

MANIPAL UNIVERSITY

DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – APRIL 2008

SUBJECT: PAPER I: BASIC SCIENCES AS APPLIED TO ANAESTHESIOLOGY

Tuesday, April 01, 2008

Time: 3 Hrs.

Max. Marks: 100

- ✍ **Be brief in your answers, padding your answers will not get you any extra credit.**
✍ **Illustrate your answer with clearly labeled diagrams where appropriate.**

1. With the help of a labelled diagram, discuss the electrical and mechanical events of the cardiac cycle.
(10 marks)
2. Explain the meaning of the terms *static compliance*, *dynamic compliance*, *frequency-dependant compliance*, *airway resistance* and *time constant*.
(2×5 = 10 marks)
3. Discuss the factors that maintain normal lower oesophageal sphincter tone. How do drugs used in the perioperative period affect lower oesophageal sphincter tone?
(4+6 = 10 marks)
4. Discuss the current applications of transmucosal drug delivery in anaesthetic practice.
(10 marks)
5. List the drugs (with dosage) that can be used to treat bronchospasm. Describe their mechanism of action.
(5+5 = 10 marks)
6. Describe the physical principles underlying temperature monitoring in anaesthetic practice.
(10 marks)
7. What is static electricity? Describe the implications of static electricity in the operation theatre environment and how are these hazards minimised? How is the electrical supply in the operation theatre different from domestic electrical supply?
(2+6+2 = 10 marks)
8. Describe the anatomy of the coronary circulation. Explain the meaning of the term “dominant coronary artery”.
(7+3 = 10 marks)
9. Discuss the factors that affect the extent of blockade obtained during subarachnoid anaesthesia.
(10 marks)
10. Describe the anatomy and technique of performing ankle block. What are the contraindications to the performance of an ankle block?
(3+4+3 = 10 marks)



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DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – APRIL 2008

SUBJECT: PAPER II: CLINICAL ANAESTHESIOLOGY

Wednesday, April 02, 2008

Time: 3 Hrs.

Max. Marks: 100

- ✍ **Be brief in your answers; padding your answers will not get you any extra credit.**
- ✍ **Illustrate your answer with clearly labeled diagrams where appropriate.**
1. Discuss the preoperative evaluation of cardiac function in a patient with long standing hypertension.
(10 marks)
 2. Discuss the preanaesthetic evaluation and preparation of a 42 year male with bronchiectasis of the right lower lobe scheduled for right lower lobectomy. Mention (giving reasons) your plan for airway management in this patient.
(8+2 = 10 marks)
 3. Discuss the preoperative evaluation and intraoperative management of a 1 year old child with hydrocephalus scheduled for ventriculoperitoneal shunt.
(2+8 = 10 marks)
 4. A twenty eight year old ASA I third gravida with bad obstetric history is scheduled for a cervical encirclage at 15 weeks of gestation. Discuss the anaesthetic considerations and your plan for anaesthetic management.
(5+5 = 10 marks)
 5. Present a plan for the optimal perioperative management of a 6 month old child weighing 5 kg scheduled for correction of hypospadias.
(10 marks)
 6. A 55 year old man with a vocal cord tumour presents with minimal stridor and is scheduled for microlaryngeal surgery. Discuss the airway management options available for this procedure.
(10 marks)
 7. Discuss the preoperative evaluation, intraoperative and postoperative management of a 40 year old patient diagnosed to have stag horn calculus in the right kidney scheduled for percutaneous nephrolithotomy.
(2+6+2 = 10 marks)
 8. Describe the type, quantity and rate of administration of intravenous fluids that you would use during the first 12 hours to resuscitate a 20 year old woman who has sustained 65% burns.
(10 marks)
 9. Discuss the difficult airway algorithm as described by the American Society of Anesthesiologists Task Force.
(10 marks)
 10. A 25 year old lady with a weight of 100 kilograms and height of 160 centimetres is scheduled for liposuction around the abdomen and axilla. Discuss the perioperative anaesthetic care of this patient keeping in mind the problems that are specific to her condition.
(10 marks)



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DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – APRIL 2008

SUBJECT: PAPER III: REANIMATOLOGY, CRITICAL CARE MEDICINE, MANAGEMENT OF CHRONIC PAIN STATES & ALLIED DISCIPLINES OF ANAESTHESIOLOGY

Thursday, April 03, 2008

Time: 3 Hrs.

Max. Marks: 100

- ✍ Be brief in your answers; padding your answers will not get you any extra credit.
✍ Illustrate your answer with clearly labeled diagrams where appropriate.

1. What is defibrillation? What are the different types of current used for defibrillation? Compare and contrast between them. What are the special situations where modification of the technique of defibrillation is recommended, and how are these modifications done?
(2+2+2+4 = 10 marks)
2. Outline the APGAR scoring system. How do you resuscitate a neonate with a heart rate of 50 beats per minute?
(4+6 = 10 marks)
3. You are called to evaluate the airway of a 25 year old male who is brought to the emergency room following a road traffic accident. Describe the criteria used to clear the cervical spine prior to any manipulation of the head and neck. Outline your plan to secure the airway in the presence of a suspected cervical spine injury.
(4+6 = 10 marks)
4. Detail the techniques of separation of various components of whole blood. What are the guidelines for transfusion of fresh frozen plasma and cryoprecipitate.
(6+4 = 10 marks)
5. Discuss the role of synchronised intermittent mandatory ventilation, pressure support ventilation and spontaneous breathing trial in weaning off ventilatory support.
(10 marks)
6. Define SIRS, sepsis, septic shock and severe sepsis. Outline organ specific management of a patient with multiorgan dysfunction syndrome.
(6+4 = 10 marks)
7. A 22 year old full-term primigravida admitted to the labour room in early labour requests for labour analgesia. What are the methods available to provide pain relief? Describe in detail the technique of lumbar epidural analgesia in a parturient.
(4+6 = 10 marks)
8. A 70 year old elderly man undergoes oesophagogastrectomy by thoracoabdominal approach. Discuss the different options available for managing postoperative pain in this patient.
(10 marks)
9. Classify pain. With the help of diagrams, describe the pain pathways.
(4+6 = 10 marks)
10. Describe phantom limb pain. What are the methods available to prevent and treat such pain?
(2+4+4 = 10 marks)



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DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – OCTOBER 2008

SUBJECT: PAPER I: BASIC SCIENCES AS APPLIED TO ANAESTHESIOLOGY

Monday, October 06, 2008

Time: 3 Hrs.

Max. Marks: 100

- ✍ **Be brief in your answers, padding your answers will not get you any extra credit.**
 ✍ **Illustrate your answer with clearly labeled diagrams where appropriate.**

1. Describe how systemic blood pressure is regulated. Explain the principle of measuring blood pressure noninvasively using the oscillotonometric method. (6+4 = 10 marks)
2. Define the terms *hypoxia* and *hypoxaemia*. Describe the different types of hypoxia and briefly outline their management. (2+8 = 10 marks)
3. Describe the effects of thyroid hormones on the cardiovascular, central nervous and gastrointestinal systems. Briefly outline the anaesthetic implications of hypothyroidism. (4+6 = 10 marks)
4. Enumerate the factors that affect the uptake of inhaled anaesthetic agents from the inhaled gas to the blood. Describe the meaning of the terms concentration effect, second gas effect, overpressure technique and Fink effect. (2×5 = 10 marks)
5. Describe the cardiovascular and central nervous system effects of nitrous oxide. Enumerate the clinical situations where it is preferable to avoid nitrous oxide. (6+4 = 10 marks)
6. Describe any one principle of measuring carbon dioxide concentration in respired gases. What are the relative merits and demerits of mainstream versus sidestream capnography? (6+4 = 10 marks)
7. Describe methods used at the level of the flowmeter in modern anaesthesia machines to prevent the administration of hypoxic gas mixtures. (10 marks)
8. Describe the sympathetic nerve supply to the upper limb. Briefly explain the technique, the drug and dosage and complications of stellate ganglion block for complex regional pain syndrome involving the upper limb. (3+3+2+2 = 10 marks)
9. Describe the various patient-related factors that affect the spread of local anaesthetics administered in the spinal subarachnoid space. (10 marks)
10. Describe the formation, course and cutaneous distribution of the musculocutaneous nerve. Explain in detail any one technique of blocking this nerve should it be spared following an axillary approach to brachial plexus block. (6+4 = 10 marks)



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DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – OCTOBER 2008

SUBJECT: PAPER II: CLINICAL ANAESTHESIOLOGY

Tuesday, October 07, 2008

Time: 3 Hrs.

Max. Marks: 100

- ✂ Be brief in your answers; padding your answers will not get you any extra credit.
- ✂ Illustrate your answer with clearly labeled diagrams where appropriate.

1. Enumerate the clinical predictors of increased cardiovascular risk for non-cardiac surgery in a patient with heart disease. What are the indications and contraindications for the use of beta blockers in patients with heart disease?
(6+4 = 10 marks)
2. With the help of diagrams, describe the normal flow-volume loop and how it differs in a patient with acute exacerbation of chronic obstructive lung disease. Add a note on the guidelines for steroid use in patients with acute exacerbation of chronic obstructive lung disease scheduled for surgery.
(5+5 = 10 marks)
3. A patient undergoing a neurosurgical procedure for excision of posterior fossa tumour in sitting position develops sudden onset of bradycardia (46/min) and hypotension (76/40 mmHg) with ETCO₂ dropping to 23 mmHg from 32 mmHg. On auscultation, a murmur is heard in the precordial area (new onset). What is the likely diagnosis for the deterioration in clinical status of this patient? How will you manage this situation?
(2+8 = 10 marks)
4. A 25 year old lady, with 16 weeks of gestation has been scheduled for appendicectomy. Enumerate the anaesthetic concerns and describe your technique of anaesthetic management in this patient.
(3+7 = 10 marks)
5. Describe the technique of anaesthesia for removal of a foreign body in the right main bronchus in a 3-year old child with a history of possible aspiration 3 days prior.
(10 marks)
6. A 60 year old well-controlled hypertensive is scheduled for surgery for retinal detachment. Outline your plan for anaesthetic management and enumerate the anaesthetic problems that are specific to this condition.
(7+3 = 10 marks)

7. A 70 year old gentleman with suspected prostatic carcinoma and no other systemic illness has been scheduled for open radical prostatectomy. Discuss the preoperative evaluation, intraoperative management and possible postoperative complications in this patient.
(2+5+3 = 10 marks)
8. Discuss the physiological changes that can occur in central nervous system, cardiovascular system and the respiratory system in a person aged 75 years. Discuss the technique of combined epidural anaesthesia and its relative merits and demerits as compared to general anaesthesia if this person had to undergo corrective surgery for fracture neck of femur.
(4+3+3 = 10 marks)
9. A patient with large thyroid gland (16 x 13 x 15 cm), euthyroid clinically and biochemically, has been posted for thyroidectomy. Describe your induction technique in this patient. What are the possible causes for postoperative stridor in patients undergoing thyroid surgery? What measures would you institute if the patient develops stridor due to haematoma at the site of surgery?
(5+3+2 = 10 marks)
10. Define anaphylaxis. What features would indicate development of anaphylaxis in a patient who is under general anaesthesia. Describe your management protocol for anaphylaxis.
(2+3+5 = 10 marks)

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DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – OCTOBER 2008

SUBJECT: PAPER III: REANIMATOLOGY, CRITICAL CARE MEDICINE, MANAGEMENT OF CHRONIC PAIN STATES & ALLIED DISCIPLINES OF ANAESTHESIOLOGY

Thursday, October 09, 2008

Time: 3 Hrs.

Max. Marks: 100

- ✍ **Be brief in your answers, padding your answers will not get you any extra credit.**
 ✍ **Illustrate your answer with clearly labeled diagrams where appropriate.**

1. Describe how resuscitation would differ from a normal adult in the following situations: (a) pregnancy (b) hypothermia (c) drowning and (d) electrocution. (2½×4 = 10 marks)
2. A 20-year old victim of road traffic accident with injuries to the chest and abdomen is brought to the emergency room in a pulseless state. The electrocardiogram reveals narrow complex tachycardia. Discuss the possible causes of this scenario and your plan for management. (10 marks)
3. Explain the relevant pathophysiology of flail chest and stove-in chest. Describe the management of flail chest. What clinical features suggest tension pneumothorax and what is the immediate management of this condition? (5+2+3 = 10 marks)
4. Describe the blood conservation strategies available for use in the operation theatre. (10 marks)
5. Describe the following modes of ventilation and the rationale for choosing the mode in specific clinical conditions: (a) synchronised intermittent mandatory ventilation, (b) pressure controlled ventilation and (c) pressure support ventilation. (3+4+3 = 10 marks)
6. Discuss the advantages of enteral nutrition over parenteral nutrition. What components should ideally constitute a parenteral nutrition regime, and why? (4+6 = 10 marks)
7. Discuss the methods for assessing postoperative pain in adults and children. (5+5 = 10 marks)
8. Enumerate the various techniques by which you can provide pain relief to a 1 year old boy after circumcision. Explain your technique of choice and give reasons why you consider this technique superior to the others enumerated. (3+7 = 10 marks)
9. A 27 year old male is diagnosed to have postherpetic neuralgia in the lumbar area. Discuss the pathophysiological basis of the pain and various management options available. (4+6 = 10 marks)
10. A 60 year old man with advanced gastric malignancy presents with severe pain. Discuss the plan for providing immediate pain relief and for initiating oral morphine therapy. What are the problems of oral morphine therapy and how will treat them? (7+3 = 10 marks)

