



**UNIVERSITI KUALA LUMPUR
Malaysia France Institute**

**FINAL EXAMINATION
SEPTEMBER 2014 SESSION**

SUBJECT CODE	:	NCB10202
SUBJECT TITLE	:	ENGINEERING PRACTICE AND PROFESSIONALISM
LEVEL	:	BACHELOR
TIME / DURATION	:	9.00 AM – 11.00 AM (2 HOURS)
DATE	:	31 DECEMBER 2014

INSTRUCTIONS TO CANDIDATES

- 1. Read the instructions given in the question paper CAREFULLY.**
 - 2. This question paper is printed on both sides of the paper.**
 - 3. This question paper consists of FIVE (5) questions.**
 - 4. Answer any FOUR (4) questions.**
 - 5. Write the answers in the answer booklet provided.**
 - 6. Answer all questions in English.**
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THERE ARE 6 PRINTED PAGES IN THIS QUESTION PAPER

INSTRUCTION: Answer FOUR (4) questions only.

Please use the answer booklet provided.

Question 1

The Accreditation Board of Engineering and Technology (ABET) has defines engineering as: “the profession in which a knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgement to develop ways to utilize economically, the materials and forces of nature for the benefit of mankind and society.”

- (a) Explain how the knowledge of mathematical and natural sciences gained by engineering students in university can equip./ prepare them to work in the industry.

(5 marks)

- (b) Discuss why is is important for engineers to consider the economical factor (economics of scale) of a project as mentioned in the engineering definition, above.

(10 marks)

- (c) Regardless of the discipline of engineering, in your opinion, how engineers can contribute to the building and development of a Nation.

(10 marks)

Question 2

Engineers need to develop the ability to apply problem-solving skills when faced with issues or problem that are new to them. Cause and Effect Diagram (Ishikawa/ Fishbone) is one of the most popular problem-solving tools used in the industry.

- (a) Explain the methodology used in Cause and Effect Diagram (Ishikawa/ Fishbone) problem-solving method.

(5 marks)

- (b) Company A is having a problem of high electrical overstress in one of their product.

Studies shows that the causes of the problem are as follows :

- i) Man
 - a. Incompetent Engineer
The engineer having lack or experience, lack of training and lack of motivation
 - b. Operator errors
These operators also having similar experience the engineer have.
- ii) Material
 - a. Lack of good spares
The audit indicated that it have a poor inventory control
 - b. Defective power supplies
The defective power supplies are due to Poor calibration and poor management
 - c. Lack of appropriate tools
- iii) Machine
 - a. Equipment breakdown
The studies indicates that the equipment was poorly in maintenance with the equipment is very old. (15 Years)
 - b. Presence of spikes
This are due to it have contacts issue (wiring) as well as it have AC supply issues
- iv) Methods
 - a. Software problem
It was found out that the software is poorly design and the operator have used the wrong program
 - b. Poor documentation
 - c. Poor test method

- This is due to poor written SOP, Poor quality and the engineers themselves have not enough experience
- d. Poor calibration

Draw a Cause and Effect (Ishikawa/ Fishbone) Diagram to illustrate the problem and all the outcomes of the studies.

(14 marks)

- (c) Explain the Mistake Proofing (Poka Yoke) problem-solving technique used in engineering industry. Provide TWO (2) examples of Mistake Proofing (Poke Yoke) implementation in engineering design and facilities.

(6 marks)

Question 3

Critical thinking is an essential part of creativity because we need critical thinking to evaluate and improve our creative ideas.

(a) Discuss how critical thinking can help engineering students becoming creative.

(8 marks)

(b) Communicating and presenting innovative ideas to others requires skills and practice. Suggest some useful methods to be considered in explaining new ideas to others/ audiences.

(7 marks)

(c) Choosing to enrol/ register in a new academic program like Bachelor of Engineering at UniKL may require potential students to think clearly and rationally about their choices and future. Discuss how engineering students can critically plan for their success in their studies and working life.

(10 marks)

Question 4

Leadership is the ability to motivate and inspire a group to achieve collective and individual goals.

- (a) It is often quoted/ mentioned that leaders should “lead by example”. Discuss FIVE (5) outstanding leadership qualities that best describe the statement.

(10 marks)

- (b) Discuss how communication and teamwork plays an important role in leadership to ensure a successful outcomes, based on the “lead by example” concept.

(15 marks)

Question 5

Errors normally occurs when making scientific measurements. By definition, an error is the difference between the measured value and the true value.

- (a) Define the terms accuracy, precision, systematic error and random error in statistical reporting/ analysis.

(8 marks)

- (b) Propose some steps taken by students to reduce errors in conducting laboratory experiments.

(7 marks)

- (c) Discuss how statistical analysis of experimental/ laboratory results can help student to report the findings made in laboratory report/ submission.

(10 marks)

END OF QUESTION