Consider ONLY FIVE of the following medical devices:
1. Patient monitor
2. Ventilator
3. Hemodialysis machine
4. DC shock defibrillator
5. Electrosurgical unit (ESU)
6. Ultrasound imaging
7. Fetal Doppler
8. Hearing aid
9. Bone mineral densitometry (BMD)
10. Steam sterilizer

a. Describe clearly the theory of operation of each in English. *(1 Page)*

b. Describe clearly the theory of operation of each in Arabic. *(1 Page)*

c. Describe in one page their operation in clinical use (i.e., how the clinician uses them). *(1 page)*

d. Based on a site visit, provide specific comments about the problems facing the use and maintenance of each of these devices in the actual local environment in the site you visited. *(1 page)*

e. Provide your comments about the technology used in the implementation of each device (e.g., hardware or software) and your possible suggestions / innovations in their respective areas. *(1 page)*

f. Virtual design of the device: provide your own preliminary design of ONLY ONE of the devices that could serve as the starting point for local manufacturing of a prototype of it including detailed block diagram, resources or technology to be used to design each block (e.g., electronic circuit or software technology available now), required test equipment to verify performance, analysis of expected cost, and competition analysis (i.e., comparison to other devices currently in the market). *(10 pages)*

Important Notes:
1. You are required to submit by January 1, 2010. No late submissions will be accepted.
2. The project evaluation will amount to 10 points in your term grade.
3. Number of students in the group should include a maximum of 10 students. Be advised that all projects will be graded the same regardless of how many students are on it.
4. You are required to submit the project in electronic format only (i.e., on a CD – no hardcopies will be accepted). The project output should include a report in PDF format and a 20 minute presentation in PowerPoint for each group to be given during the oral examination of the group. No modifications to the report or the presentation will be allowed after the deadline.
5. You must use your own words in the report with clear reference citation. "Copy-Paste" items will not be accepted.
6. Plagiarism will not be tolerated and will result in a failing grade in this course for all members of the project group.