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MANIPAL UNIVERSITY

MD (ANAESTHESIOLOGY) DEGREE EXAMINATION – APRIL 2017

SUBJECT: PAPER I: BASIC SCIENCES AS APPLIED TO ANAESTHESIOLOGY

Monday, April 03, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

✍ Answer ALL the questions.

✍ Answer to the point as padding of answers will not fetch extra marks.

✍ Illustrate your answer with diagrams where appropriate.

✍ Essay Questions:

1. Define the terms Bohr effect, double-Bohr effect and Hamburger's phenomenon. Discuss the processes by which carbon dioxide is carried in the blood from the tissues to the lungs.
(15 marks)

2. Define loading dose and context-sensitive half-life of an intravenous anaesthetic agent. Discuss the similarities and differences between propofol and etomidate with respect to distribution half life, elimination half life, clearance, volume of distribution and protein binding.
(15 marks)

3. Write briefly on:

3A. With the help of appropriate diagrams, describe the coronary circulation. Discuss the factors that determine the myocardial oxygen balance.

3B. Describe the electrophysiologic basis of the different phases of the action potential of cardiac pacemaker tissue.

3C. Describe the Henderson-Hasselbalch equation. Write about the buffering systems in body fluids that help in maintaining acid-base homeostasis.

3D. List the biochemical and physiological functions of the liver. Discuss the role of the liver in drug metabolism and excretion.

3E. Define minimal alveolar concentration (MAC), MAC awake, MAC-EI and MAC-BAR. Enumerate the factors that affect the minimal alveolar concentration of an anaesthetic.

3F. With the help of diagrams, explain the following pharmacologic concepts – *full agonist, partial agonist, neutral agonist and inverse agonist*.

3G. Describe the oscillotonometric principle of measuring blood pressure. Mention how cuff size can influence the measured blood pressure.

3H. In the context of vaporisers, describe the meaning of the term "pumping effect". What changes in vaporiser design help to minimise/prevent pumping effect?

3I. Describe the anatomy of the sacral canal including relevant surface anatomy. Describe the technique of performing a caudal epidural anaesthesia in a 3-year old child weighing 12 kilogram for inguinal herniotomy.

3J. Mention the nerves that are blocked while performing ankle block and illustrate with appropriate diagrams the area innervated by each nerve.

(7 marks × 10 = 70 marks)



MANIPAL UNIVERSITY**MD (ANAESTHESIOLOGY) DEGREE EXAMINATION – APRIL 2017****SUBJECT: PAPER II: ANAESTHESIA IN RELATION TO ASSOCIATE SYSTEMIC DISEASES**

Tuesday, April 04, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

- ✍ **Answer ALL the questions.**
- ✍ **Answer to the point as padding of answers will not fetch extra marks.**
- ✍ **Illustrate your answer with diagrams where appropriate.**

✍ Long Essays:

1. Describe how you will resuscitate a neonate born following caesarian section with an Apgar score of 2.

(15 marks)

2. A 30-year old lady is on Tab Prednisolone 15 mg twice a day for the past 6 months for idiopathic thrombocytopenic purpura. Her platelet count is $35,000/\text{mm}^3$. Discuss the anaesthetic management of this patient scheduled for elective splenectomy.

(15 marks)

3. Write briefly on:

- 3A. Central neuraxial blockade in a pregnant lady
- 3B. Amniotic fluid embolism
- 3C. Interscalene brachial plexus block
- 3D. EMLA cream
- 3E. Role of nonsteroidal anti-inflammatory agents in postoperative pain management
- 3F. Minimum effective analgesic concentration
- 3G. End organ damage due to uncontrolled hypertension
- 3H. Advantages of regional techniques for surgery in a diabetic patient
- 3I. Anaesthetic considerations in a 2-year old boy posted for squint surgery
- 3J. Infraorbital nerve block

(7 marks × 10 = 70 marks)



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MANIPAL UNIVERSITY

MD (ANAESTHESIOLOGY) DEGREE EXAMINATION – APRIL 2017

SUBJECT: PAPER III: ANAESTHESIA IN RELATION TO SUB SPECIALITIES

Wednesday, April 05, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

- ✘ Answer ALL the questions.
- ✘ Answer to the point as padding of answers will not fetch extra marks.
- ✘ Illustrate your answer with diagrams where appropriate.

✘ Essay Questions:

1. A 60-year old man with a left middle cerebral artery aneurysm is scheduled for clipping of the aneurysm the day after a bleed. Describe the perioperative management of this patient who has a Glasgow Coma Score of 12/15, with special emphasis on the complications likely to be encountered during the procedure.

(15 marks)

2. Outline the preoperative assessment and anaesthetic management a 1-day old neonate scheduled for repair of tracheoesophageal fistula, placing special emphasis on the problems anticipated during induction of general anaesthesia.

(15 marks)

3. Write briefly on:

3A. Recent guidelines regarding antiplatelet therapy in a patient with a coronary stent posted for an elective surgical procedure.

3B. Pathophysiology of aortic stenosis and its anaesthetic implications.

3C. Intercostal chest drainage systems.

3D. Video-assisted thoracoscopic resection of emphysematous bullae.

3E. Relative merits and demerits of general anaesthesia versus central neuroaxial blockade for transurethral resection of prostate.

3F. Anaesthetic management of a 45-year old patient with bilateral renal calculi and a history of anuria for 2 days (blood urea 120 mg.dL^{-1} , serum creatinine 5 mg.dL^{-1} , normal serum sodium and potassium levels) scheduled for bilateral stenting of ureters.

3G. Intravenous fluid therapy in children.

3H. Options for anaesthetic induction in children.

3I. Clinical features and management of malignant hyperpyrexia.

3J. Occupational hazards faced by an anaesthesiologist.

(7 marks \times 10 = 70 marks)



MANIPAL UNIVERSITY**MD (ANAESTHESIOLOGY) DEGREE EXAMINATION – APRIL 2017****SUBJECT: PAPER IV: INTENSIVE CARE MEDICINE, PAIN MEDICINE AND
RECENT ADVANCES**

Thursday, April 06, 2017

Time: 14:00 – 17:00 Hrs.

Max. Marks: 100

- ✍ **Answer ALL the questions.**
- ✍ **Answer to the point as padding of answers will not fetch extra marks.**
- ✍ **Illustrate your answer with diagrams where appropriate.**

✍ Essay Questions:

1. Briefly outline the clinical and laboratory criteria for weaning a patient being mechanically ventilated for respiratory failure.
(15 marks)
2. Discuss the evaluation and management of a difficult airway.
(15 marks)
3. **Write briefly on:**
 - 3A. Compare and contrast the differences in recent guidelines for adult and paediatric basic life support.
 - 3B. Management strategy in a case of pulseless electrical activity.
 - 3C. Indications, controversies and contraindications involving intraoperative cell salvage.
 - 3D. Pre-hospital and intra-hospital care of a victim with polytrauma in haemorrhagic shock.
 - 3E. Multiorgan dysfunction syndrome.
 - 3F. Diagnosis and management of pulmonary aspiration of gastric contents.
 - 3G. Reflex sympathetic dystrophy (CRPS I)
 - 3H. Stellate ganglion block.
 - 3I. Illustrate with examples the use of the following diagrams in research – bar diagrams, scatter diagrams and box-whisker plots.
 - 3J. Magnesium sulphate in anaesthesia and intensive care.

(7 marks × 10 = 70 marks)

