

**COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME  
FOR MD IN ANAESTHESIOLOGY**

**1. GOALS:**

- a. To train the candidate to be a proficient Anaesthesiologist, practicing evidence based medicine, independently and in an ethical way.
- b. Well trained in the art and science of Anaesthesia & critical care.
- c. Acute and chronic Pain Management,
- d. Well trained in the art and science of Resuscitation – BLS, ACLS and ATLS and as a trainer imparting such knowledge to the doctors in training and subordinate ancillary medical staff.

**2. PROGRAM OUTCOMES:**

**2.1 Cognitive domain**

- a. He should have precise concepts of doing basic clinical research and application of statistical analysis, in clinical medicine, medical audit, and medical record maintenance.
- b. He should be able to conceive judiciously all types of regional anaesthesia techniques both in OT as well as for all pain management.
- c. He has to understand the problems and anaesthesia related implications of the following conditions and situation:
  - i. Endocrine disorders
  - ii. Chronic respiratory disease
  - iii. Respiratory crises situations
  - iv. Hypertension and coronary artery disease
  - v. Congenital heart disease
  - vi. Surgical operable conditions of newborn
  - vii. Management of trauma including burns of various stages of its course
  - viii. Geriatric anaesthesia related problems
  - ix. Acid-base homeostasis

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- x. Anaesthesia in difficult situations- Radiology including MRI, Dental chair, Endoscopic and airway-sharing procedures, Camp anaesthesia, Day care surgery, Shock of various etiology, Field situations including high altitude, Laser surgery.

### **2.2 Affective Domain:**

- a. He should participate in all specialties of Anaesthesia such as transplants, laparoscopic, cardiac surgical, neurosurgical, neonatal, obstetric, orthopedic, plastic and ophthalmologic procedures.
- b. He should be familiar with blood products transfusions, their indications, limitations and hazards.
- c. He should have knowledge of basic and advanced life support measures.
- d. He should have performed competently various procedures involved in the anaesthesia management of the patient.

Attitudes including Communication skills and Professionalism:

#### **2.2.1 Communication skills:**

- Exhibits participation in honest, accurate health related information sharing in a sensitive and suitable manner.
- Recognizes that being a good communicator is essential to practice effectively
- Exhibits effective and sensitive listening skills.
- Recognizes the importance and timing of breaking bad news and knows how to communicate.
- Exhibits participation in discussion of emotional issues.
- Exhibits leadership in handling complex and advanced communication.
- Recognizes the importance of patient confidentiality and the conflict between confidentiality and disclosure.
- Able to establish rapport in therapeutic bonding with patients, relatives and other stakeholders through appropriate communication.
- Able to obtain comprehensive and relevant history from patients/relatives.

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- Able to counsel patients on their condition and needs.
- 2.2.2 Teamwork:** Seek cooperation, Coordination and communication among treating specialties and paramedical staff.
- 2.2.3 Counseling of relatives:** regarding patient's condition, seriousness, bereavement and counseling for organ donation in case of brain stem death.
- 2.2.4 Leadership:** Trauma prevention, education of the public, paramedical and medical persons.
- 2.2.5 Advocacy:** with the government and other agencies towards cause of pre-operative complications and critical care.
- 2.2.6 Ethics:** The Code of Medical Ethics as proposed by the institute and Medical Council of India/ National medical council will be learnt and observed.

### **2.3 Psychomotor domain**

The candidate should be able to:

- a. Perform pre-anaesthetic checkup of patients taking detailed history, thorough physical examination, examining the reports of relevant laboratory tests, and order appropriate premedication.
- b. Categorize patients according to ASA (American Society of Anesthesiologists) risk grading.
- c. Recognizes anaesthesia related problems in high-risk patients and select further investigations and referral for expert opinion for dealing with specific problems.
- d. Obtain patient / guardian consent for anaesthesia after proper explaining the anaesthesia procedure, its advantages and any complications.
- e. Conduct complete check for oxygen supply, other gases supply.
- f. Administer anaesthesia to patients for emergency surgery, recognize perioperative complication and institute therapy.
- g. Assist in anaesthesia management of the-Organ Transplant surgery, Limb replantation, Complicated reconstructive surgeries.
- h. Perform the following procedures related to general anaesthesia independently end tracheal intubation, nasal and oral under difficult situations e.g. Awake intubation, under local

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anaesthesia without the use of muscle relaxants, to obtund response to Laryngoscopy.

- i. Assist / Perform-Blind nasal intubation, Intubation with double lumen tube, Laryngoscopy and Bronchoscopy using malleable Fibreoptic Laryngoscopy / Bronchoscope.
- j. Maintain airway by using different types of laryngeal mask airway.
- k. Maintain airway by using mask ventilation.
- l. Undertake the following regional anaesthesia techniques- Lumbar epidural including segmental block and par vertebral block, Spinal / Intrathecal anaesthesia, Combined spinal and epidural block, Caudal block, Peripheral Nerve block, Brachial plexus block by inter scalene, supraclavicular and axillary approach, Intravenous regional anaesthesia.
- m. Recognize chronic pain syndromes and manage them by-Pharmacotherapy, Nerve blocks, Physical methods TENS, and acupuncture.
- n. Assist/Perform Neurolytic Blocks.
- o. Manage Patients for cancer pain by WHO regime.
- p. Maintain nutrition of critically ill patients by parenteral and enteral nutrition.
- q. Assist/Perform central venous cannulation by all routes-Perform Percutaneous / Mini-Tracheostomy, Institute Jet Ventilation.
- r. Carry out cardiopulmonary brain resuscitation.
- s. Initiate, maintain and wean patients from ventilators in ICU settings.
- t. Initiate and manage labour analgesia in labour room settings.
- u. Initiate and manage total intravenous anaesthesia.
- v. Able to manage anaesthesia for electro convulsive therapy.

Besides he / she should have comprehensive knowledge in anaesthesia and perioperative management of patients with hypertension, diabetes mellitus, chronic obstructive airway disease, including bronchial asthma, myasthenia gravis, obesity, paraplegia, neuromuscular disorders, burns resuscitation and critical care, intensive care management of all assorted patients under that which includes choice of ventilators, and management of patients on ventilators, sterilization of equipments.

### **2.4 1st Year Objectives**

The first year resident should be taught expertise in the management of ASA I and II cases.

To start with they will observe and slowly become confident in giving general anaesthesia

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and spinal anaesthesia to ASA I & II cases for minor and major surgery, under graded supervision. They should be posted to the following specialties doing the first-year gynaecology, General Surgery, Orthopaedic, ENT, Recovery Room, trauma, PAC OPD.

### **2.5 2nd Year Objectives**

The student should be taught to give general anaesthesia regional anaesthesia to ASA I, II, III & IV under supervision they should be able to give extradural block (EDB), Spinal Block, and Peripheral Nerve Blocks under supervision. Should learn paediatric and trauma life supports and maintain skills for basic and advanced cardiac life support.

It is advised that they may be posted in the following specialties Obstetrics, Dental Surgery, Eye, ICU, Pain Clinic and Peripheral Theatres, urology, plastic surgery, neurosurgery, cardiac and vascular surgery and paediatric surgery.

The student should be able to be able to analyse data and write a thesis and should be able to present scientific data.

### **2.6 3rd Year Objectives**

The student should be able to plan and administer anaesthesia to all patients under graded supervision including patients for cardiac, Neurosurgery, Paediatric surgery and for all major surgery. The aim at the end is to be competent and independent soon after the third year of junior residency in providing anaesthesia to elective and emergency cases. The junior resident should be able to manage critically ill patient treat intractable pain. They should also know how to organize mass casualty.

Minimum Procedures / Cases to be entered in the log book.

## **3. DURATION OF PROGRAM:**

The period of certified study and training for the post-graduate MD Anaesthesiology shall be three academic years (six academic terms). The academic terms shall mean six months training period. The students will take up their final examination after completion of 3 years/36 months and clearing the formative assessment as specified. If a student fails to appear for final

examination due to some reason or does not clear it, he/she will be allowed to reappear after 6 months, in the next term.

**4. ELIGIBILITY:**

The candidates will be admitted through INI CET for postgraduate courses.

Commencement of academic session: January & July. Admission for MD Anaesthesiology would be done twice a year.

**5. SYLLABUS:**

- a. A thorough knowledge of the pharmacokinetics and pharmacodynamics of anaesthetic drugs and adjuncts.
- b. Knowledge of cardiovascular, respiratory, neurological, hepatobiliary, renal and endocrine homeostasis and related drugs as relevant to patients undergoing anaesthesia.
- c. Relevant anatomy, physiology and biochemistry.
- d. A basic idea of the relevant physical principles involved in the construction and functioning of equipment used in anaesthesia and monitoring.
- e. Knowledge to attain expertise of the commonly used techniques in general, regional and local anaesthesia.
- f. A clear-cut concept of unconsciousness and its implications.
- g. Relevant knowledge about chronic intractable pain and its management.
- h. Relevant knowledge to manage patients in intensive therapy unit.
- i. Relevant knowledge of medical Statistics
- j. Knowledge & Expertise in Cardiopulmonary resuscitation.

**5.1 1st Year Theory**

Should cover the following:

- 1.1. History of anaesthesia

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- 1.2. Legal & ethical aspects of Anaesthesia
- 1.3. Patient simulation
- 1.4. Scope of modern anaesthesia practice.
- 1.5. International scope and practices in anaesthesia.
- 1.6. Anatomy – Diaphragm, larynx and upper and lower airway, learn relevant anatomy for regional anaesthesia and venous cannulation. Some Anatomical areas of interest to the anaesthetist are Orbit of the Eye, Base of skull, Vertebral Column, brain, spinal cord, and meninges, axilla, lungs, heart, Intercostal space, Brachial plexus.
- 1.7. Principles of physics and use of equipment in anaesthesia
- 1.8.
  - a. Anaesthesia machine-checking the machine and assembly of necessary items.
  - b. Airway equipment including Tracheostomy / Equipments for airway management-mask, LMA, Fiberoptic laryngoscopes; other devices like Double Lumen tube etc.
  - c. Breathing systems continuous flow systems, draw over system-Assembly and checking.
  - d. Monitoring in Anaesthesia with concepts of minimal monitoring.
  - e. Medical gases - storage and central pipeline system.
- 1.9. Patient safety, Safety in Anaesthesia Equipments, Electrical and environmental safety.
- 1.10. Physiology
  - a. Theories of mechanism of action of Anaesthesia.
  - b. Respiratory, cardiovascular, hepatobiliary, renal and endocrine system. Pregnancy, Blood Groups, Muscle & N M Junction, ECG, Regulation of temperature & Metabolism, Stress response, cerebral blood flow and ICP, sleep study, consciousness, memory and Autonomic Nervous System.
- 1.11. Pharmacology
  - a. General pharmacological principles.
  - b. Concepts of pharmacokinetics and pharmacodynamics.
  - c. Uptake and distribution of inhaled anaesthesia agents.
  - d. Drug interaction in Anaesthesiology.

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- e. Drugs used in Anaesthesia, Drugs used for treatment of co morbid diseases and interaction of these.
- 1.12. Theoretical background of the commonly used anaesthetic techniques of general and regional anaesthesia viz.
  - a. GA - Intravenous, Inhalational, endotracheal etc, using spontaneous and controlled mode of ventilation.
  - b. RA - Spinal, epidural, peripheral nerve blocks and local.
- 1.13. Biochemistry relevant to fluid balance & Blood Transfusions, Artificial Blood & Pre-operative fluid therapy. Acid base homeostasis in health and diseases.
- 1.14. Documentation and medico-legal aspects of anaesthesia. Stress the importance of accurate documentation.
- 1.15. Theoretical background on disorders of:
  - a. Cardiovascular system.
  - b. Respiratory system
  - c. Hepatobiliary system.
  - d. Urinary system.
  - e. Endocrine system
  - f. Pregnancy
  - g. Central Nervous system
- 1.16. Cardiopulmonary Resuscitation:
  - a. Theories behind cardiac compressions and ventilation and defibrillation.
  - b. Resuscitation of a patient with overdose of drugs / poisons. Management of unconscious patients. Resuscitation of a severely injured patient.
  - c. Neonatal resuscitation.
- 1.17. Introduction to Research methodology, Random clinical trials etc. Basics of biostatistics.
- 1.18. Preoperative assessments and medication – general principals.
- 1.19. Introduction to anatomical, physiological, pharmacological and biochemical aspects of pain and pain management.
- 1.20. Introduction to artificial ventilation.
- 1.21. Oxygen therapy

- 1.22. Introduction to the operation theatre, recovery rooms (concepts of PACU), ICU.
- 1.23. Recovery from anaesthesia.
- 1.24. Shock - pathophysiology, clinical diagnosis and management.
- 1.25. Pulmonary function tests - principles and applications.
- 1.26. Effect of positioning.

## **5.2 2nd Year Theory**

- 2.1. Relevant anatomy of each system
- 2.2. Physics of equipment used in anaesthesia
  - a. Medical gases - gas plant, central pipeline, Scavenging system.
  - b. Anaesthesia machine, Humidifiers
  - c. Flow meters
  - d. Vaporisers - Characteristics and functional specifications.
  - e. Breathing systems - Assembly, functional analysis, APL and flow directional valves
  - f. Minimum monitoring standards requirements.
- 2.3. Sterilization of equipment.
- 2.4. Computers, Utility, computer assisted learning and data storage. Computerized anaesthesia records.
- 2.5. Pharmacology of drugs used in cardiovascular, respiratory, endocrine, renal diseases and CNS disorders.
- 2.6. Acid-base and electrolyte balance.
- 2.7. Interpretation of blood gases and other relevant biochemical values, various function tests and basics of measurement techniques,
- 2.8. ECG
- 2.9. Paediatrics – Prematurity, Physiology, anatomy of neonate
- 2.10. Principles of monitoring equipment used for assessment of
  - a. Temperature
  - b. Cardiac function viz. Rhythm, pulse, venous and arterial pressures ,cardiac output.
  - c. Respiratory function viz. Rate, volumes, compliance, resistance, blood gases.
  - d. Intracranial pressure,

- e. Depth of anaesthesia
- f. Neuromuscular block.
- 2.11. Working principles of ventilators.
- 2.12. Special anaesthesia techniques as relevant to outpatient anaesthesia, anaesthesia in abnormal environments and calamitous situations.
- 2.13. Anaesthesia management in special situations - Emergency, ENT, Ophthalmology, Obstetrics, Obstetric analgesia, Plastic, Dental, Radio-diagnosis and Radiotherapeutic procedures and patients with systemic diseases.
- 2.14. Medical statistics relevant to data collection, analysis, comparison and estimation of significance.
- 2.15. Journal clubs.

### **5.3 2nd year Practical Training:**

- 3.2** Principles of paediatric anaesthesia, management of neonatal surgical emergencies, RA in infants.
- 3.3** Associated medical disorders in surgical patients - anaesthesia implications and management.
- 3.4** Basics of orthopaedic anaesthesia.
- 3.5** Day care anaesthesia.
- 3.6** Anaesthesia for otorhinolaryngology with special emphasis on difficult airway management.
- 3.7** Blood and blood component therapy. Anaesthesia implications in coagulation disorders.
- 3.8** Monitored anaesthesia care.
- 3.9** Anaesthesia implications in Diabetes mellitus, thyroid and parathyroid disorders, pheochromocytoma, Cushing's disease etc.
- 3.10** Management of acid-base disorders
- 3.11** Principles of geriatric anaesthesia
- 3.12** Anaesthesia outside the OR and in special situation
- 3.13** Principle of management in Trauma and mass casualties.

### **5.4 3rd Year Theory**

- 4.1 Anaesthesia for patients with severe cardiac, respiratory, renal and hepatobiliary disorders posted for unrelated surgery.
- 4.2 Management of patients in shock, renal failure, critically ill and/or on ventilator.
- 4.3 Chronic pain therapy and therapeutic nerve blocks.
- 4.4 Maintenance and sterilization of anaesthesia and related equipment.

### **5.5 3rd Year Practical Training**

- 5.1 Principles of anaesthesia management of neurosurgery / cardiac surgery / thoracic surgery / vascular surgery / Transplantation surgery / burn and plastic surgery.
- 5.2 Principles of neonatal ventilation and critical care.
- 5.3 Principles of human resources and material management.
- 5.4 General principles of medical audit
- 5.5 Principles of one lung anaesthesia

## **6. Teaching and Learning Activities**

A candidate pursuing the course should work in the institution as a full time student. Each year should be taken as a unit for the purpose of calculating attendance.

Every student shall attend teaching and learning activities during each year as prescribed by the department.

A list of teaching and learning activities designed to facilitate students to acquire essential knowledge and skills outlined is given below.

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Sr. No.	Activity	Frequency
1.	Lectures	Initial 6 months of training
2.	Research methodology workshop	First 6 months of training
3.	Case Presentation	Once in 15 days
4.	Clinical Teaching	Daily
5.	Tutorials	Once in 15 days
6.	Seminars	Once in 15 days
7.	Undergraduate Teaching	As needed
8.	Journal club	Once a month
9.	Interdepartmental meets (Presentation & discussion of a case integrated with other departments / specialities)	Once in 3 months
10.	Simulation Based Learning	Once a month
11.	Research forum & departmental review board	Once in 6 months
12.	Quiz / Debates	Once in a year

## **7. Tentative Schedule for Training**

The postings to various stations can be guided by the following schedule in annexure I; the time to be spent depends on availability and the duration of the course (3 years)

Duration : 3years

### **Annexure I**

#### **1<sup>st</sup> Year**

#### **Orientation & Specialties**

1. General Surgery	:	8 weeks
2. Gynecology/Obstetric	:	4 + 4 weeks
3. Orthopedic Surgery	:	8 weeks
4. ENT Surgery	:	4 weeks
5. Pre – operative Assessment /Anaesthesia OPD/ECT	:	4 weeks
6. Medicine Gastroentrolology	:	2 weeks
7. Ophthalmology surgery	:	2 weeks
8. Trauma	:	8 weeks
9. Post Anaesthesia / Care/Recovery	:	4 weeks
10. Urosurgery	:	4 weeks

#### **2<sup>nd</sup> year**

#### **Specialties and allied**

1. Emergency department / trauma	:	4 weeks
2. Pediatric surgery OT	:	4 weeks
3. Urosurgery	:	4 weeks
4. Plastic surgery OT	:	4 weeks
5. Cardiothoracic surgery O.T	:	4 weeks
6. Neurosurgery	:	4 weeks
7. Gastroentro surgery	:	4 weeks
8. Radiology –CT Scan/MRI/IVP	:	4 weeks

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9. General Surgery	:	4 weeks
10. Intensive care and PACU	:	4 weeks
11. Gynaecological surgery	:	2 weeks
12. Cardiac Catheterisation	:	4 weeks
13. ENT	:	4 weeks
14. Ophthalmology	:	2 weeks

### **3<sup>rd</sup> year**

### **Specialities**

1. Trauma O.T	:	4 weeks
2. Obstetric :	:	4 weeks
3. Paediatric surgery OT	:	4 weeks
4. Plastic surgery OT	:	4 weeks
5. Cardiothoracic surgery OT	:	4 weeks
6. Neurosurgery OT	:	4 weeks
7. General surgery	:	4 weeks
8. ENT	:	4 weeks
9. Criticalcare	:	4 weeks
10. OPD	:	2 weeks
11. Pain management	:	4 weeks
12. Dental Surgery	:	4 weeks
13. Thesis completion & Presentation, Model examination (theory), mock clinical Examination with oral	:	6 weeks

Emergency Anaesthesia: The post graduate student will do emergency duties frequently in rotation and as and when required. The student will attend all emergency cases including casualty and caters to all areas where Anaesthesia service is required

## **8. Post graduate Dissertation**

Every post graduate student shall carry out work on an assigned research project under the guidance of a recognized Post Graduate Teacher, the result of which shall be written up and submitted in the form of a Thesis. Work for writing the Thesis is aimed at contributing to the development of a spirit of enquiry, besides exposing the post graduate student to the techniques of research, critical analysis, acquaintance with the latest advances in medical science and the manner of identifying and consulting available literature.

Activity	January admission	July admission
Selection of topic in consultation with PG Guide	March / April	September / October
Approval by Department PG Committee		
Institute Scientific Committee approval	May / June	November / December
Institute Ethics Committee approval		
Final approval letter by Academics Section	30 <sup>th</sup> June	31 <sup>st</sup> December

Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination. A post graduate student shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the Thesis by the examiners.

**9. Six monthly progress report-** Six monthly progress report will be submitted to academic section in the prescribed format signed by head of the department on 7th January and 7th July of every year.

## **10. ASSESSMENT METHODS**

Assessment is a vital part of any course and it is element where there is frequently considerable doubt. There are 2 major components:

- 10.1. **Formative Assessment:** Ongoing evaluation during the course– During each posting / Module / End Unit
- 10.2. **Summative Assessment:** Final assessment after 3 years and / at the end of each year Assessment

### **FORMATIVE ASSESSMENT (Ongoing Evaluation)**

Formative assessment will be conducted during each posting / Module / End unit. This will include the following:

#### **10.1.1. Technical skills competency evaluations:**

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Methods to be used:

- a. Performing anesthetic management on real patients (check lists of each skill and competency including log book evaluation)
- b. Simulators
- c. Objective Structured Clinical Examination(OSCE)

This evaluation will be done either in the OT or ICU or PAC or Postoperative wards.

### **10.1.2. PROBLEM SOLVING CASES:**

Method to be used

- a. Case presentations
- b. Simulated case scenario
- c. OT discussions
- d. OSCE

### **10.1.3. ORAL SKILLS – Attitudinal Development:**

Method to be used:

- a. Ability to present seminars, discussion in class room (evaluation by Peers)
- b. Talking to patients in pre-anaesthesia rounds & in post-operative period.
- c. Operation theatre Management

### **10.1.4. CARDIOPULMONARY**

#### **RESUSCITATION:**

Method to be used :

- a. Mannequins demonstration
- b. Check lists for evaluation
- c. OSCE

C P R evaluation will be repeated at the end of each semester.

### **ATTENDANCE:**

All students joining the postgraduate training program shall work as full-time residents during the period of training, attending not less than 80% (eighty percent) of the training during each calendar year, and will be given full time responsibility, assignments and participation in all facets of the educational process.

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### **10.2 SUMMATIVE ASSESSMENT (FINAL ASSESSMENT) and yearly assessment**

#### **10.2.1. THEORY** (Subject contents already outlined in curriculum)

Should consist of

- a. Structured Essay Questions (SEQs)
- b. Short Answer questions (SAQs) (in all four papers taken together)
- c. Problem Solving Questions
- d. Multiple choice Questions (MCQs) MCQs of different types

<b>Final Theory papers: 4 Papers</b>		<b>Marks</b>
Paper I	Basic Sciences as applied to Anaesthesiology, including ethics, statistics, Quality assurance, medico legal Aspects.	100
Paper 2	Anaesthesia in relation to Associated Systemic diseases	100
Paper 3	Anaesthesia in relation to subspecialties such As cardiac, neuro, obstetrics and pediatrics etc.	100
Paper 4	Intensive care Medicine, Pain Medicine and Recent advances in Anaesthesiology	100

#### **10.2.2. PRACTICAL**

4 components: Marks

The practical examination should be structured and objective as possible

<b>A) CLINICAL CASES</b>	<b>1 Long Case</b>	<b>40 min</b>	<b>100 marks</b>
	<b>2 Short Case</b>	<b>15 min each</b>	<b>40 marks each</b>

#### **Structured Assessment (Long Case)**

1. Oral skills/presentation	10
2. Diagnosis/investigations	10
3. Pre anesthetic Preparation	20
4. Anesthetic management	40
5. Postoperative complications & management	20

<b>B) OSCE:</b> At least 10 OSCE stations with checklists	40
For objective assessment marks	

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<b>C) VIVA-VOCE (Structured)</b>	TOTAL MARKS: 100
1. Anaesthesia machine Circuits Flow volume loops Orals	20
2. Instruments and drugs with importance on evolution of Anaesthesia Instruments and Drugs in routine use Orals	40
3. Investigations – ECG X-Rays ABG PFT Orals	40
<b>D) CPR Assessment on Mannequins</b>	40
<b>E) SCENARIOS</b>	40
	Total Marks
Theory (Papers 1-4)	400
Practical (Cases, OSCE, Viva Voce)	400
<b>Grand Total</b>	<b>800</b>

### **MARKS QUALIFYING FOR A PASS**

<b>MARKS QUALIFYING FOR A PASS</b>	<b>MAXIMUM MARKS</b>	<b>QUALIFYING FOR A PASS 50% MARKS</b>
Theory Examination	400	200
Practical Including clinical and Viva voce examination	400	200

A student shall secure not less than 50% marks in each head of passing which shall include

1. Theory
2. Practical including and viva voce examination.

The postgraduate medical students are required to pass theory and practical examination separately. An examinee should obtain minimum 40 % marks in each theory paper and not less than 50 % marks cumulatively in all the four papers for Degree examination to be cleared as “passed” at the said degree examination”

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Final Assessment Marks Weightage

30%: Internal (Formative) Assessment & Thesis 70% Summative Assessment

The committee recommends that two external and two internal examiners should conduct the clinical examination.

### **11. List of Books Must read:**

1. Lee's Synopsis of Anaesthesia – Davies.
2. Anaesthesia - Rowbotham and Smith.
3. Clinical Anaesthesia - Barash, Cullen and Stoelting.
4. Paediatric Anaesthesia – Gregory.
5. Pharmacology and Physiology for Anaesthetists – Stoelting.
6. Principles of Obstetric Anaesthesia - Holdcroft.
8. Basics of Anaesthesia - Stoelting RK, Miller Rd,
9. ICU Book - Paul Marino.
10. Critically ill, Schoemaker.
11. Bonica Management of Pain – Scott Fishman.
12. Practical Management of Pain, Raj – Honorio Benzon.
13. Stoelting & Dierdorf: Anaesthesia and Co-existing Disease
14. Dorsch and Dorsch: Understanding Anaesthesia Equipments.
15. ECG - Shamroth and Goldman.
16. Anatomy for Anaesthetists - Harold Ellis
17. Physics for Anaesthesia - Sir Robert Macintosh
18. Physics applied to Anaesthesia - Hill
19. Medicine for Anaesthetists - Vickers

### **Must refer:**

1. Cottrell & Smith: Anaesthesia and Neurosurgery.
2. Smith: Paediatric Anaesthesia.

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3. Complications in Anaesthesia – John Atlee
4. Airway management - JL Benumof.
5. Obstetric Anaesthesia – Chestnut.
6. Cardiac Anaesthesia - Joel Kaplan.
7. Textbook of Regional Anaesthesia and Acute Pain Management- Admir Hadzic.
8. Clinical Anaesthesiology – Morgan.

### **12. List of Journals:**

1. Indian Journal of Anaesthesia
2. Journal of Anaesthesiology and Clinical Pharmacology
3. Anaesthesia
4. British Journal of Anaesthesia
5. Anaesthesia and Analgesia
6. Anaesthesiology
7. Anaesthesia and Intensive Care
8. Canadian Anaesthesia Society Journal
9. Acta Anaesthesia Scandinavia
10. Regional Anaesthesia and pain medicine

### **13. Year Books:**

1. Anaesthesia Clinic of North America
2. International Anaesthesiology Clinics
3. Year Book of Anaesthesia
4. Recent Advances in Anaesthesia
5. Anaesthesia Review