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CONFIDENTIAL

SET A

UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
SEPT 2013 SESSION

SUBJECT CODE	:	**FFB 32402 / FFB 42403**
SUBJECT TITLE	:	**FABRICATION APPLICATION ENGINEERING**
LEVEL	:	**BACHELOR**
TIME / DURATION	:	**(2 ½ HOURS)**
DATE	:	

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) question only.**
6. **Answer ALL questions in English**

THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

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

Question 1

(a) The function of the product must be clearly and comprehensively described, and attached to this must be the performance requirements. These two areas might be thought of simply as ‘What does it do?’ and ‘How much does it do for how long?’

i. State the differences between ‘conceptual design’ and ‘detail design’.

(5 marks)

ii. State the parameters for a welded design that have been recognized in many types of construction.

(9 marks)

(b) The image below is among the most common processes performed in welding inspection works. Name the examination devices that may be used in welding inspection shown in Figure 1 **-** Examination Devices

(4 marks)

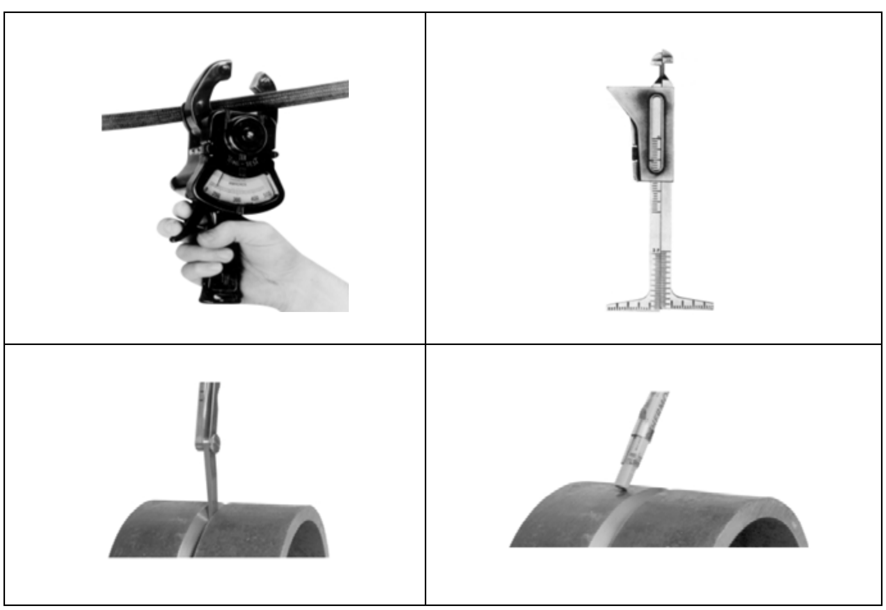

Figure 1 - Examination Devices

Question 2

Discontinuities may be found in the weld metal, heat affected zones, and base metal of weldments made in the five basic weld joint types: butt, T-, corner, lap, and edge joints. When specific discontinuities are located in the weld metal, heat-affected zone, or base metal, the abbreviations WM, HAZ, and BM, respectively, are used to indicate the location.

(a) Fill in the table below for type of discontinuities, location and remarks on the circle areas given in the Figure 2 for a double-V groove weld in butt joint.

No.	Circle area	Type of Discontinuities	Location	Remarks
i.	4			
ii.	5			
iii.	7			
iv.	11			
v.	2a			
vi.	12c			

(18 marks)

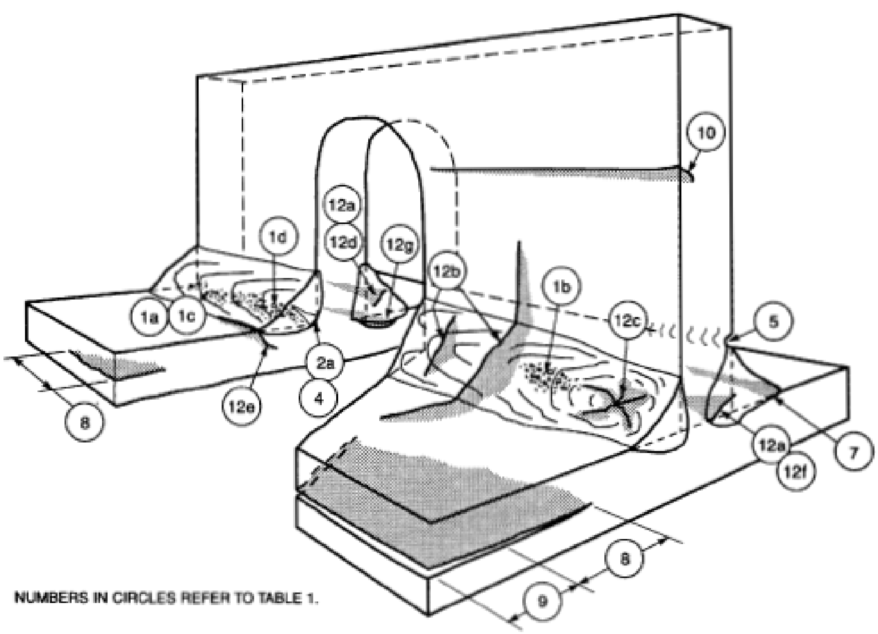

Figure 2- Double-Bevel-Groove Weld in T-Joint

(b) Sketch a sectional view of a concave fillet weld by showing the following.

(i) Concavity

(ii) Theoretical throat

(iii) Size

(iv) Leg

(4 marks)

(c) Match the codes and standards with the purpose as given in the box below.

Nos.	Codes and Standards	Purpose
1.	API 570	
2.	AWS D1.1	
3.	AWS D9.1	
4.	ABS	

(4 marks)

SECTION B (Total: 60 marks)

INSTRUCTION: Answer THREE (3) questions only.
Please use the answer booklet provided.

Question 1

(a) Visual examination reveals surface flaws, and is a valuable indication of weld quality. It is a simple, accessible, low-cost inspection method, but it requires a trained inspector.

(i) State **FIVE (5)** typical action items that requires attention by the visual inspector prior to welding.

(5 marks)

(ii) List **FOUR (4)** typical action items that requires attention by the visual inspector upon completion of welding.

(4 marks)

(iii) List **SIX (6)** typical discontinuities found at the surface of a completed welds.

(6 marks)

(iv) Sketch a groove joint and indicate where ‘weld reinforcement’ is.

(5 marks)

Question 2

(a) When a need for calibration, verification or validation of equipment has been identified then calibration, verification or validation shall be carried out once a year, unless otherwise specified.

(i) State **THREE (3)** situations where there is a need for calibration, verification or validation of equipment.

(9 marks)

(ii) State **THREE (3)** requirements whereby calibration, verification and validation can be omitted entirely.

(6 marks)

(iii) Choose **ONE (1)** of the requirements as in question 2A (ii) and describe it in further details.

(5 marks)

Question 3

(a) The importance of design in respect of production costs is paramount. The designer must specify clearly and precisely what shape he is to seeking to be fabricated, what materials are to be used, and what levels of dimensional control and weld quality he is seeking.

(i) Provide a simplified outline of a quality assurance route in welded fabrications.

(5 marks)

(ii) Describe the role of a designer with respect to welded components.

(5 marks)

(iii) State the objective of a design reviews.

(10 marks)

Question 4

(a) The most important aspect of any contract is to determine exactly what the fabricator is undertaking to manufacture. If this is not clearly defined and understood by all parties no amount of effort in the workshops can make the activity a success. **Figure 3** shows the sequence of operations in producing an estimate for fabrications adopted by large manufacturer.

(i) State the responsibility of the estimating department and provide and examples.

(10 marks)

(ii) Provide **FIVE (5)** examples of poor access for manual welding resulting from design requirements.

(10 marks)

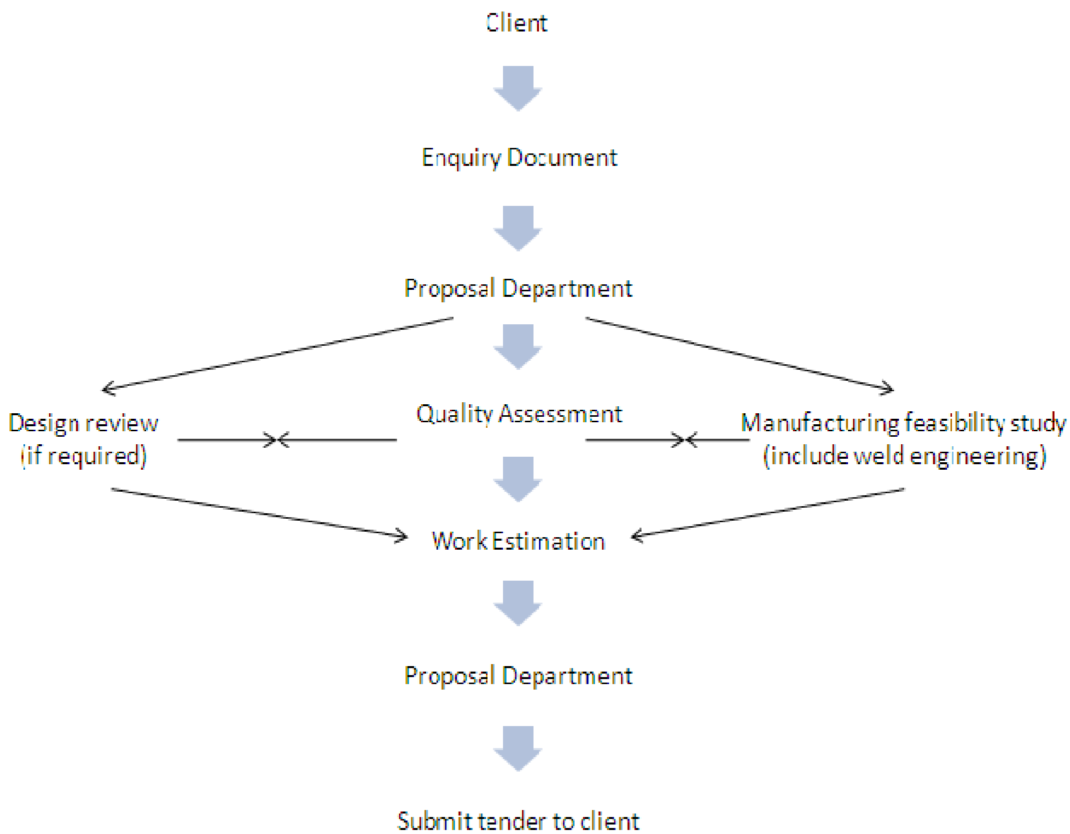

Figure 3 - Sequence of Operations

END OF QUESTION