net Present Value vs Payback Period

[2 x 2 = 4 Marks]

(b) Calculate the simple payback period for the three projects. Comment on your results.

[6 Marks]

(c) Calculate the net present value of three projects at the given discount rate. Comment on your results.

[6 Marks]

(d) Using your calculations, recommend a suitable investment option. Justify your answer.

[4 Marks]

Question 6

(a) Critical Path Method (CPM) is a popular technique for project planning. Describe 3 advantages of using CPM for project planning and 3 disadvantages.

[3 Marks]

The following is a simplified list of activities for a start-up company. Use this information, to answer parts (b) to (e). Assume all tasks will start as soon as possible. Clearly show all your calculations and state all your assumptions.

Task	Description	Duration (weeks)	Predecessor/s
A	Identify the problem through customer consultations	1	-
B	Identify a solutions to the problem	2	A
C	Build Minimum Viable Product (MVP)	4	B
D	Customer Validation	6	C
E	Hypothesis Validation	3	C
F	Revise MVP	4	D,E
G	Prepare NDA	4	C
H	Find Investment	8	G
I	Launch the Product	1	F,H

Table 1: Activities involved in a project to develop and market a product

(b)   Draw a network diagram to represent the launch of a startup.   [5 Marks]

(c)   Identify the critical path.   [3 Marks]

(d)   According to the diagram, how many weeks will it take to launch the product from the date of start?   [2 Marks]

(e)   Calculate floats for the non-critical activities.   [3 Marks]

(f)   According to the diagram, explain what happens to the launch date in each of the following situations:

   (i)   The product was so successful, investment was found within 7 weeks

   (ii) Hypothesis validation took 6 weeks   [4 Marks]

--- **The End** ---

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CLOSED BOOK EXAM

Attach this sheet to the answer script for part B of this paper.

Index Number:

Answer Sheet for Part A

Question no	Answer (a,b, c or d)
1	
2	
3	
4	
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9	
10	