

1-Write true or false: (Score 15)

- 1) Medical technology life cycle is subdivided into two sub-cycles based on the sequence of the stages.
- 2) The purchase contract document is prepared by the purchasing department and reviewed by TAWG.
- 3) The clinical engineer interfaces with the vendors in cost and economics.
- 4) The location of OR should be easily accessible from surgical wards.
- 5) The technical evaluation involves analyzing the performance of the device
- 6) The inside pressure of operating room is a positive pressure.
- 7) The tourniquet is used to deliver an electric shock to the heart.
- 8) The hybrid OR includes the advanced imaging technologies.
- 9) An abbreviated service history as well as general information of the medical device should be included in the inventory.
- 10) All journeys in OR should be made from dirty to clean areas.
- 11) The organizational structure of small CE department consists of three levels.
- 12) The role of PSC committee is to ensure standards compliance for used technologies and supplies.
- 13) The doors of OR should be recessed type.
- 14) The role of the clinical engineer in the hospital began in the late 1960's.
- 15) The calibration is one activity of corrective maintenance.

2- Choose the most correct answer (Score 15)

- 1- A request for proposal should include
 - a) The vendor name
 - b) The price of equipment
 - c) Tender instructions
 - d) Equipment brand
- 2- Medical technology acquisition sub-cycle incorporates
 - a) Monitoring
 - b) Training
 - c) Maintenance
 - d) Planning
- 3- In X hospital, the reliability of a piece of medical equipment that was purchased in 2002 cost of 100000\$ is very low. The device now has a failure, and in order to repair, it will cost 40000\$ approximately. Which is the best decision in such case?
 - a) Repair it
 - b) Dispose it
 - c) A and B
 - d) None of all
- 4- The device has two types of electrodes; monopolar and bipolar. What is the device?
 - a) Defibrillator
 - b) Electrosurgical unit
 - c) Electrocardiogram

- d) Tourniquet
- 5- A plan is good or generally acceptable if it contains all of the following characteristics EXCEPT
- a) Is in line with a clearly stated objective
 - b) Does not allow for alternate courses of action
 - c) Represents an integrated whole and not an isolated entity
 - d) Indicates the procedural method for putting the plan into action
- 6- Preventive maintenance frequency is based on
- a) Manufacturer's recommendation
 - b) Equipment service history
 - c) Equipment knowledge
 - d) All of the above
- 7- A replacement decision of medical equipment is made based on the following criteria EXCEPT
- a) Increased maintenance costs
 - b) Technology obsolescence
 - c) Spare parts shortage
 - d) Consistent reliability
- 8- The medical gases planning in OR is considered one of
- a) Environmental criteria
 - b) Technical criteria
 - c) Functional criteria
 - d) Ergonomic criteria
- 9- The hospital signs a contract with X Company in order to provide the maintenance for ultrasound equipment including all spare parts excluding the probe. Which is the type of this contract?
- a) Full service contract
 - b) Partial service contract
 - c) Labor service contract
 - d) Parts service contract
- 10- The relative humidity requirements range of OR are
- a) 30 % - 60 %
 - b) 20 % - 60 %
 - c) 40 % - 70 %
 - d) 30 % - 80 %
- 11- Key stakeholders in HTM include
- a) Vendors
 - b) External agencies
 - c) Patients
 - d) Administration staff
- 12- In acquisition process, negotiation in price is forbidden in
- a) Direct order
 - b) Practicing
 - c) Tendering
 - d) None of all

- 13- Verification of accessories and electrical safety test are examples of activities that should take place in
- Planning
 - Maintenance
 - Incoming inspection
 - Training
- 14- In planning, identification of "why we exist" is equivalent to
- Vision identification
 - Mission identification
 - Goals identification
 - Performance identification
- 15- The medical gas is used to drive surgical instruments. The gas is
- Oxygen
 - Medical air
 - Nitrous oxide
 - Surgical air

3- Answer the following questions (Score 20)

- What are the main steps of acquisition process? (2)
- What are the main types of service modalities? (2)
- What are the advantages and disadvantages of service contract? (2)
- List OR support areas. (3)
- Draw a block diagram that depicts the clinical engineering management process. (3)
- Mention the functions of TAWG committee. (3)
- State the commissioning and acceptance criteria of medical equipment that should be listed in purchasing contract. (2)
- State the possible usages of scrapped medical equipment. (3)