

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

SEMESTER EXAMINATION
DURATION: 1 Hour 30 Minutes

SUMMER SEMESTER, 2016-2017

FULL MARKS: 75

CSE 4407: System Analysis and Design

Programmable calculators are not allowed. Do not write anything on the question paper.
 There are 4 (four) questions. Answer any 3 (three) of them.
 Figures in the right margin indicate marks.

- a) The Rock 90 Gym has a paper method of maintaining its records that it now realizes will not do with its high enrolment and the low cost of modern day technology. The CEO Mr. John Snow knows nothing about the modern technology therefor Mr. Lannister has been hired as their system consultant to see what needs to be done to computerize their system. After a series of interviews with key personnel in The Rock 90, he has found out that their paper processing system works as follows: 10
- Prospective members come in in person, either as guests of a member or via promotions in the newspaper. If they decide to join the club, they fill out a membership application. Sophie Turner takes their application and places it in a folder which she files by members last name. She also fills out a membership card which she gives to the new member and then creates a member-on-file card. The member-on-file card goes into a card file that is kept at the Health Club's entrance. If a member forgets their membership card, all they need to do is show another form of id. The person at the reception desk will check the member-onfile cardbox. If a match is found, the individual is permitted entrance. The member-on-file card also lists the nature of the membership, i.e., whether free exercise clothes, lessons or massages are included in the membership. At the beginning of every month Sophie Turner goes through the files and pulls out those members whose membership is about to expire within two months. She generates an automatic form letter on her electronic typewriter to send to these individuals and encloses a renewal card in her mailing. She also pulls out the files of all the memberships that have expired, pulls out their member-on-file card and throws both in the trash.

Draw the following dataflow diagrams:

- i. Context Diagram
- ii. Diagram 0

Note: If any process in diagram 0 requires further breakdown into some other child process then draw the corresponding Diagram N (N is the parent process number.)

- b) What are the ways of acquiring computer equipment? Explain with advantages and disadvantages. 8
- c) Explain Martin's pioneering approach to RAD. 7

2. a) Draw an ER diagram to model the application with the following assumptions:

- i. Each customer has a name, permanent address, date of birth, auto generated age and a social security number. Address consists of city, street and house.
- ii. Each customer can have multiple phone numbers, and the same phone number may be shared by multiple customers.
- iii. A customer can own multiple accounts, but each account is owned by a single customer.
- iv. Each account has an account number, a type (such as saving, current, etc) and a balance.
- v. The bank issues an account statement for each account and mails it to its account owner every month. As time goes on, there will be multiple statements of the same account. Each statement has an issued date and a statement ID. All the statements of the same account have different statement IDs, but two different accounts could have statements with the same statement ID. For example, it is possible that account A has a statement with ID '123', while account B has another statement with the same ID '123'.

b) With the aid of a Fishbone Diagram show what are the things that can go wrong in developing a system.

c) List and briefly define the different phases of system development life cycle (SDLC).

3. a) Explain the different ways of organizing interviews. Imagine you have to interview a group of people who are introvert by nature. However they tend to express themselves once they are acclimatized. Which interview method will you choose?

b) Draw PERT diagram for the following activities and find out the critical path. Draw the Gantt chart as well. For drawing Gantt chart assume you are in week 8 and you may have valid parallel activity in your diagram.

| Activity | Predecessor | Duration |
|----------|-------------|----------|
| A | None | 6 |
| B | A | 4 |
| C | A, B | 8 |
| D | A, B, C | 7 |
| E | A, B | 2 |
| F | D, E | 6 |
| G | E, F, D | 11 |
| H | G, F | 5 |
| I | None | 5 |
| J | I | 12 |

c) What is feasibility study? Explain three areas of feasibility.

4. a) What is prototyping and what are the different types of it? According to you which of the following two is better:

- i. Prototyping as an alternative to SDLC.
- ii. Prototyping with SDLC.

Back up your answer with valid reasoning.

b) Explain different type of measurement scales along with three main problems.

c) Write short notes on the following:

- i. Agile modeling
- ii. Scrum
- iii. COTS
- iv. Break even analysis