Answer **ALL** questions

1. Define preload and afterload of the heart. Explain how positive pressure mechanical ventilation affects the preload, afterload and cardiac output.

2. Explain how arterial pressure readings from an oscillometric cuff (Dinamap®) over the right brachial artery may differ from that of a pressure transducer connected to a catheter in the left radial artery of the same patient.

3. Explain how the cerebral perfusion is maintained when a healthy adult stands up from a supine position.

4. Compare and contrast capnography using mainstream and sidestream analysers.

5. Describe the cough reflex. Briefly explain how coughing is modified in an awake person breathing through an endotracheal tube.

6. List the primary causes of arterial hypoxaemia. Explain the effects of breathing 100% oxygen on the arterial partial pressure of oxygen for each cause.

7. Briefly outline the functions of the hypothalamus.

8. Describe the roles of mast cells in all types of anaphylactic reactions.

9. Describe the physiological control of plasma calcium concentration.

10. Describe the factors that control aldosterone secretion.

11. Describe the changes in Na$^+$ and K$^+$ conductance during the action potential of a nerve.

12. Describe how the kidney handles the excretion of potassium.