

**MANIPAL ACADEMY OF HIGHER EDUCATION**

(Deemed University)

**DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – APRIL 2006****SUBJECT: PAPER I: BASIC SCIENCES AS APPLIED TO ANAESTHESIOLOGY**

Monday, April 03, 2006

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. Classify the sympathetic nervous system receptors. Enumerate their sites of distribution and function. Give one test each to check functioning of the sympathetic and parasympathetic nervous systems.  
(3+5+2 = 10 marks)
2. Classify the lung fields based on ventilation and perfusion. What is ventilation-perfusion mismatch? How does position of the patient affect ventilation and perfusion of lung?  
(3+2+5 = 10 marks)
3. Draw a diagram depicting the normal neuromuscular junction. Enumerate the causes for proliferation of extrajunctional receptors and describe the anaesthetic implications.  
(5+2+3 = 10 marks)
4. Compare and contrast thiopentone and propofol in the following aspects:
  - 4A. Physical and chemical properties.
  - 4B. Volume of distribution.
  - 4C. Metabolism.
  - 4D. Distribution half-life.
  - 4E. Elimination half-life.(2×5 = 10 marks)
5. Define minimum alveolar concentration (MAC) of inhaled anaesthetic agents. Enumerate the physiologic and pharmacologic factors affecting MAC.  
(2+8 = 10 marks)
6. Describe the physical principles underlying the measurement of carbon dioxide concentration in the expired gas using infrared spectroscopy and Raman spectroscopy.  
(5+5 = 10 marks)
7. Define and explain the anaesthetic implications of:
  - 7A. Laplace's law.
  - 7B. Hagen Poiseuille's law.(4+6 = 10 marks)

(4+6 = 10 marks)

8. With the help of diagrams, describe the cartilages that form the larynx. Describe the sensory and motor innervation of the larynx.

(5+5 = 10 marks)

9. What is postdural puncture headache (PDPH)? What are the strategies used to prevent and manage PDPH? Explain briefly the technique of epidural blood patch.

(2+5+3 = 10 marks)

10. With reference to the 3-in-1 block, list the nerves blocked and describe the technique of block.

(3+7 = 10 marks)

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**DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – APRIL 2006****SUBJECT: PAPER II: CLINICAL ANAESTHESIOLOGY**

Tuesday, April 04, 2006

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 the preoperative evaluation and preparation of a 55-year old businessman on medications for ischaemic heart disease scheduled for a major upper abdominal surgery.  
(10 marks)
2. Discuss the preoperative evaluation, preparation and anaesthetic management of a 45 year old asthmatic with carcinoma breast scheduled for radical mastectomy.  
(2+2+6 = 10 marks)
3. Discuss the management of potential perioperative problems in a 6 year old child weighing 20kg scheduled for cervical laminectomy for removal of an intramedullary tumour in the prone position.  
(10 marks)
4. Describe the perioperative management of a 46 year old lady with dysfunctional uterine bleeding (haemoglobin 8 g/dl) posted for laparoscopic hysterectomy.  
(10 marks)
5. A 2.5 kg term neonate is diagnosed to have the most common type of oesophageal atresia. The baby has no other congenital anomalies and is scheduled within a few hours of birth for a primary repair by an extrapleural approach. Present your plan for perioperative management.  
(10 marks)
6. What are the anaesthetic considerations in a 46 year old male posted for repair of le Fort's II fracture? Describe the intraoperative and postoperative management of such a patient.  
(2+6+2 = 10 marks)
7. A 50 year old patient diagnosed to have chronic renal failure on haemodialysis has a haemoglobin of 8.5 g/dl, blood urea 50 mg/dl, serum creatinine 5.5 mg/dl and potassium 5.4 mEq/L. Discuss the preoperative preparation and intraoperative management of this patient scheduled for functional endoscopic sinus surgery.  
(3+7 = 10 marks)

8. Discuss the anaesthetic management for modified electroconvulsive therapy in a 40 year old lady with manic depressive psychosis on tricyclic antidepressants and lithium carbonate. (10 marks)
9. Define the terms *difficult mask ventilation* and *difficult intubation*. Enumerate the predictors of difficult airway. With the help of diagrams, describe the modified Mallampati classification. (2+2+3+3 = 10 marks)
10. A 56 year old diabetic presents with tachypnoea, ketotic breath, heart rate 120 bpm and blood pressure 140/60 mmHg. His investigations reveal random blood sugar of 420 mg/dL, serum sodium 138 mEq/l, serum potassium of 5.2 mEq/l, serum bicarbonate 14mEq/l and arterial pH of 7.28. Discuss the preoperative preparation and intraoperative management of this patient scheduled for emergency below knee amputation. (7+3 = 10 marks)



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## DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – APRIL 2006

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

Wednesday, April 05, 2006

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. A 65 year old patient has an implanted pacemaker (VVI type) in the right infraclavicular region for recurrent ventricular tachycardia. Describe the preoperative evaluation of pacemaker function in this patient. Outline the perioperative management of this patient scheduled for open cholecystectomy.  
(3+7 = 10 marks)
2. A 40 year old man with cardiac arrest has spontaneous return of circulation following a 10 minute period of resuscitation. Describe the criteria to diagnose brain death in this patient.  
(10 marks)
3. Describe the protocol for providing prehospital and intrahospital care in the event of a mass casualty in your locality.  
(10 marks)
4. Define massive blood transfusion. Describe the complications and management of massive blood transfusion.  
(2+8 = 10 marks)
5. What are the features that differentiate hypovolaemic shock from cardiogenic shock? Discuss the management of a patient in cardiogenic shock presenting with pulmonary oedema.  
(4+6 = 10 marks)
6. Describe the management of a 6 year old boy with history of snake bite presenting with difficulty in breathing.  
(10 marks)
7. What is the gate control theory of pain? Describe any two nonpharmacological methods of pain relief that are based on this theory.  
(4+6 = 10 marks)
8. Explain the role of inhalational agents in pain relief during labour. Describe the method of administering entonox in a 27 year old parturient in labour.  
(5+5 = 10 marks)
9. Describe the mechanism and management of pain in trigeminal neuralgia.  
(10 marks)
10. Discuss your role in the diagnosis and management of a 50 year old man with claudication pain in the lower limbs due to peripheral vascular disease.  
(10 marks)



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**DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – DECEMBER 2006****SUBJECT: PAPER I: BASIC SCIENCES AS APPLIED TO ANAESTHESIOLOGY**

Monday, December 04, 2006

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. Classify cholinergic receptors. Describe the distribution of these receptors in the autonomic nervous system and the response to activation at various sites. Enumerate the agonists and antagonists of cholinergic receptors.  
(2+4+2+2 = 10 marks)
2. Discuss the factors that determine oxygen delivery to tissues (oxygen flux). State the normal value for oxygen flux, arterial oxygen content and mixed venous oxygen content.  
(7+3 = 10 marks)
3. Draw a neatly labelled diagram of the foetal circulation. Delineate the differences of this circulation from the adult circulation.  
(6+4 = 10 marks)
4. Explain the unique metabolism of atracurium and cisatracurium. How is mivacurium metabolised and excreted and enumerate other drugs that undergo similar metabolism.  
(4+3+3 = 10 marks)
5. Classify intravenous anaesthetic agents. Compare thiopentone sodium and ketamine hydrochloride as intravenous induction agents.  
(3+7 = 10 marks)
6. In the context of neuromuscular monitoring, describe the characteristics of the following modes of stimulation and their relative advantages and limitations - *single twitch, train-of-four, double burst and post-tetanic count*.  
(2½×4 = 10 marks)
7. Explain the Venturi principle. Describe the applications of the above principle in anaesthetic practice.  
(4+6 = 10 marks)
8. Describe with the help of a diagram the innervation of the foot. Describe the technique of ankle block for transmetatarsal amputation.  
(5+5 = 10 marks)
9. With the help of appropriate diagrams, describe the extent and contents of the epidural space. Explain the anatomical basis for the various methods described to identify the epidural space.  
(4+6 = 10 marks)
10. Discuss the indications, clinical conduct and complications of intravenous regional analgesia.  
(2+6+2 = 10 marks)



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**DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – DECEMBER 2006**  
**SUBJECT: PAPER II: CLINICAL ANAESTHESIOLOGY**

Tuesday, December 05, 2006

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.**
- Describe the perioperative management of a 65 year old male posted for abdominal aortic aneurysm repair.  
(10 marks)
  - Discuss the utility of specific pulmonary function tests (including arterial blood gas analysis) in predicting possible postoperative pulmonary complications in (a) chronic obstructive pulmonary disease and (b) thoracolumbar scoliosis.  
(5+5 = 10 marks)
  - A 6 year old boy with a posterior fossa tumour has been posted for surgery in prone position. Explain the perioperative anaesthetic considerations.  
(10 marks)
  - A 23 year old female admitted with right iliac fossa pain is diagnosed to have an inflamed appendix. She is confirmed to have an intrauterine pregnancy (7 weeks). Describe the anaesthetic considerations in this lady posted for laparoscopic appendicectomy.  
(10 marks)
  - Describe the anaesthetic considerations in a 2 day old neonate weighing 3 kg with omphalocele. Present your plan for perioperative anaesthetic management.  
(10 marks)
  - An 85 year old lady with no co-existing disease is posted for total hip replacement. Discuss the possible complications expected during the procedure. Describe your plan for perioperative management of this patient.  
(3+7 = 10 marks)
  - A 65 year old patient with renal dysfunction (blood urea 78 mg/dl, serum creatinine 3.2 mg/dl and normal serum electrolytes) is posted for open prostatectomy. Explain the anaesthetic management in terms of preoperative evaluation and preparation, premedication, anaesthetic technique and postoperative care.  
(2+1+5+2 = 10 marks)
  - Discuss the anaesthetic implications and plan for managing a 5-year old child with haemophilia for tonsillectomy.  
(3+7 = 10 marks)
  - Discuss the role of the laryngeal mask airway in the management of a difficult airway.  
(10 marks)
  - A 40 year old patient is tested to be positive for the human immunodeficiency virus. Describe your plan for perioperative management of this patient scheduled for open cholecystectomy.  
(10 marks)



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**DIPLOMA IN ANAESTHESIOLOGY (DA) EXAMINATION – DECEMBER 2006**  
**SUBJECT: PAPER III: REANIMATOLOGY, CRITICAL CARE MEDICINE, MANAGEMENT OF**  
**CHRONIC PAIN STATES & ALLIED DISCIPLINES OF ANAESTHESIOLOGY**

Wednesday, December 06, 2006

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.**
- Describe the basic life support and advanced cardiac life support recommended for an adult victim of lightning strike.  
(5+5 = 10 marks)
  - A 35 year old individual has return of spontaneous circulation following 5 minutes of cardiopulmonary resuscitation. Describe the guidelines for optimal postresuscitation care of this patient.  
(10 marks)
  - Describe the criteria used to obtain the Glasgow Coma Scale (GCS). Outline the principles of management of a patient with head injury admitted to the intensive care unit with a GCS of 5/15.  
(4+6 = 10 marks)
  - Describe the composition and relative advantages and disadvantages of dextran, hydroxyethyl starch and gelofusine as plasma expanders.  
(10 marks)
  - Describe the predisposing factors, prevention and management of ventilator associated pneumonia.  
(3+5+2 = 10 marks)
  - A 20 year old male is admitted with difficulty in breathing 1 hour after consuming insecticide compound. Describe the in-hospital management of this patient.  
(10 marks)
  - What are the advantages of patient controlled analgesia (PCA) over conventional physician-directed analgesia? Present a PCA scheme for a 50 year old school teacher who has undergone radical cystectomy for carcinoma bladder.  
(4+6 = 10 marks)
  - Define preemptive analgesia. Discuss the role of nonsteroidal anti-inflammatory agents in acute pain management.  
(3+7 = 10 marks)
  - Describe the WHO analgesic ladder for management of chronic pain. Discuss the role of adjuvant analgesic medications in the management of chronic pain.  
(3+7 = 10 marks)
  - A 70-year old man with an intraoral malignancy presents with severe pain over the left cheek and jaw. Describe your plan for pain relief in this patient.  
(10 marks)

