

Course No: EQUIP 5335
Course Title: الأنظمة الطبية العلاجية والمساندة
Date 9/1/2019
No. of Questions: (5)
Time: 2 hours
Using Calculator (Yes)

University of Palestine



Final Exam
2019-2018
Total Grade: 50

Instructor Name: Eng. Abdulhamid seyam
Student No.: _____
Student Name: _____
College Name: Engineering
Dep. / Specialist: Biomedical Eng.
Using Dictionary (No)

Question One:

12 Marks

Choose the correct (one and only one) answer for each.

1- Short Wave diathermy Frequency having Stronger Electric field

- a. 13.56 MHz
- b. 27.12 MHz
- c. 10 MHz
- d. 15.57 MHz

2- The most common type of the pumps that used in today's infusion Pumps

- a. Rotary Peristaltic Pumps
- b. linear Peristaltic Pumps
- c. Piston Pumps
- d. Cassette pumps

3- Its located at the Last stage of the infusion Pumps is

- a. Pressure sensor
- b. Air- in – Line sensor
- c. A drip sensor
- d. Upper tubing Retainer

4- The maximum volume of air inhaled from the point of maximum expiration.

- a. IC
- b. FRC
- c. IVC
- d. IRV

5- Amount of work required to move air through the lungs .

- a. Compliance
- b. Expandability
- c. Resistance
- d. Elastance

6- Valve that releases gases to the scavenging system.

- a. Two-stage Valve
- b. Flow control valves
- c. Adjustable Pressure Limiting valve
- d. Proportioning system.

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7- Specially designed valves controlled by oxygen pressure

- a. The Rotameter
- b. Fail-safe Valves
- c. Single-stage Valve
- d. Adjustable Pressure Limiting valve

8- Activated by high/low conductivity, high/low PH

- a. Blood-leak detector
- b. Bypass system
- c. De-aeration
- d. Dialysate proportion system

9- Especially important for the purification of water for the production of dialysate

- a. Diffusion
- b. Ultrafiltration
- c. Reverse osmosis
- d. Peritoneal dialysis

10- Provide aerosolized medication to the patient

- a. Syringe pump
- b. Infusion pump
- c. Vaporizer
- d. Nebulizer

11- Heart disorders treated with pacemakers

- a. heart valve
- b. Bradycardia
- c. Tachycardia
- d. Fibrillation

12- Ventilation Mode Facilitate patient transition from full ventilator support to partial support

- a. CPAP
- b. CMV
- c. SIMV
- d. PSV

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Question Two

8 Marks

Indicate for each statement below whether it is true or false:

- 1- [True, False] the Periphery of SWD Capacitor Electrodes has higher current density than the center .
- 2- [True , False] Increasing the space between SWD Pads electrodes will increase the current density
- 3- [True , False] Induction electrodes of the SWD creates a stronger magnetic field than electrical field
- 4 -[True , False] DISS prevents accidental rearrangement of gases cylinders
- 5- [True , False] Fail-safe valves do not prevent administration of a hypoxic mixture.
- 6- [True , False] Accuracy of the rotameter is within $\pm 12\%$.
- 7- [True , False] the diaphragm muscles contract During inhalation while relax during exhalation
- 8- [True , False] Proportioning systems of anesthesia the maximum oxygen concentration is maintained at 25%.

Question Three:

17Marks

Solve the following questions :

A- List the Common Features of the Infusion Pumps [4]

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B- List the Factors That Influence Vaporizer Output in the anesthesia machine [5marks]

C- Compare between volume limited versus pressure limited ventilation modes [5marks]

D- List the parts of the blood circuit of hemodialysis machine [3 Marks]

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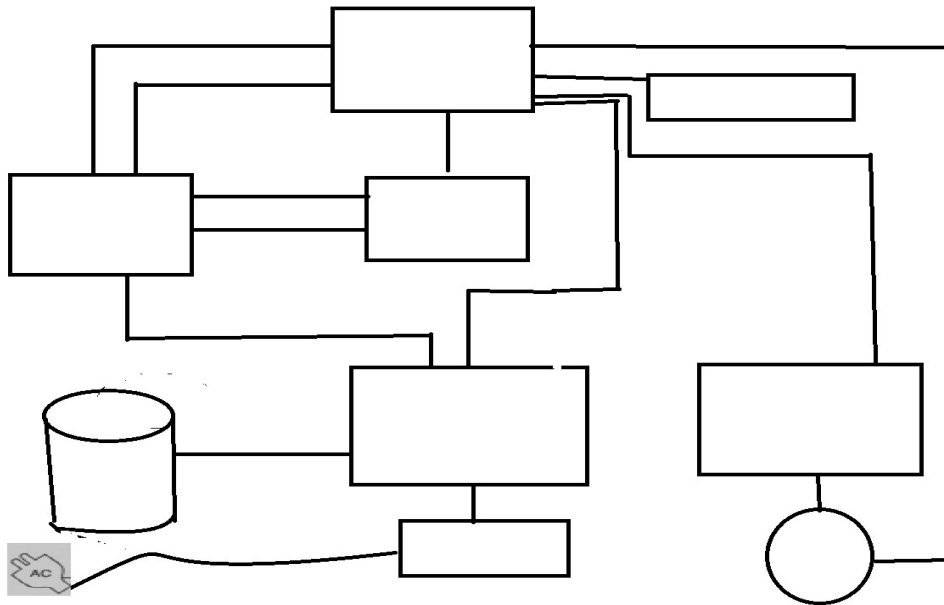
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Question Four:

7 Marks

- Complete infusion Pump diagram , Name each block , show directions arrows and the data for each controlling lines on the diagram below .



Question Five:

6 Marks

- A- Draw the output graph of spirometer indicate on the graph the lungs volumes and capacitance .[3 Marks]

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B- Draw Block functional block diagram for the ventilator[3 Marks]

End of Questions
Good Luck