Contents

SECTION 1: SPECIAL TOPICS

1. Development of General Anesthesia **3**
Jaydeb Prakash Kundu
Tenth Century Downwards up to Eighteenth Century 3; Nineteenth Century 4; Chloroform 5; Anesthetic Machine 7

2. Pediatric Anesthesia: An Overview **9**
Purnima Mukherjee, Shalini Chaudhuri
Fasting Guidelines 10; Reversal Criteria 11; OPD Anesthesia 12; Anesthetic Drugs 12; Special Considerations 13

3. Neurosurgical Anesthesia: An Overview **15**
Bibhukalyani Das
What Makes Neuroanesthesia Different? 15; Basic Principles of Neurophysiology 15; Clinical Neuroanesthesia 17; Preanesthetic Evaluation and Optimization 17; Basic Principles 18; Management of Intracranial Pressure 19; Recent Advances in Neurosurgery 21

4. Cardiovascular and Respiratory Physiology **23**
Anupam Goswami
Respiratory Physiology with Anesthetic Implications 23; Cardiovascular Physiology with Anesthetic Implications 28

5. Role of Anesthesiologist in Pain Management in the Preoperative Period **37**
Sushma Bhatnagar, Arif Ahmed
Adverse Physiological Effects 39; Unidimensional Tools 40; Functional Measurement of Acute Pain 42; Pain Assessment in Pediatric Population 43; Peripheral Nerve Block 45; Level of Administration—Thoracic vs Lumbar 46; Nonselective Nonsteroidal Anti-inflammatory Drugs (nsNSAIDs) 52; Management of Acute Pain 60

6. How to Write a Thesis? **69**
Uday C Ghoshal, Rajan Singh, Sushil Kumar
What is Thesis? 69; How to Write the Introduction and Background? 71; How to Write Aims? 71; How to Write a Review of Literature? 72; How to Write Method Section? 73; How to Write Results? 75; How to Write Discussion? 77; How to Write Conclusion? 78; How to Write the Reference or Bibliography Section? 78; Appendices 79; Some Important Language Points 80

7. Renal Physiology and Anesthetic Implications: An Overview **81**
Srabani Basu
Anatomy of the Kidney 81; Functions of the Kidney 82; Renal Circulation 82; Renal Blood Flow 83; Glomerulus and its Function 84; Tubular Function 86; Regulation of Glomerular Blood Flow 87; Formation of Urine 88; Proximal Tubule and Peritubular Capillaries 88; Loop of Henle and Vasa Recta 88; Distal Tubule and Collecting Ducts 90; Perioperative Renal Function and Anesthetic Implications 91; Direct Anesthetic Effects on Renal Function 91; Direct Surgical Effects on Renal Function 91; Nephrotoxic Insults in the Perioperative Period 92

8. Anesthetic Considerations in Pregnant Patients with Cardiac Disease **93**
Sampa Dutta Gupta
Valvular Heart Disease 94; Mitral Stenosis 95; Mitral Regurgitation 98; Aortic Stenosis 99; Aortic Regurgitation 100; Congenital Heart Disease 101; Eisenmenger's Syndrome 103; Coarctation of the Aorta 104; Infective Endocarditis 107

9. Anesthetic Considerations for Liver Transplantation **112**
Jyotsna Goswami

10. Preanesthetic Evaluation **122**
Dalim Kumar Baidya, Souvik Maitra
Approach to a Patient in Preanesthetic Clinic 122; Coagulation Disorders 132; Preoperative Investigations 132; Assessment of a Child before Elective Surgery 133; Risk Stratification 133

11. Legal Aspects of Anesthesia: Knowledge of Postgraduates in Anesthesiology **136**
Sukdev Nayak
Legal Master-servant Relationship 136; Standards of Care 137; Expert Witness 138; How to Avoid a Lawsuit? 138; If a Trial is to Occur? 138; Government Hospitals 140; Vexatious Complaints 141; Prevention 141

SECTION 2: LONG CASES

12. Mitral Stenosis during MD (Anesthesiology) Examination **145**
Deepak K Tempe, Indira Malik

13. Anemia in Pregnancy **155**
Sagarmoy Basu
Case Summary 155

14. Anesthetic Management of a Patient with Permanent Pacemaker/Cardiac Implantable Electronic Device **161**
Sumitra Bakshi, JV Divatia
Establishing whether Patient has a CIED (Must know) 161; Basics of Pacemaker and CIED 165; Preoperative and Intraoperative Device Functioning (Must know) 169; Postoperative Care and Instructions 173

15. Anesthetic Management of a Patient with Chronic Renal Failure Posted for Elective Surgery **176**
Nibedita Pani, Dhanee Majhi
Pharmacology 186

16. A Patient with Surgical Jaundice to Undergo Anesthesia for Laparotomy **195**
Jayashree Sood
History 195; Social History 196

17. Diabetes Mellitus: Anesthetic Considerations **207**
Ashok Kumar Saxena

18. A Patient with Lung Cyst Posted for Pneumonectomy **226**
Anupam Goswami
Pathophysiology: Cysts and Bullae 226; Management of One Lung Ventilation 231; Technique and Steps of Anesthesia 232; Strategies for Postoperative Mechanical Ventilation 233

19. Thyroid Swelling **234**
Subrata Pahari, Koel Mitra
Case Summary 234; Palpation 235

20. Abdominal Sepsis with Septic Shock, Posted for Exploratory Laparotomy for Source Control: An Approach **246**
Sanghamitra Mishra
Case 246

21. Transurethral Resection of the Prostate Syndrome in Patient with Hypertension and Ischemic Heart Disease **259**
Baljit Singh, Indira Malik

22. A 65-Year-Old Male Hypertensive Patient Posted for Elective Herniorrhaphy **275**
Rahul Guha Biswas, Chandan Kumar Mandal
Hypertension 275; Drugs for Compelling Indication 278

23. Renal Transplant Anesthesia **286**
Kanak Kanti Kundu
Case Summary 286; Cardiovascular System 293; Hematological System 293; Respiratory System 294; Electrolytes and Acid Base Status 294; Endocrine System 294; Coagulation 294; Central Nervous System 294; Gastrointestinal System 295; Dermatological 295; Problems of Dialysis 295; Opioids 297; Muscle Relaxants 297; Nondepolarizing Agents 297; Drugs Modifications 300

24. Hypertensive Diseases in Pregnancy **309**
Sampa Dutta Gupta, Maupali Ghosh, Samarendra Samui
Case Summary 309

25. A Patient Suffering from Ischemic Heart Disease, have an Intracoronary Stent, on Beta Blockers, Calcium Channel Blocker and Statin Therapy, Posted for Elective Abdominal Surgery **320**
Minati Choudhury
Case 320

26. Anesthetic Management of a Patient with Airway Disorder Posted for Upper Abdominal Elective Surgery **329**
Sampa Dutta Gupta, Pooja Banerjee, Rajat Choudhuri
Few Algorithm Related to the Management 353

SECTION 3: SHORT CASES

27. Hydrocephalus **359**
LD Mishra, S Parashar
Causes of Hydrocephalus 359; Pathogenesis 359; Signs and Symptoms 360; Treatment 361; Anesthetic Management 361; Postoperative Care 362

28. Cleft Lip/Palate **364**
Dilip K Pawar

29. Role of Anesthesiologist in Acute Burn **371**
Sudakshina Mukherji

30. Postburn Contractures: Neck and Extremity **379**
Anil Agarwal, Sujeet Kumar Singh Gautam

31. Meningocele and Meningomyelocele **384**
Jatisankar Rudra

32. Cyanotic Congenital Heart Disease: Tetralogy of Fallot **389**
Soumendu Pal

33. Patent Ductus Arteriosus **396**
Mohona Mukherjee, Sudeshna Bhar (Kundu), Samarendra Pal

34. Anesthetic Management of a Diabetic Patient Posted for Emergency Laparotomy **406**
Ratul Kundu, Chiranjib Bhattacharyya, Rajib Samal

SECTION 4: MISCELLANEOUS

35. Inhaled Anesthetics **417**
Mahendra Kumar
Halothane 417; Isoflurane 418; Other Drugs Related to Anesthesia 420

36. Intravenous Fluids: Crystalloids and Colloids **425**
Mahendra Kumar
General Consideration of Intravenous Fluids 425; Crystalloid Intravenous Fluids 426; 5% Dextrose Solution 426; 10% Dextrose Solution 427; Normal Saline (NS) Solution 427; Dextrose Normal Saline (DNS) Solution 428; Ringer Lactate Solution 428; Pediatric Electrolyte Solution (Isolyte P) Multielectrolyte Solution in 5% Dextrose 429; Colloid Intravenous Fluids 429; Gelatin Solution (Haemaccel) 429; Dextran 40 and Dextran 70 430; Hydroxy Ethyl Starch (HES) 431; Human Albumin 432

37. Surgical Airway **433**
Sabyasachi Das
Definition 433; Indications of Surgical Airways 433; Techniques 434; Percutaneous Cricothyrotomy 437; Percutaneous Tracheostomy 441; Cricothyrotomy 445

38. How to Prepare Chest X-rays for MD/DA/DNB Examinations? **450**
Prithwis Bhattacharyya
Objectives 450; Lateral Positioning 451; Positioning 452

39. How to Prepare ECG for Examination of Postgraduate Students of Anesthesiology? **463**
Sumanta Dasgupta
Normal ECG and the 12-Lead System 463; Basic ECG Waveform 463; Determination of the Electrical Axis 464; Normal Rhythm of the Heart 466; Mechanism of Genesis of Dysrrhythmia 467; Einthoven's Triangle Hypothesis 493; Normal Appearance in Pericardial Leads 494; Electrophysiology of the Heart 500; Digoxin 502; Digoxin Toxicity 502; ICD Therapy 502

40. Cardiopulmonary Resuscitation Guidelines—the Science Behind Applications: What We Need to Know? **504**
Saikat Sengupta, Simantika Ghosh

41. Neonatal Resuscitation **514**
Rajat Choudhuri
Steps of Resuscitation 514

42. Vaporizers **518**
Sudeshna Bhar (Kundu)
Salient Features of Some Vaporizers 525

Index *529*