

**DIPLOMA IN CRITICAL CARE TECHNOLOGY****SECOND YEAR****PAPER III –CRITICAL CARE TECHNOLOGY AIRWAYS, O<sub>2</sub> THERAPY,  
CARE OF PATIENT ON VENTILATOR, EQUIPEMNT MAINTENANCE AND  
TROUBLE SHOOTING***Q.P. Code : 841213***Time: Three hours****Maximum: 100 Marks****Answer All Questions****I. Elaborate on:****(3 x 10 = 30)**

1. What are the various modes of mechanical ventilation? Describe SIMV in detail.
2. A 60 year old patient has a GCS of 5T/15. He is on a FiO<sub>2</sub> of 0.3 and a PEEP of 10cm H<sub>2</sub>O, on SIMV with a machine set rate of 0 and a pressure support of 15cmH<sub>2</sub>O. He has a PaO<sub>2</sub> of 100mmHg, pH = 7.40 and PaCO<sub>2</sub> = 60mmHg. His total respiratory rate is 40 /min. He has had a nasogastric feed 1 hour before. His cuff leak is positive and his forced vital capacity is 1000ml.  
Would you extubate this patient? What are the factors.
  - a) Against extubating the patient
  - b) In favour of extubating the patient.
3. Bains circuit - draw a diagram, label parts and describe its functioning.

**II. Write notes on:****(10 x 5 = 50)**

1. Measures to prevent ventilator associated pneumonia
2. Describe steps in the use of a defibrillator
3. What are the various types of oxygen delivery systems?
4. Describe the concept of PEEP with the help of diagrams.
5. A patient is on SIMV with a tidal volume of 500ml, Pressure support of 20cmH<sub>2</sub>O and a PEEP of 8cmH<sub>2</sub>O. The ventilator starts alarming because the peak inspiratory pressure is 40cmH<sub>2</sub>O. What are the possible causes of this alarm? How will you manage the problem?
6. How will you prepare to transport a mechanically ventilated patient?
7. Describe the uses of oropharyngeal and nasopharyngeal airways with diagrams.
8. Steps of endotracheal suctioning
9. Approach to hypoxia in a ventilated patient
10. Ventilator settings for ARDS.

**III. Short answers on:****(10 x 2 = 20)**

1. Indications for NIV.
2. Contents of intubation tray.
3. Causes of low pressure alarm in invasive mechanical ventilation.
4. Draw a pressure time graph of a patient on volume controlled ventilation and label the parts.
5. Draw a 2-bottle system for a patient who has had a pneumothorax.
6. Advantages and disadvantages of closed suctioning.
7. Conditions where pulse oximetry can give false readings.
8. Bernoulli's principle.
9. Classify humidification devices.
10. Parameters to monitor before, during and after a tracheostomy.

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