REGULATIONS AND CURRICULUM GOVERNING

MD ANAESTHESIOLOGY PROGRAM

(2024-25)

Name of the Constituent Unit/Centre: Yenepoya Medical College

RABBI ZIDNI 'ILMA

YENEPOYA

Deemed to be University

Deralakatte, Mangalore, Karnataka.

NOTIFICATION FROM THE UNIVERSITY

YENEPOYA
(DEEMED TO BE UNIVERSITY)
Recognized under Sec 3(A) of the UGC Act 1956
Accredited by NAAC with 'A' Grade

NOTIFICATION – 34-ACM/2019 dtd. 20.02.2019

Sub:- Implementation of Competency Based Medical Education PG Curriculum

Ref. : Resolution of the Academic Council at its 34th Meeting held on 08.02.2019 vide Agenda 33

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The Academic Council at its 34th Meeting held on 08.02.2019 and subsequently the 45th meetings of Board of Management held on 09.02.2019 have accepted the proposal for implementation of Competency Based Medical Education (CBME) for the PG Curricula of the following programs as per the MCI Norms.

1. MD in Pathology
2. MD in General Medicine
3. MD in Anaesthesiology
4. MD in Paediatrics
5. MD in Respiratory Medicine
6. MD in Radio-diagnosis
7. MD in Anatomy
8. MD in Physiology
9. MD in Biochemistry
10. MD in Microbiology
11. MD in Pharmacology
12. MD in Forensic Medicine
13. MD in Psychiatry
14. MD in Dermatology
15. MD in Community Medicine
16. MS in General Surgery
17. MS in OBG
18. MS in Otorhinolaryngology
19. MS in Ophthalmology
20. MS in Orthopaedics

This revised curriculum shall come into effect from the academic year 2019-2020 onwards.

REGISTRAR

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GUIDELINES FOR COMPETENCY BASED POSTGRADUATETRAINING PROGRAMME FOR MD IN ANAESTHESIOLOGY

Preamble

The purpose of PG education is to create specialists who would provide high quality health care and advance the cause of science through research & training.

A post graduate specialist having undergone the required training in anesthesiology should be able to recognize the health needs of the community. He or she should be competent to handle effectively medical problems and should be aware of the recent advances pertaining to his/her specialty. She/he should be highly competent anesthesiologist with broad range of skills that will enable him/her to practice anesthesiology independently. The PG student should also acquire the basic skills in teaching of medical/para-medical students. She/he is also expected to know the principles of research methodology and modes of consulting library. She/he should attend conferences, workshops and CMEs regularly to upgrade his/her knowledge.
The purpose of this document is to provide teachers and learners illustrative guidelines to achieve defined outcomes through learning and assessment. This document was prepared by various subject-content specialists. The Reconciliation Board of the Academic Committee has attempted to render uniformity without compromise to purpose and content of the document. Compromise in purity of syntax has been made in order to preserve the purpose and content. This has necessitated retention of “domains of learning” under the heading “competencies”.

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Goal

- The goal of the MD Anaesthesiology is to train Competent, ethical and skilled Anaesthesiologist who can independently manage high quality and safe anaesthesia practices, peri operative care, critical care, pain management and emergency services.

SUBJECT SPECIFIC LEARNING OBJECTIVES

The training should have clear objective, is competency based, is well planned & evaluated, is supervised and delivered by well trained teachers. It will have special emphasis on attitude and behavior, safety, communication, presentation, audit, teaching, ethics and law and management.

No limit can be fixed and on the number of topics that can be prescribed as course contents. The student is expected to know his/her subject in depth from various text books and journals; however, more emphasis should be on the diseases/health problems most prevalent in that area. Knowledge of recent advances and basic sciences as applicable to his/her specialty should get high priority. Competency in anaesthesia skills commensurate with the specialty (actual hand on training) must be ensured.

1. **Theoretical knowledge**: The student should have fair knowledge of basic sciences (Anatomy, Physiology, Biochemistry, Microbiology, Pathology, Pharmacology, Statistics and Physics) as applied to Anaesthesia. The student should acquire in-depth knowledge including recent advances. He/she should be fully conversant with the bedside procedures (diagnostic and therapeutic) and have knowledge of latest diagnostics and therapeutics procedures available including radiological methods.
2. **Teaching:** The student should learn the basic methodology of teaching and develop competence in teaching medical/paramedical students. The student should be familiar with the latest teaching (computer and power point presentation) modes including simulators training and evidence based medical education.
3. **Attitude development:** The student should develop attitude that leads to appropriate communication with colleagues to function in a group in Operating Room /Intensive Care Unit, and develop the ability to function as a leader in the operating room.

SUBJECT SPECIFIC COMPETENCIES

The student during the training programme, should acquire the following competencies:

A. Cognitive domain

- Demonstrate knowledge of Anatomy related to;
  - ❖ Diaphragm, upper and lower airway, heart and coronary circulation,
  - ❖ Regional anaesthesia - field block, central neuraxial, blockade, block for acute pain states
  - ❖ Procedures like-Intramuscular injections, arterial and venous cannulations and
  - ❖ Patient Positioning under anaesthesia
- Demonstrate knowledge of Physiology of various systems (respiratory, cardiovascular, hepatobiliary, renal, endocrine, pregnancy, haematological, neuromuscular, regulation of temperature and metabolism, stress response, cerebral blood flow and ICP, central, autonomic and peripheral nervous systems, metabolic response to stress and trauma) in detail and translate its application in a problem solving manner.
- Demonstrate knowledge of Biochemistry relevant to fluid balance and blood transfusion, perioperative fluid therapy, acid base homeostasis in health and diseases.
- Demonstrate knowledge of commonly used drugs in anaesthesia practice (premedication, induction agents - intra-venous and inhalational, neuromuscular blocking agents and reversal of muscle relaxants) – general principles, concepts of

  pharmacokinetics and pharmacodynamics, drug interactions with the other drugs taken concomitantly by the patient and an aphylactoid reactions.
- Demonstrate knowledge of gas laws, medical gas supply system, fluidics, electricity, diathermy and oxygen therapy.
- Demonstrate knowledge of 'principles of physics' that govern functions of basic anaesthesia delivery equipment, airway devices – (laryngoscopes, airways etc.), breathing systems and monitors, fiber optics, Lasers,

Pacemakers and defibrillators, monitoring equipment's (used for assessment of cardiac functions, temperature, respiratory functions, blood gases, intracranial pressure, depth of anaesthesia and neuromuscular block), Sterilization of equipments, manufacture, filling and transport of gases and liquid oxygen. etc.

- Demonstrate knowledge of importance of pre-anaesthetic assessment and optimization of a patient; consisting of evaluation, interpretation of laboratory investigation as applied to the care of the patients in planning and conduct of general anaesthesia.
- Demonstrate knowledge of basic life support, advanced cardiac, trauma life support, and neonatal resuscitation according to latest guidelines.
- Demonstrate knowledge of principles of sterilization and universal precautions, selection, maintenance and sterilization of anaesthesia and related equipment, Infection control, cross contamination in OT and ICU. Immune response and anaesthesia.
- Describe the development and history of anaesthesia as a specialty with knowledge of important personalities who have contributed towards it.
- Demonstrate knowledge of principles of artificial ventilation, management of unconscious patients, oxygen therapy, shock- (pathophysiology and management) and various protocols related to Intensive Care Unit.
- Demonstrate knowledge of post-operative care in the post-anaesthesia recovery room, in terms of management of
    - ❖ Post-operative pain: various modalities
    - ❖ Nausea and vomiting
    - ❖ Identified emergencies and postoperative complications.
    - ❖ Special precautions to be taken in specific surgical patients.
- Demonstrate knowledge of acute pain management, chronic pain therapy & therapeutic nerve blocks, acupuncture, acupressure and other non-conventional methods of treatment.
- Describe documentation, medico-legal aspects of anaesthesia and concept of informed consent.
- Demonstrate knowledge of research methodology and basics of biostatistics relevant to data collection, analysis, record keeping in

anaesthesia, comparison and estimation of significance.

- Demonstrate ability to interpret blood gas analysis and other relevant biochemical values, various function tests and basics of measurement techniques, ECG.
- Explain blood coagulation mechanism, and their disturbances, rational use of blood and blood components.
- Demonstrate knowledge pertaining to special anaesthetic techniques as relevant to:
    - ❖ Outpatient anaesthesia, hypotensive anaesthesia, anaesthesia in abnormal environments including rural area and calamitous situations
    - ❖ Associated medical disorders in surgical patients
    - ❖ Geriatric and pediatric anaesthesia, Emergency, ENT, orthopedic, ophthalmology, obstetrics, dental, radio-diagnosis and radiotherapy.
    - ❖ Induced hypothermia, incidental, environmental safety of patient.
    - ❖ Malignant hyperthermia, myasthenia gravis, GB syndrome and other neuromuscular diseases, obesity, COPD, Diabetes mellitus, bronchial asthma and hypertensive crises..
    - ❖ Principles of anaesthetic management of neuro/cardiac/thoracic/vascular/ transplantation/burns and plastic surgery.
    - ❖ Anaesthesia for patients with severe cardiac, respiratory, renal and hepatobiliary disorder posted for unrelated surgery
    - ❖ Shock, types, pathogenesis and management of patients in shock, renal failure, critically ill and/or on ventilator, Multiple organ failure
- Demonstrate knowledge pertaining to care of terminally ill, Hospices management, do not resuscitate orders.
- Demonstrate knowledge of general principles of medical audit and Critical incident reporting.
- Demonstrate knowledge of Ethics and clinical trial.
- Demonstrate knowledge of Hospital, ICU and OT design and planning.

- DemonstrateknowledgeofMedicaleducationincludingevidencebasedmedical education.
- Demonstrateknowledgeofprinciplesofhumanresourcesandmaterialmanagement.

B. Affective Domain:

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

C. Psychomotor domain

At the end of the course, the student should acquire skills in the following broad areas and be able to:

- Demonstrate ability **as a perioperative physician**, in Terms of
  - ❖ Acquiring mastery in careful and relevant history taking, physical examination in clinical evaluation of the patient preoperatively.
  - ❖ Collecting and synthesizing preoperative data from parent hospital and other sources and to develop a rational strategy for the peri-operative care of the patient.
  - ❖ Thorough and systematic approach to preoperative evaluation of patients with and without systemic diseases, undergoing different types of operations.
  - ❖ Prioritizing problems, present cases clearly and systematically to attending consultants.
  - ❖ Developing working relationships with consultants in other specialties to assist in preoperative evaluation and get a good consultation.
  - ❖ Interactingwithpreoperativepatientsanddevelopingeffectivecounseling

techniques for different anaesthetic techniques and peri-operative procedures.

- ❖ Assessing and explaining risk of procedure and taking informed consent.
- ❖ Managing information in preoperative evaluation and outcome enhancement and communication skill to patients and relatives.
- ❖ Ability to choose and order the required investigations to be done in a particular patient peri operatively

- Demonstrate ability in performing
  - ❖ Pre-operative equipment check
    - ❖ Selection of drugs
    - ❖ Preparation of work table etc.
  - Identify conditions like difficult airway by following difficult airway algorithms.
  - Demonstrate ability to establish to apical airway an aesthesia for awake intubation
  - Demonstrate management of a Failed intubation drill on a Mannequin according to latest guidelines
  - Demonstrate ability to monitor and assess depth of anaesthesia
  - Demonstrate abilities to manage body fluid composition; volume status; replacement of fluid and blood loss; use of whole blood and blood components.
  - Demonstrate abilities to manage Electrolyte and acid based arrangements; osmolarity and osmolality.
  - Demonstrate acquisition of skills to initiate mechanical ventilation; select appropriate type and mode of ventilator; and monitor proper functioning of ventilator.
  - Identify the need to perform intra-operative laboratory tests, blood gases, coagulation profile and interpret the results with clinical co relation
  - Demonstrate ability to manage co-morbid conditions and anaesthesia
  - Demonstrate ability to perform cannulation of arteries, central and peripheral veins.

- Demonstrate ability in using and interpreting the following routine non-invasive and invasive monitors intra-operatively:
    a. Electrocardiogram with ST-segment analysis
    b. Non invasive blood pressure
    c. Capnograph:values and changes in values and waveform.
    d. Pulse oximetry: values and changes in values
    e. Neuro muscular blockade monitor
    f. Invasive arterial pressure: wave form and changes in the wave form
    g. Central venous pressure: values and wave form
    h. Pulmonary artery pressure: Values and wave forms, pulmonary capillary wedge tracing.
        i) Cardiac output
        ii) Mixed venous oxygen saturation
        iii) Evoked potential
        iv) Trans esophageal echocardiography: basic understanding

- Demonstrate skills in providing basic life support, advanced cardiac life support, trauma life support and paediatric-neonatal life support, train medical and paramedical staff in BLS and ALS.
- Demonstrate mastery in common procedures like vascular access, use of latest invasive and non-invasive monitoring equipment, lumber puncture, management of appropriate mechanical ventilation and total care of Intensive Care Patient.
- Demonstrate ability to administer general anaesthesia and regional anaesthesia for ASA I to V, under supervision.
- Demonstrate ability to give extradural block (EDB) lumbar and thoracic, Spinal Block, and Peripheral Nerve Blocks under supervision.
- Demonstrate ability to use ultrasound machine for giving blocks and venous cannulation.
- Demonstrate ability to plan and administer anaesthesia to all emergency patients under supervision including patients for Cardiac, Neurosurgery, Pediatric surgery, and for all major surgeries, able to manage critically ill patients and treat intractable pain.

- Demonstrate following abilities in **Emergency Anaesthesia, Trauma and Resuscitation:**
  - ❖ Organize resources in case of mass casualty.
  - ❖ Perform triage.
  - ❖ Assess, transport and manage mass casualties'/disaster management and camp anaesthesia.
  - ❖ Manage massive hemorrhage and massive blood transfusion.
  - ❖ Transport critically ill patient.
  - ❖ Perform anaesthetic management of geriatric patients with fracture neck of femur
  - ❖ Manage severe burns patients, rapidly progressing spinal compression, massive haemoptysis and lobectomy, peritonitis from various suspected causes, preparation and management of bowel obstruction, septicemic shock, acute upper airway obstruction such as foreign body, epiglottitis, infections, cardiac tamponade from examples post cardiac surgery, malignant pericardial effusion, peri-operative management of rupture aneurysm of abdominal aorta
  - ❖ Basic Cardiac Life Support and Advanced Cardiac Life Support, Basic Trauma Life Support, Advanced Trauma Life Support, and Cerebral preservation.
  - ❖ Management of intra-operative cardiac arrest
  - ❖ Management of intra-operative bronchospasm

- Demonstrate ability to document a Medico-legal aspect.
- Demonstrate ability to provide special sedation /**anaesthesia requirements outside operating Room,** eg **Radiology**: for CT, MRI (especially in relation to dye allergy and embolization, Oncho radiotherapy, Electroconvulsive shock therapy (modified ECT. Non-invasive cardio-radiologic procedures including balloon angioplasty and cardiac catheterization, Non-invasive neuro-radiologic procedures, lithotripsy etc.
- Demonstrate ability to analyze data and write a thesis, present scientific data, participate in anaesthesia audit.

- Demonstrate ability to critically review and acquire relevant knowledge from the journals about the new development in the specialty
- Demonstrate following abilities in the **Post Anaesthesia Care Unit (PACU)**
  - ❖ Assess the patient's recovery and condition for a safe discharge or transfer.
  - ❖ Observe, recognize and treat the commonly occurring problems likely to arise in the Post-anaesthsia Care Unit (PACU) especially those in relation to cardio-respiratory systems:
    1. Airway integrity and compromise.
    2. Arrhythmia
    3. Hypertension
    4. Hypotension
    5. Pain prevention and pain relief
    6. Nausea and vomiting
    7. Decreased urine output
    8. Emergence delirium
    9. Delayed emergence from anaesthesia
    10. Shivering
    11. Post-obstructive pulmonary edema.
  - ❖ Assess patient recovery and the parameters for transfer from the PACU to the ward, ICU, home.
  - ❖ Score the patient's condition according to the Aldrete system, including fast tracking after out-patient surgery.
- Demonstration of following abilities in Intensive Care Unit
  - ❖ Understanding the spectrum of critical illnesses requiring admission to ICU.
  - ❖ Recognizing the critically ill patient who needs intensive care - Trauma, burns, all types of shock, Sepsis, SIRS and ARDS, Poisoning, infectious patient (HIV, Hepatitis) and patients with metabolic disturbances.
  - ❖ Monitoring progress of patients by physiological scoring systems
  - ❖ Practicing infection control practices and control of nosocomial infections.
  - ❖ Inserting central venous lines, arterial lines using ultrasound and

interpreting the data.

- ❖ Managing cardiovascular instability, respiratory failure and postoperative pulmonary complications
- ❖ Understanding of the operation of mechanical ventilators including different ventilatory modalities non-invasive ventilation, complications and modes of weaning.
- ❖ Principles and application of Oxygen Therapy
- ❖ Glycemic control in the critically ill patient
- ❖ Practice of Hypothermia and prevention of cerebral injury after cardiac arrest
- ❖ Deliver in gap appropriate nutritional support –enteral and parenteral.
- ❖ Proper use of sedative/hypnotic drugs in the ICU.
- ❖ Practicing ethical and legal aspects of critical care
- ❖ Good communication skills with patient and relatives.
- ❖ Proper Sterilization of ICU equipment.

Demonstration of following abilities in **Acute and Chronic Pain Management**

- ❖ Assessment of patients with pain including: history taking, physical examination, and interpretation of investigations.
- ❖ Classify types of pain- acute chronic, traumatic, cancer pain, etc. with the knowledge of Pain pathways in detail.
- ❖ Practice the different modalities of physical therapy that may relieve both acute and chronic pain
- ❖ Practice the acute pain, cancer pain guidelines and WHO treatment ladder.
- ❖ Practice routes of administration and risk/benefits of drugs used for acute and chronic pain relief, patient controlled analgesia and treat the common pain syndromes.
- ❖ Demonstrate practice of pain management in patients with problem drug use, drug dependency and addiction and identify the parameters for referral to a pain medicine specialist.

- Demonstrate Organization of acute pain service and role of acute pain nurse for pain assessment in various groups of patients, Physiological changes secondary to Pain, practice different modalities of pain control.

Pharmacology and side effects of opioid analgesia and non-opioid analgesia, principle of patient-controlled analgesia and assessment of its efficacy, Pharmacology and side effects of epidural/intra-thecal opioid. Neurological assessment of epidural blockade and management of failed block. Management of regional blockade – brachial plexus, para-vertebral and intra-pleural block. Management of epidural abscess. Substance abuse and acute pain control. Pain control in concurrent medical diseases – COAD, IHD, bleeding tendency, geriatric. Pain control in burns patients. Pain control in trauma patients included multiple rib fracture

- Demonstration of abilities to manage **Chronic Pain**
  - ❖ Practice different modalities of chronic pain management –physical therapy, psychotherapy, (including cognitive behavioural approaches), neuro- ablation, neuro-augmentation, spinal opioid, interventional neuro-blockade, non-opioid analgesia.
  - ❖ Anatomy, indication, technique and complication of chemical sympathectomy (lumbar sympathectomy, stellate ganglion block, celiac plexus block).
  - ❖ Practice principles of management of cancer pain, principle of management of non-cancer neuropathic pain - phantom limb pain, post-herpetic neuralgia, complex regional pain syndrome, trigeminal neuralgia. Principle of management of non-cancer no conceptive pain - myofascial pain, lower back pain, intractable angina, burns, chronic pancreatitis, PVD.
  - ❖ Practice Epidural steroid injection (all levels) and long-term epidural catheterization.
  - ❖ Observe and practice following blocks: Infra-orbital nerve, Intercostal nerve
  - ❖ Recognize complications associated with each blocks and know appropriate treatment of each
  - ❖ Know the indications for stimulation techniques such as transcutaneous electrical nerve stimulation (TENS), dorsal column stimulation, and deep brain stimulation.
  - ❖ Mechanisms and side effects of other the rapies used for treating pain.
  - ❖ The principles of pain management in special patient groups

including the elderly, children, disabled, intellectually handicapped and those unable to communicate.

- ❖ Awareness of the principles for insertion and management of implantable drug delivery pumps.
- ❖ Awareness of the basic principles of palliative care.

- **Demonstrate practice of Regional Anaesthesia**
  - ❖ Applying general principles of pharmacology of local anaesthetics and various adjuvants.
  - ❖ Familiarizing with the relevant anatomy for regional techniques.
  - ❖ Application of indications and contraindications to regional anesthetic technique including central neuraxial blocks, peripheral nerve blocks and sympathetic nerve blocks.
  - ❖ Assessing adequacy of regional anaesthesia, and learn techniques of supplementation of inadequate blocks.
  - ❖ Providing effective anxiolytics and sedation of patients by both pharmacologic and interpersonal technique.
  - ❖ Performing the following regional anaesthesia techniques:
    - o Brachial plexus, cervical plexus, stellate ganglion block, lumbar plexus, lumbar sympathetic, Sciatic nerve block, Femoral nerve block, 3 in 1 block, Wrist block, Popliteal Nerve block, Trigeminal nerve block, Retro bulbar blocks, Paravertebral blocks, Intercostal blocks, Caudal block – adult and pediatric, Ankle block, Epidural block/Catheter, Subarachnoid block, Bier's block, All peripheral nerves of the upper and lower limbs.

- **Demonstrate practice of Thoracic Anaesthesia**
  - ❖ Pre-operative assessment of patients undergoing Thoracotomy (lung resection),thoracoscopy, video assisted thoracoscopy and mediastinoscopy
  - ❖ Various approaches and their relevant equipments for lung isolation.
  - ❖ Various double lumen tubes and their placement.
  - ❖ Application of Principle of chest drain.
  - ❖ Respiratory Physiology and management of one lung

ventilation(OLV). Indications, contraindications and hazards of OLV.

- ❖ Application of the knowledge of Anatomy of lung and broncho-pulmonary segments.
- ❖ Anatomyandtechniquesforintercostalsnerveblockandthoracicepidural. Management of thoracic epidural anaesthesia and analgesia
- ❖ Anatomy, techniques and placement of para vertebral block/catheter.
- ❖ Post-operative care of patients after lung surgery.
- ❖ Peri-operative management of patients with myasthenia gravis.
- ❖ Peri-operative management of patients with mediastinal mass.
- ❖ Anaesthetic management of mediastinoscopy, major airway stenting.
- ❖ Lung volume reduction surgery and problems.

- **Demonstrate practice of Cardio vascular Anaesthesia**:
  - ❖ Application of the knowledge of Anatomy and physiology of valvular disease, coronary arteries and their territories. Pulmonary circulation, coronary circulation, cerebral circulation, visceral circulation.
  - ❖ Application of the knowledge of Distribution of blood volume to different organs and systems and their control. Microcirculation. Venous system, venous pressure, its influence on various functions.
  - ❖ Regulation of blood pressure, hypotensive anaesthesia.
  - ❖ Anatomy and physiology of all operable congenital heart disease like ASD, VSD, PDA, TOF, transposition of great vessels.
  - ❖ Application of the knowledge of anatomy and physiology of vascular heart disease like co-arctation of aorta.
  - ❖ Assessment of cardiac patient with is chaemicheart, valvular heart disease and other diseases listed above. Understanding of cardiac catheterization, echocardiography, stress testing, and radio-nuclide imaging.
  - ❖ Application of Principle and complication of cardiopulmonary bypass
  - ❖ Application of Principle of trans-esophageal echocardiography
  - ❖ Application of Principle of circulatory support: inotropes, IABP, pacing

- ❖ Coagulation and management of coagulopathy.
- ❖ Off pump bypass
- ❖ Intra-operative management of aortic surgery and major peripheral vascular surgery, aneurysm grafts, recanalisation procedures.
- ❖ Understanding of the adult patient with congenital heart disease and their management during anaesthesia.
- ❖ Postoperative cardiac critical are, including cardiovascular problems, analgesia.
- ❖ Insertion of invasive monitoring for arterial monitoring, central venous pressure monitoring, pulmonary artery catheter insertion and interpretation.
- ❖ Robotic cardiac surgery.

- **Demonstrate practice of Paediatric Anaesthesia**
  - ❖ Application of knowledge of Anatomical changes in paediatric patient and neonates.
  - ❖ Application of knowledge of Physiology and pharmacology in paediatric patient.
  - ❖ Guideline for pre-operative fasting in children and pre-medication.
  - ❖ Anaesthetic equipment: laryngoscopes, airways, endotracheal tubes, LMAs, PLMA and breathing circuit for children.
  - ❖ Anaesthesia management for pre mature and new born.
  - ❖ Emotional problems for parent and child and principles of premedication. Consent by parents and their presence during induction. To be come skilled in communicating with children, parents and other relatives.
  - ❖ Problems of transporting a sick pediatric patient from the ward to the operating room and back with regard to temperature maintenance, cardiovascular stability, ventilation and oxygenation.
  - ❖ Estimate preoperatively blood volume, hourly fluid requirements, fluid deficit, third space loss, acceptable blood loss and apply principles of fluid and blood replacement in the perioperative period.
  - ❖ Induce and maintain anaesthesia by inhalation, intravenous, intramuscular and rectal routes and monitor pediatric patients.
  - ❖ Understand the benefits, risks and techniques of regional anaesthesia

in children. Anatomy and techniques of caudal, dorsal penile and inguinal regional block, spinal and epidural block

- ❖ Learn to recognize and treat post anaesthesia complications like apnea, laryngospasm, acid-base and electrolyte disturbances, febrile and convulsing child and bleeding child.
- ❖ Common problems related to common congenital syndromes presenting for surgery. Anaesthetic management of a child with concurrent disease – Down's, Pierre Robin syndrome, von Willebrand's disease, Goldenhar's, Sturge-Weber, Tracher-Colin, Prune-Belly, and cyanotic and non-cyanotic congenital heart disease.

- ❖ Paediatric resuscitation: drugs, doses and defibrillation of children of all ages, from the very premature neonates to those children with complex coexisting disease.
- ❖ Management of patients requiring paediatric intensive care, ventilatory management, and support of circulation.
- ❖ Resuscitation of neonates and children of all ages. A period of one to two months in a PICU is recommended for all post graduate students undergoing advanced training in paediatric anaesthesia.
- ❖ Paediatric pain management
- ❖ Assessment of a child with URTI, with a heart murmur.
- ❖ Management of fluid and electrolytes in children.
- ❖ Anaesthetic management of a malignant hyperthermia susceptible child.
- ❖ Anaesthetic management of FB bronchus, oesophagus, Wilm's tumour, congenital diaphragmatic hernia, tracheo-oesophagus fistula, thoracotomy.
- ❖ Anaesthesia for Fetal Surgery.
- ❖ Sedation techniques including the selection, management and monitoring of children for diagnostic and therapeutic procedures, with particular attention to working in areas outside the theatre suite.

- **Demonstrate practice of Transplant anaesthesia**
  - ❖ Application of knowledge of basic pathophysiology of renal and liver failure. Principles of anesthetizing an immuno-compromised patient.

- ❖ Principles of anesthetizing patient with end stage renal/liver disease and patient with organ transplantation. Perioperative management.

- **Demonstrate practice of Neuro anaesthesia**
  - ❖ Application of basic knowledge of cerebral circulation and intracranial pressure and its implications
  - ❖ Anaesthesia to patients with neurologic disease, head injury undergoing neurologic or non-neurologic surgery and for diagnostic procedures requiring anaesthesia.
  - ❖ Anesthetic implications of the most common neurosurgical procedures, transnasal, trans-sphenoidal pituitary surgery. Posterior fossa surgery. Surgery for supratentorial pathology.
  - ❖ Application of basic concepts behind electrophysiologic monitoring of the brain and spinal cord.
  - ❖ Application of knowledge of general principles of positioning the patient for surgery and the advantages and disadvantages of each position.
  - ❖ Effects of anaesthesia on the electroencephalogram(EEG)and evoked potentials.
  - ❖ Differential diagnoses and treatment alternative so intraoperative intracranial hypertension (“tight brain”)
  - ❖ Management of Head Trauma, and its anesthetic management and various protocols regarding their management and associated trauma.
  - ❖ Intra cranial surgery and spinal surgery, both routine and emergency.
  - ❖ Monitoring: techniques for detection and management of air embolism.
  - ❖ Lumbar puncture and CSF drainage.
  - ❖ Non-surgical management of the head trauma patient, Systemic complications of severe brain injury.
  - ❖ Management of subarachnoid haemorrhage and vasospasm.
  - ❖ Diagnosis and management of patients with brain stem death; and dealing with patient’s relatives

- **The following are special Procedures which the postgraduate student must be able to perform**

Sl. No.	Name of procedure
1.	Blind Nasal intubation
2.	Failed intubation drill (includes Fiberoptic Laryngo/ Bronchoscope)
3.	Double Lumen Tube
4.	Bronchial Blocker placement
5	Jet Ventilation
6.	Suctioning and physiotherapy of wet lung
7.	Intubation in Neonates
8.	Initiation and management of ventilation
9.	Combined Spinal Epidural
10.	Brachial Plexus Block
11.	Intravenous Regional Anaesthesia
12.	Elbow, Wrist, Digital, Sciatic, Femoral, Lateral Cutaneous Nerve of thigh, Ankle - each
13	Cervical-Superficial and Deep, Stellate, Splanchnic-each
14.	Central Venous Line by Brachial, Jugular and Subclavian veins
15.	Radial and Femoral Artery cannulation
16.	CV P monitoring
17.	Pulmonary Capillary Wedge Pressure
18.	Neuro-muscular transmission Monitoring
19.	Anaesthetic Depth eg. BIS monitoring

- Demonstration of anesthetic abilities in the intra operative period keeping into consideration the specific requirement of the surgical procedure –ENT, Orthopaedic, Gynaecology – Obstetrics, General surgery, Onchosurgery, replacement surgeries, urosurgery, vascular, plastic, Thoracic, Dental etc.

Suggested Time Frame for Training the PG Students:

The student should be taught as per the following schedule to acquire the skills:

1. **First 6 months:**
   - During the first 6months, the student should be taught expertise in the management of uncomplicated cases not belonging to any super specialty (ASA I and II cases). To start with, the student will observe and slowly become independent in giving general anaesthesia and spinal aneasthesia to ASA I and II cases for minor and major surgery, under graded supervision.
   - The postgraduate student should learn the basic principles of safe and effective anaesthesia, resuscitation, and both the prevention and treatment of pain, perioperative care of the surgical patient, care of handling equipments, basic techniques in anaesthesia, and anaesthetic pharmacology, and electrical safety.
   - He/she should select the thesis topic and submit the protocol for his thesis.

2. **Next18months**
   - The student should widen his experience and should be able to undertake anaesthetic care of all routine cases, assist in the anaesthetic care for routine obstetric practice, understand basic principles of critical care, pain management, and participate in audit.
   - The student should be trained in administration of general anaesthesia and regional anaesthesia for ASA I to V under supervision. The student should be able to give extradural block (EDB) lumbar and thoracic, Spinal Block, and Peripheral Nerve Blocks under supervision, and use of Ultrasound machine for giving blocks and venous cannulation. The student should learn paediatric and trauma life supports and maintain skills for basic and advanced cardiac life support.
   - It is advised that they should be posted in the following specialties: General surgery including gastrointestinal surgery, transplant, ENT, Urology, Obstetrics, Dental Surgery, Eye, ICU, Pain Clinic and peripheral theatres like ECT, radio diagnostic and therapeutic procedures (CT scan, MRI scan, angiography).

- The student should be able to analyze data and write a thesis. He/she should be able to present scientific data.

3. Last 12 months

- Thesis should be submitted minimum of 6 months before the final MD examination.
- The post graduate student should be given experience of various super-specialties like cardiothoracic and vascular surgery, neurosurgery and transplantation, and paediatric surgery. The student should be able to plan and administer anaesthesia to all emergency patients under supervision including patients for Cardiac, Neurosurgery, Pediatric surgery, and for all major surgeries. 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 post graduate student should be able to manage critically ill patients and treat intractable pain. They should also know how to organize resources in case of mass casualty. The curriculum should be able to provide 04 months of elective Intensive Care Unit posting (2 months during initial years under supervision and 2 months independently in the last six months).

4. At the end of 3 years, the post graduate student should have the skills to:

- Plan and conduct anaesthesia and provide post-operative care including pain relief for elective and emergency surgical procedures related to all surgical specialties.
- Carry out basic life support(BLS)and advanced life support(ALS)and train medical and paramedical staff in BLS and ALS.
- Manage patients admitted to an intensive care unit with the help of latest equipment.
- Manage patients suffering from acute and chronic intractable pain.
- Organize the hospital environment to manage mass casualty situation and camp anaesthesia.
- Critically review and acquire relevant knowledge from the journals about the new development in the specialty.
- Should be able to participate in anaesthesia audit.

Overall the student should acquire skills in the following practical competencies:

Information management in preoperative evaluation and outcome enhancement and communication skill to patient and relatives.

Syllabus

The course content of **1st year** should cover the following:

1. **Anatomy related to:**

- Diaphragm, upper and lower airway
- Regional anaesthesia, field block, central neuraxial, blockade, block for acute pain states
- Intramuscular injections, arterial and venous cannulations and positioning.

2. **Physics related to:**

- Anaesthesia machine - assembly of necessary items.
- Airway equipment including laryngoscopes, airway devices
- Breathing systems
- Monitoring in anaesthesia with concepts of minimum monitoring
- Gas laws, medical gas supply system
- Fluidics
- Electricity and diathermy
- Oxygen therapy

3. **Physiology related to:**

- Theories of anaesthesia
- Respiratory, cardiovascular, hepatobiliary, renal and endocrine system, pregnancy, blood, muscle and N-M junction, Nerve impulse transmission, ECG, regulation of temperature and metabolism, stress response, cerebral blood flow and ICP.
- Central, autonomic and peripheral nervous systems.
- Metabolic response to stress and trauma.

4. **Pharmacology related to**

    - General principles, concepts of pharmacokinetics and pharmacodynamics
    - Drug interactions in Anaesthesiology, anaphylactic reactions
    - Drugs used for premedication, induction of anaesthesia, general anaesthetics- intra-venous and inhalational, neuromuscular block and reversal of muscle relaxants.

5. **Biochemistry** relevant to fluid balance and blood transfusion, perioperative fluid therapy, acid base homeostasis in health and diseases.
6. Theoretical background of the commonly used anaesthetic techniques of general and regional anaesthesia, general principles of pre-anesthetic assessment and medication, recovery from anaesthesia and postoperative care, effects of positioning during anaesthesia.
7. Introduction to the operation theatre, post-anaesthesia care rooms
8. Introduction to acute, chronic pain and pain management.
9. Documentation and medico-legal aspects of anaesthesia. Defensive anaesthesia. Concept of informed consent.
10. Resuscitation - basic and advanced life support (cardiac and trauma life support), neonatal resuscitation.
11. Intensive care of critical patients with introduction to artificial ventilation, management of unconscious patients, oxygen therapy, shock – pathophysiology and management.
12. Introduction to Research methodology, basics of biostatistics.

The course content of **2nd year** should cover the following:

Anatomy related to blocks for chronic pain, chemical neurolysis and different organ systems.

1. **Physics related to:**

    - Equipments used in anaesthesia monitors, ventilators, vaporizers,
    - fibroptics.
    - Laser
    - Pacemaker and defibrillator

- Monitoring equipment used for assessment of cardiac functions, temperature, respiratory functions, blood gases, intracranial pressure, depth of anaesthesia and neuromuscular block.
- Sterilization of equipment
- Computers in anaesthesia

2. Pharmacology of drugs used in cardiovascular, respiratory, endocrine, renal diseases and CNS disorders.
3. Interpretation of blood gases and other relevant biochemical values, various function tests and basics of measurement techniques, ECG.
4. Blood coagulation mechanism, disturbances, blood components.
5. Special anaesthetic techniques as relevant to–

    - Outpatient anaesthesia, hypotensive anaesthesia, anaesthesia in abnormal environments including rural area and calamitous situations
    - Associated medical disorders in surgical patients

6. Geriatric and pediatric anaesthesia
7. Emergency, ENT, orthopedic, ophthalmology, obstetrics, dental, radio-diagnosis and radiotherapy.
8. Medical statistics relevant to data collection, analysis, record keeping in anaesthesia, comparison and estimation of significance.
9. Care of terminally ill, Hospices management. Do not resuscitate orders.
10. Postures and anaesthesia.
11. Induced hypothermia, incidental, environmental safety of patient.
12. Malignant hyperthermia, myasthenia gravis, GB syndrome and other neuromuscular diseases, obesity, COPD, Diabetes mellitus, bronchial asthma and hypertensive crises.
13. Third world anaesthesia.
14. Inherited metabolic diseases and anaesthesia.

The course contents of **3rd year** should cover the following:

1. Principles of anaesthetic management of neuro/ cardiac/ thoracic/ vascular/ transplantation/ burns and plastic surgery.

2. Anaesthesia for patients with severe cardiac, respiratory, renal and hepatobiliary disorder posted for unrelated surgery
3. Shock, types, pathogenesis and management of patients in shock, renal failure, critically ill and/or on ventilator.
4. Multiple organ failure
5. Infection control, cross contamination in OT and ICU.
6. Immune response and anaesthesia.
7. Concept of cytokines, and other enzymes.
8. Selection, maintenance and sterilization of anaesthesia and related equipment
9. Chronic pain therapy and therapeutic nerve blocks.
10. Acupuncture, acupressure and other non-conventional methods of treatment.
11. Principles of neonatal resuscitation, ventilation and critical care.
12. Principles of human resources and material management.
13. General principles of medical audit. Critical incident reporting
14. Ethics and clinical trial.
15. Hospital, ICU and OT design and planning.
16. Medical education including evidence based medical education.

TEACHING AND LEARNING METHODS

Postgraduate Training Teaching Methodology

Didactic lectures are of least importance.

- Teaching should include seminars, journal clubs, symposia, tutorials, case discussions, and research presentations.
- Reviews and guest lectures should get priority for theoretical knowledge.
- Bedside teaching, grand rounds, interactive group discussions and clinical demonstrations should be the hallmark of clinical/practical learning.
- Student should have hands-on training in performing various procedures (medical/surgical concerning his specialty) and ability to interpret various tests/investigations.
- Exposure to newer specialized diagnostic/therapeutic procedures concerning his/her subject should be given.
- A postgraduate student of a postgraduate degree course in broad specialties/super specialties would be required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.
- Log books shall be maintained regularly and should be checked and assessed periodically by the faculty members imparting the training.
- The postgraduate students shall be required to participate in the teaching and training programme of undergraduate students and interns.
- Department should encourage e-learning activities.

Thesis: Supervision

- The postgraduate is responsible to a Faculty member and the latter should be available to advise and assist the student in his clinical assignments
- Departmental teaching committee will be responsible for the educational

activities of the department and the teaching schedule.

- This involves providing services for emergencies and it makes different demands upon the anaesthesiologist. It should be learned through experience, with reduced staff. The clinical work during emergency should have a close supervision. The standards should be maintained of the agreed competence on schedule. The

  emergency duties should be properly arranged with duty off. The postgraduates may have to do emergency duty as per schedule

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently; for this purpose, provision of skills laboratories in medical colleges is mandatory.

Simulators:

Simulators should be used for the events of high importance but infrequent occurrence and where there may be high risks to the patients. The simulators can also be used for assessment purposes.

Rotation:

Schedule for three years of MD Anaesthesia postings:

The post graduate student should be exposed to the following areas of clinical anaesthesia practice:

1. Pre-anaesthesia clinic
2. Pain clinic
3. Recovery and Post anaesthesia Care Unit (PACU)
4. Intensive Care Units
5. Dialysis and transplant
6. All specialty theatres
7. Peripheral areas: Radiology, MRI, ECT and other interventional laboratories

The suggested schedule of the Operating Theatre can be as follows: This may change as per availability of specialties.

Operation theatre	Months
General Surgery	6
Urology	1
Ophthalmology	1
Otorhinology	2
Dental	1
Orthopedics/Trauma/casualty	3
Gynecology	3
Obstetrics	3
Pediatrics surgery	2
Burns/Plastic	2
CTVS	2
Neurosurgery	2
ICU	4
Recovery	1
Pain	1
Organ Transplant Radiology, Radiotherapy) posting in the their areas. (ECT, Cardiac Cath)	

ASSESSMENT

FORMATIVE ASSESSMENT, during the training programme

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self-directed learning and ability to practice in the system.

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and clinical examination. The thesis is assessed separately.

Quarterly assessment during the MD training should be based on:

1. Journal based/recent advances learning
2. Patient based/ Laboratory or Skill based learning
3. Self directed learning and teaching
4. Departmental and inter departmental learning activity
5. External and Outreach Activities/CMEs

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I)

SUMMATIVE ASSESSMENT

i e., assessment at the end of training

The summative examination would be carried out as per the Rules given in **POSTGRADUATE MEDICAL EDUCATION REGULATIONS, 2000.**

Postgraduate Examination

The examinations shall be organised on the basis of 'Grading'or 'Marking system' to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training. Obtaining a minimum of 50% marks in 'Theory' as well as 'Practical' separately shall be mandatory for passing examination

as a whole. The examination for M.D./ MS shall be held at the end of 3rd academic year. An academic term shall mean six month's training period.

The final examination consists of three parts:

1) Thesis
2) Theory evaluation
3) Practical/Clinical and Oral evaluation

1. Thesis

Every post graduate student shall carry out work on an assigned research project under the guidance of a recognised 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.

Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical 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.

2. Theory consistsoffourpapersof3hourseachhaving10shortstructuredquestions with 10 marks each:

Paper I: Basic Sciences as applied to Anaesthesiology

Paper II: Practice of Anaesthesia: Anaesthesia in relation to associated systemic and medical diseases.

Paper III: Anaesthesia in relation to subspecialties/super specialties

Paper IV: Intensive Care Medicine, Pain Medicine and Recent advances.

3. **Practical/Clinical Examination**: will consist of:3 clinical cases,

Long case: One, duration 30min (history, examination, Diagnosis and Management, Discussion)

Short cases: Two,15minutes each for short case. In short cases only relevant History important to anaesthesia to be taken (history, clinical examination and diagnosis, discussion).

Oral/Viva-voce should be conducted preferably on four tables with one examiner on each table:

Table one: ECG, X-rays, ABG Cards, Pulmonary function tests, Capnographs, clinical exercises card.

Table two: Anaesthetic Drugs, Emergency Drugs, IV Fluids, Nerve Bocks (skeleton) .

Table three: Anaesthesia machine including circuits and Vaporizers, ETT, Supraglottic Airway devices, ICU Ventilator and oxygen therapy equipment.

Table four: Resuscitation equipments, resuscitation demonstration, Difficult Airway Equipment, monitoring equipments.

Alternatively,

1. One long case,vivavoce at one station with all examiners,and:150 marks
2. 28 OSCE station covering two stations of short cases, drugs ECG, X-rays, PFT, ABG, Respiratory loops, Resuscitation etc.: 150 marks

RECOMMENDED READING BOOKS

(LATEST EDITION)

1. Lee's Synopsis of Anaesthesia
2. Clinical Anesthesiology by Morgan
3. Cardiac Anaesthesia By Joel Kaplan
4. Clinical Anaesthesia by Barash, Cullen and Stoelting
5. Textbook of Anaesthesia by Aitken head Rowbotham and Smith
6. Anaesthesia for neonates and in fants by Smith
7. Pharmacology and Physiology for Anaesthetists by Stoelting
8. Principles of Obstetric Anaesthesia by Craford
9. Miller's Anesthesia
10. Stoelting RK, Miller R D Basics of Anaesthesia
11. ICU Book, Paul Marino
12. Text Book of Critical Care, by Fink etal
13. Regional Anaesthesia, P Prithviraj
14. Practical Management of Pain, Raj
15. Stoelting and Dierdorf: Anaesthesia and Co-existing Disease
16. Dorsch and Dorsch: Understanding Anaesthesia Equipments
17. ECG by Shamroth /Goldman
18. Anatomy for Anaesthetists by Harold Ellis
19. Clinical Anesthesia by P.G.Barash
20. Long neckers Anaesthesiology-Mcgraw Hill

Must refer:

1. Cucchiara and Michenfelder:Clinical Neuroanaesthesia
2. Cottrell and Smith:Anaesthesia and Neurosurgery
3. Complications in Anaesthesiology by Orkin
4. Complications in Anaesthesia by Raven
5. Airway management by JL Benumof
6. Obstetric Anaesthesia by Chestnut

Journals 03-05 international Journals and 02 national (all indexed) journals

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BLUEPRINT OF THEORY EXAM PAPER

PAPER I: BASIC SCIENCES AS APPLIED TO ANAESTHESIOLOGY

- Anatomy 10%
- Physiology 20%
- Pharmacology 20%
- Physicsin Anaesthesia 10%
- OR safety, Equipment/ Monitors 10%
- History 10%
- Statistics, Ethics & medico legal aspects 10%
- Pre-anaesthetic evaluation and optimization 10%

PAPERII: PRACTICEOFANAESTHESIA:ANAESTHESIA IN RELATION TO ASSOCIATED SYSTEMICAND MEDICAL DISEASES.

- Obstetric anaesthesia and analgesia, antenatal surgery and IVF 10%
- Central neuraxial anaesthesia and coagulation disorders 10%
- Peripheral nerve blocks 10%
- Orthopaedic and spine surgeries in elective & emergency situation 10%
- Anaesthesia for endocrine diseases 10%
- Anaesthesia for head and neck, ENT and laser surgeries 10%
- Anaesthesia for Laparoscopic/endoscopic surgeries/robotic surgeries 10%
- Airway assessment and difficult airway management 10%
- Post anaesthesia care unit and Post operative complications 10%
- Anaesthesia for daycare surgeries and NORA. 10%

PAPERIII:ANAESTHESIA IN RELATION TO SUB SPECIALTIES/SUPERSPECIALTIES

- Anaesthesia for cardiac and vascular surgery 20%
- Anaesthesia for Thoracic surgeries 10%
- Anaesthesia for neurosurgery 10%
- Anaesthetic Management for paediatric and neonatal surgeries 10%
- Anaesthesia for Urogenital and organ transplant surgeries 10%
- Anaesthesia for Hepatic, Gastroenterological surgeries. 10%
- Anaesthesia for Ophthalmic, Maxillofacial, Dental surgeries, Psychiatry diseases 10%

- Plastic surgery and burns 10%
- Geriatric, Bariatric & Onco-surgeries 10%

PAPER IV: INTENSIVE CARE MEDICINE, PAIN MEDICINE AND RECENT ADVANCES

- Resuscitation and organization of its facilities 10%
- Trauma & disaster management 10%
- Intensive care medicine including POCUS 30%
- Pain management (acute and chronic) and Palliative care 20%
- Simulation in anaesthesia 10%
- Transfusion Therapy–IV fluids, blood products 10%
- Recent advances in Anaesthesiology 10%

Summative Evaluation

Final PG University Examination MD/MS/DM/M.Ch.courses

For all Clinical and Pre para subjects

Distribution of marks for Theory examination

Item	Marks
No. of Theory Papers	4
Marks for each Theory Paper	100
Total marks for Theory Paper	**400**
Passing Minimum for Theory	200/400 (40%minimumineach paper) Theory – aggregate 50% (In addition, in each Theory paper a candidate has to secure minimum of 40%)

Distribution of marks for Practical examination-Clinical departments

Item	Marks	Total Marks
Long case	1*120	120

Short case	2*60	120
OSCE(Minimum4stationsand two Should be manned stations)	40	40
Dissertation viva	20	20
Sub total of clinical/practical	300	**300**
Viva voce	100	100
Grand total	400	**400**

Practical/Clinical and Viva voce-aggregate 50%

Add All Annexures related to PG Activity

For Example: Checklist for seminar

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Model Question Papers

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SUBJECT: ANAESTHESIOLOGY (Max.Marks100)

PAPERI: BASIC SCIENCES AS APPLIED TO ANAESTHESIOLOGY

Your answers should be specific to the questions, draw labeled diagrams wherever necessary. Answer all questions.

I. Short Essays: **10X10=100marks**

1. Describe anatomy of coronary circulation with the help of diagram. Enumerate factors affecting myocardial oxygen demand and supply.(5+5)
2. Write steps of Acetylcholine Synthesis and metabolism. Describe Pre synaptic and postsynaptic events in neuro transmission. Write a note on applied aspects of Neuromuscular physiology. (3+5+2)
3. Define Functional Residual Capacity(FRC). Describe methods to estimate FRC. Draw a neat labelled diagram of pulmonary flow volume loops. Mention its clinical significance. (2+3+3+2)
4. Define Minimum Alveolar Concentration (MAC), MAC-Bar, MAC awake. Mention MAC of commonly used volatile agents and gases. Describe factors affecting MAC. (3+3+4)
5. Enumerate local anaesthetic toxicity of Bupivacaine in terms of Central Nervous and Cardiovascular system symptoms. Mention reasons for difficulty in treating Bupivacaine Toxicity. Add a note on management of Local Anaesthesia Systemic Toxicity (LAST).(2+2+2+4)
6. Describe Venturi effect and its derivation from Bernoulli's principle with diagram. Discuss Clinical applications of Venturi principle(5+5).
7. Classify Vaporizers. Describe functions of a variable bypass vaporizer with a neat diagram. Enumerate safety features in a TEC Vaporizer(3+4+3).
8. Discuss Sir Evan Magill's contributions to Anaesthesia breathing systems, airway devices and Laryngoscopes and other contributions. (3+4+3).

9. Define Brain Death. Mention criteria for determining brain death. Describe tests for determining brain death.(1+4+5)
10. Discuss smoking and its anaesthtic implications. Describe pre procedure optimization of a COPD patient. Discuss postoperative analgesia plan of a COPD patient posted for Ingunial herniaplasty(4+3+3).

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YENEPOYA MEDICAL COLLEGE

SUBJECT: ANAESTHESIOLOGY **Max. Marks 100**

PAPER II : PRACTICE OF ANAESTHESIA: ANAESTHESIA IN RELATION TO ASSOCIATED SYSTEMIC AND MEDICAL DISEASES.

Your answers should be specific to the questions, draw labeled diagrams wherever necessary. Answer all questions.

I. Short Essays: **10X10=100 marks**

1. A 30 year old primigravida PIH patient with 38 weeks of gestation, BP of 160/100mmHg. and moderate proteinuria is posted for LSCS. Discuss preoperative assessment, preparation and anaesthesia management .(3+3+4)
2. Discuss Central neuraxial opioids in terms mechanism of action, indications and adverse effects.(4+3+3)
3. Draw a neat labeled diagram of Brachial plexus. Discuss supraclavicular approach for brachial plexus block in terms of indications and contraindication, techniques and complications.(3+2+3+2).
4. Define Fat Embolism Syndrome. Describe Etiopathogenesis, clinical presentation, diagnosis and its management.(2+2+2+2+2)
5. Describe preoperative evaluation, intraoperative and post operative management of an adult patient with Phaeochromocytoma posted for adrenalectomy.(3+4+3)
6. Post tonsillectomy bleeding.
   a. Discuss an aesthetic concerns
   b. Preoperative preparation
   c. Induction techniques
   d. Intra operative management.(3+3+2+2)
7. 40 year old female with BMI of 38kg./m^2 posted for Laparoscopic cholecystectomy. Describe Pre anaesthetic evaluation.
   Intra operative management
   Post operative concerns(4+4+2)

8. Describe Percutaneous tracheostomy.
   Indications, contraindications, technique and complications(2+2+3+3)
9. Discuss post anaesthesia discharge scoring system. Add a note on causes and management of postoperative nausea and vomiting.(5+5)
10. Discuss the role of anaesthesiologist outside the operating room. A 2 year old child with history of fall from cot is posted for MRI brain-Describe the anaesthetic management.(4+6)

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SUBJECT: ANAESTHESIOLOGY (Max.Marks10)

PAPER III: ANAESTHESIA IN RELATION TO SUBSPECIALTIES /SUPERSPECIALTIES

Your answers should be specific to the questions, draw labeled diagrams wherever necessary. Answer all questions.

I. Short Essays: 10X10=100marks

1. Discuss the anaesthetic considerations of Off pump coronary artery bypass surgery in terms of indications, pre operative evaluation and maintenance(2+2+6)
2. Classify Aortic Aneurysm. Describe clinical presentation. Explain the various strategies of spinal cord protection during thoracic aortic aneurysm repair.(2+2+6)
3. Discuss the indications of one lung ventilation. Enumerate the types of bronchial blockers. Add a note on placement of DLT and confirmation checklist. Methods to improve oxygenation in one lung ventilation. (2+2+3+3)
4. Discuss the preoperative evaluation and preparation of a 30 year old patient with acoustic neuroma posted for posterior fossa surgery. Describe intra operative complications and its management.(5+5)
5. 2yearoldchild (weight10kg.)with cleft palate is posted for palatoplasty. Describe
   a) Pre anaesthetic evaluation
   b) Intra operative management
   c) Post operative Analgesia.(4+4+2)
6. Enumerate various irrigation fluids used for TURP with advantages and disadvantages of each. Describe the signs & symptoms of TURP syndrome. Discuss the management of TURP syndrome.(3+3+4)
7. What is Child –Turcotte Pugh scoring system. Discuss the pre operative evaluation and intraoperative management of60 year old patient with chronic liver disease posted for laparoscopic umbilical hernia repair.(3+3+4)

8. Anaesthetic implications of Psychiatric drugs and add a note on anaesthetic management of modified ECT. (5+5)

9. A25 year old female, post burns contracture neck patient with restricted mouth opening (1 finger breadth) posted for contracture release. Discuss
   a) Pre anaesthetice valuation, preparation
   b) Intraoperative anaesthetic management
   c) Postoperative complications and its management(3+5+2)
10. A 80 year old male patient with COPD and Parkinson's disease posted for cataract surgery. Discuss
   a) Preoperative evaluation and optimization
   b) Intraoperative management.(5+5)

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Y) YENEPOYA MEDICAL COLLEGE

SUBJECT: ANAESTHESIOLOGY (Max.Marks100)

(Time:10.30a.m.to1.30p.m)

PAPERIV: INTENSIVE CARE MEDICINE, PAIN MEDICINE AND RECENT ADVANCES.

Your answers should be specific to the questions, draw labeled diagrams wherever necessary. Answer all questions.

(10x10=100 marks)

1. Describe Resuscitation. Management of a patient of severe haemetemesis in hypovolemic shock due to Esophageal variceal rupture. . (2+8)
2. A 25 year old man has met with a road traffic accident and sustained poly-trauma. Discuss in detail the problems involved and initial management in ICU. (4+6)
3. Total parentral nutrition. Discuss the initiation, maintenance, monitoring and complications.(2+2+3+3)
4. Non Invasive Ventilation. Discuss indications, settings, contraindications and complications.(2+2+3+3)
5. Describe the Etiology, Pathogensis and management of pulmonary edema.(3+3+4)
6. Draw a neat labeled diagram of pain pathway. Define multimodal analgesia. Discuss the rational and methods to administer multimodal analgesia.((3+2+5)
7. Indications, contraindications, anatomy, technique and complications of Stellate Ganglion Block.(2+2+2+2+2)
8. Role of Simulation in Anaesthesia.(10)
9. Goal Directed Fluid Therapy. Add a note on Balanced Salt Solution.(5+5)
10. Erector Spinae Plane(ESP)Block. Discuss indications, Sono anatomy and technique, advantages and complications.(2+2+2+2+2)

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Postgraduate Students Appraisal Form Pre / Para /Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training :FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		123	456	789	
1.	Journal based /recent advances learning				
2.	Patient based /Laboratory or Skill based learning				
3.	Self directed learning and teaching				
4.	Departmental and interdepartmental learning activity				
5.	External and Outreach Activities / CMEs				
6.	Thesis/Research work				
7.	Log Book Maintenance				

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT

SIGNATURE OF HOD

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DEPARTMENTOFANAESTHESIOLOGY

YENEPOYA MEDICAL COLLEGE

Formative Assessment Plan

The following is the current assessment plan of our department of Anaesthesiology for formative assessment for the postgraduates during the training duration.

1. Conducting theory examination for 1st, 2nd and 3rd year postgraduates separately.
2. Viva voce for all the postgraduates oncein3 months having 4 stations.
3. Clinical/Practical test for 2nd & 3rd year postgraduates once in 3 months.