

Ollscoil na hÉireann, Gaillimh
National University of Ireland, Galway

Semester II Examinations, 2004/2005

Exam Code(s)	1BD1
	1BD2
	1BD3
Exam(s)	H. Dip Systems Analysis
	H. Dip Systems Analysis (part time)
Module Code(s)	MS862
Module(s)	Applied Systems Analysis
Paper No.	1
Repeat Paper	Special Paper
External Examiner(s)	Professor S. Carlsson
Internal Examiner(s)	Professor J. F. Collins
	Mr M. Scott

Instructions: Answer **three** questions
 All questions carry equal marks.

Duration	2 hrs
No. of pages	4

Requirements:

Handout	
MCQ	
Statistical Tables	
Graph Paper	
Log Graph Paper	
Other Material	
Department(s)	Accountancy and Finance

Question 1

A new online order entry system is currently being developed in your organisation. As part of the implementation procedures, users of the new system will require a number of training activities. The following table lists the activities, their duration and the most appropriate sequence.

Activity	Precedence	Estimate (days)
A	-	4
B	-	3
C	A	6
D	B	8
E	C, D	3

- (a) Construct a CPM/PERT diagram for this project. Identify the critical activities (the critical path) of the project and the float time for the non-critical activity(s).
(12.5 Marks)
- (b) Explain how a Gant chart might also be of use in this context and identify any extra information which would then be required.
(8 Marks)
- (c) Identify the various core skills or competencies that a project manager needs to be effective and explain how they apply to project management.
(12.5 Marks)

Question 2

- (a) "One to one interviewing is the most widely used fact-gathering technique. It can be a productive and revealing means of determining end-user requirements and can yield direct feedback, essential in developing acceptable systems. In practice however, interviewing is costly and resource intensive, used most often in an arbitrary manner." Discuss this statement.
(20 Marks)
- (b) What is your view of the effectiveness of diagramming techniques such as data flow diagrams and entity relationship diagrams for communications with users in interview sessions?
(13 Marks)

Question 3

- (a) The IS Manager at Small Planet Limited has proposed two alternative groupwork support systems (A and B). System A anticipates significant changes in the installed system in the third year. Thus there will be two development phases. If System B is chosen all development costs are incurred at the beginning. Using estimated costs and benefits detailed below, advise the company on the relative merits of each alternative using Payback Analysis, Return on Investment, Net Present Value and your own judgement. (Express all costs and benefits in present value terms, assuming a discount factor of 3%).

SYSTEM A	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Costs:						
Development Costs	266,000	0	0	90,000	0	0
Operation & Maintenance	0	58,000	78,000	80,000	105,000	105,000
Benefits						
Operational Benefits	0	195,000	185,000	100,000	210,000	230,000
SYSTEM B	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Costs:						
Development Costs	600,000	0	0	0	0	0
Operation & Maintenance	0	100,000	110,000	130,000	130,000	125,000
Benefits						
Operational Benefits	0	150,000	400,000	400,000	380,000	280,000
Discount Factors for 3%	1.000	0.971	0.943	0.915	0.888	0.863

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(25 Marks)

- (b) Briefly describe other feasibility issues which would be relevant for a company planning a major information systems development project?

(8 Marks)

Question 4.

AutoParts is a new company providing a range of basic mechanical services to customers. These services include oil changes, replacement of windscreen wipers, oil and air filter changes and exhaust replacements. The invoice contains the charges for all parts used and a standard labour charge. When the invoice is presented customers

pay cash, use a credit card or write a cheque. AutoParts database is designed to keep track of all components in all transactions.

AutoParts must also maintain control of its parts inventory and if parts reach their minimum-on-hand quantity, the part must be ordered from an appropriate vendor. Periodically, AutoParts mails updates to customers, based on the date of the car's service. AutoParts also tracks each customer's car mileage.

You are required to draw the Entity Relationship Diagram for the system described above. Specify all entities, relationships and cardinalities, making every effort to adhere to normalization rules. Also identify attributes for each entity, including primary and foreign keys. Clearly state any assumptions that you make.

(33 marks)

Question 5.

Projects, Inc., is an engineering firm with approximately 500 engineers of different types. The company keeps records on all employees, their skills, projects assigned, and departments worked in.

New employees are hired by the personnel manager based on data in an application form and evaluations collected from other managers who interview the job candidates. Prospective employees may apply at any time. Engineering managers notify the personnel manager when a job opens and list the characteristics necessary to be eligible for the job. The personnel manager compares the qualifications of the available pool of applicants with the characteristics of an open job, then schedules interviews between the manager in charge of the open position and the three best candidates from the pool.

After receiving evaluations on each interview from the manager, the personnel manager makes the hiring decision based upon the evaluations and applications of the candidates and the characteristics of the job, and then notifies the interviewees and the manager about the decision. Applications of rejected applicants are retained for one year, after which time the application is purged. When hired, a new engineer completes a nondisclosure agreement, which is filed with other information about the employee.

For the project described above you must produce a levelled set of data flow diagrams (DFDs):

- Context Diagram
- Systems Diagram (Level Zero)

Clearly indicate all assumptions that you make: this includes assumptions to overcome ambiguities or incomplete details, as well as any ideas or expectations which impact upon the robustness and flexibility of the models.

(33 marks)