UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JULY 2010 SESSION

SUBJECT CODE : FFB32402
SUBJECT TITLE : FABRICATION AND APPLICATION ENGINEERING
LEVEL : BACHELOR
TIME / DURATION : 9.00 am – 11.30 am
(2.5 HOURS)
DATE : 21 NOVEMBER 2010

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. Please write your answers on the answer booklet provided.
4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
5. This question paper consists of TWO (2) sections. Section A and B. Answer all questions in Section A. For Section B, answer three (3) questions only.
6. Answer all questions in English

THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.
SECTION A (Total: 40 marks)

INSTRUCTION: Answer ALL questions. Please use the answer booklet provided.

Question 1

(a) A suitable definition of quality audit is 'a systematic and independent examination of the effectiveness of the quality system or of its parts'. An audit is a prime method of obtaining factual information from an unbiased assessment of objective evidence rather than subjective opinion. It can relate to products, processes (e.g. welding) or organizations. List FIVE (5) typical agendas of a comprehensive suppliers audit process.

(5 marks)

(b) A specification is a written description of a product, accompanied by drawings as necessary, in as much detail as is considered essential to its proper definition. The specification may be prepared by the customer or the supplier. State any 5 (five) information that should appear in the specification.

(5 marks)

(c) The importance of design in respect of production costs is paramount. The designer must specify clearly and precisely what shape he is seeking to be fabricated, what materials are to be used, and what levels of dimensional control and weld quality he is seeking. Far too frequently the designer backs off from defining the limits applicable to fabrication, preferring to leave this to the shop floor, since he often does not understand what can be achieved economically.

i. List FIVE (5) roles of a designer with respect to its welded components.

(10 marks)

iii. List FIVE (5) objectives of design reviews.

(10 marks)
Question 2

(a) The International Standards Organization Technical Committee—welding, has proposed four factors to be considered by the designer in fixing the service requirements for each welded joint in a construction. State the **FOUR** (4) factors,

i. ........................................................................................................

ii. ........................................................................................................

iii. ........................................................................................................

iv. ........................................................................................................

(8 marks)

(b) The part played by the designer in the success of a fabrication is most important and, to ensure his conformity, a ‘design review’ is desirable in many cases. Name the **TWO** (2) stages in a review process.

i. ........................................................................................................

ii. ........................................................................................................

(2 marks)
SECTION B (Total: 60 marks)

INSTRUCTION: Choose and Answer THREE questions only. Please use the answer booklet provided.

Question 1

A crane girder assembly is to be erected in a warehouse. A particular attribute of a good designer is to be able to understand the uncertainties which are inherent in much of the data used in everyday engineering. What should be the consideration taken from a designer in the project. Provide your explanations.

The following are the design requirements taken from the specification:

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(20 marks)

Question 2

The most important factor in quality assurance is the human one, partly because its effects permeate design, manufacture, inspection and operational stages. However, much can be overcome by better instructions and procedures, by management and supervisor motivation, and by audits to determine adequacy of procedures and adherence to instructions.

(a) List down the SIX (6) main factors. (6 marks)

(b) Describe any TWO (2) of the main factors in details. (6 marks)
Too often, quality assurance only emerges as a policy issue when governments, users or traumatic situations force managements to consider that which should be a standard business discipline. Provide the 4 (four) questions that need to be asked to the supplier and the purchaser.

(8 marks)

**Question 3**

The design of a successful welded product requires a greater understanding of the fabrication process by the designer than is required for most other manufacturing processes. The reason for this are that the act of welding fuses the two parts irrevocably, and changes the metallurgical structure of the material local to the joint in a way which can render its performance inferior to the parent metal in a number of ways. In addition, the configuration and distribution of the welded joins within the product can affect the manner in which the welding can be done and has implications in terms of distortion. The selection of materials for the welded products requires an attention to the means of welding them so that the material and the joining process are compatible.

(a) What should be included in the course material for welding and associated technologies?

(6 marks)

(b) Most designers obtain their information about the design of welded products from standard specifications. Describe the THREE (3) types of information.

(9 marks)

(c) Engineering drawing is the primary means of communication between the designer and the fabricator. The comprehensiveness and clarity of the drawings must then contribute to the achievement of quality State the responsibility of a designer in indicating welds on drawings.

(5 marks)
Question 4

The function of the product must be clearly and comprehensively described, and attached to this must be the performance requirements. The basis of design will also incorporate some reference to the conceptual means by which the performance will be measured and achieved.

(a) Name the **TWO** (2) types of design.  
(2 marks)

(b) Describe the **TWO** (2) types of design in details.  
(8 marks)

(c) Name the **THREE** (3) parameters that have been recognised in many types of construction.  
(3 marks)

(d) Describe the parameters in details.  
(7 marks)

**END OF QUESTION**