

**SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES AND TECHNOLOGY**

**TRIVANDRUM, KERALA**

**NEUROANESTHESIOLOGY EXAMINATION (DM & PDCC) NOVEMBER 2016**

**MARKS: 100 (1 MARK EACH)**

**DURATION 90 MINUTES**

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1. The cerebral metabolic rate of oxygen requirement for the normal brain is:
  - A) 3.3ml/100g/min
  - B) 2.2ml/100g/min
  - C) 5.5ml/100g/min
  - D) 3.0ml/100g/min
2. Which among the anesthetic agents does not affect the CSF production?
  - A) Halothane
  - B) Isoflurane
  - C) Enflurane
  - D) Desflurane
3. Regarding routine HIV testing in the preoperative period which of the following is false?
  - A) Increases the cost
  - B) Test Cannot be undertaken without patient consent
  - C) Gives protection for operating team against HIV
  - D) Not required in places with low incidence of HIV
4. 60-year-old gentleman presents to the emergency room with history of head injury. On evaluation, does not open eyes to noxious stimuli, makes in-comprehensible sounds and has an abnormal flexion to noxious stimuli. Has a GCS of:
  - A) E2V2M2
  - B) E1V2M3
  - C) E1V3M2
  - D) E1V3M3
5. Isoelectric EEG is seen when the cerebral blood flow is less than
  - A) 10 ml/100g/min
  - B) 15ml/100g/min
  - C) 20ml/100g/min
  - D) 25ml/100g/min

6. Components of the trigeminal cardiac reflex are
- A) Hypertension & Bradycardia
  - B) Hypotension & Tachycardia
  - C) Hypertension & Tachycardia
  - D) Hypotension & Bradycardia
7. The term "ascent" refers to;
- A) Giving anesthesia without pregnancy testing in women of child bearing age
  - B) Treatment of children who do not fall into legal category with adult rights
  - C) Giving anesthesia to persons who cannot give consent due to neurological illness.
  - D) Managing brain dead donors.
8. Wakefulness is distinguished from sleep types (Both REM and NREM) in EEG (electroencephalogram) by the presence of;
- A) Delta activity in EEG
  - B) Slow wave activity in EEG
  - C) Triphasic activity in EEG
  - D) Theta activity in EEG
9. Human brain receives how much percentage of cardiac output normally?
- A) 20-25 %
  - B) 12-15 %
  - C) 7-10 %
  - D) 3- 5 %
10. The only current indication for starting perioperative beta blocker therapy is;
- A) Aortic aneurysm surgery
  - B) Lung resection
  - C) intracranial tumor decompression in diabetic patient
  - D) Bilateral knee replacement
11. Normal brain tissue oxygen tension (PbtO<sub>2</sub>) is:
- A) 10 – 20 mm of Hg
  - B) 20 – 40mm of Hg
  - C) 50 - 70 mm of Hg
  - D) 80 - 90 mm of Hg

12. Which of the following is to be avoided in the management of a hyperkalemic patient?

- A) Hypertension
- B) Beta agonists
- C) Hyperventilation
- D) Hypoventilation

13. Clinical features of malignant hyperthermia include all EXCEPT?

- A) Mottling of skin
- B) Disseminated intravascular coagulation
- C) Cardiac arrhythmias
- D) Respiratory alkalosis

14. The preferred position of levelling external pressure transducers is;

- A) Mid axillary line
- B) Anterior axillary line
- C) 5 cm posterior to sterno manubrial joint
- D) 5 cm posterior to sternoclavicular joint

15. With a one degree drop in temperature, the CMRO<sub>2</sub> decreases by;

- A) 5%
- B) 7%
- C) 10%
- D) 12%

16. Ataxic pattern of respiration is found in lesions of;

- A) Pons
- B) Midbrain
- C) Medulla
- D) Cerebral cortex

17) The following region has been recognized critical for general anesthetics action to produce unconsciousness;

- A) Reticular activating system
- B) Thalamocortical system
- C) Limbic system
- D) Cerebellar system

18) All of the following agents reduces BIS (bispectral index) in anesthetic concentration except;

- A) Xenon
- B) Propofol
- C) Isoflurane
- D) Sevoflurane

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19) Which system is considered to be essential to maintain life?

- A) Parasympathetic system
- B) Sympathetic system
- C) Serotogenic system
- D) GABAergic system

20) In spinal cord the dural sac extends till which vertebral level?

- A) L3
- B) L4
- C) S2
- D) Coccyx

21) Which of the following is the most common cause of subarchnoid hemorrhage?

- A) Trauma
- B) Coagulopathy
- C) Intracranial aneurysm rupture
- D) Idiopathic

22) Metabolic acidosis can be produced by;

- A) Free water excess
- B) Free water deficit
- C) Hypophosphatemia
- D) Hypoalbuminemia

23. The leading cause of transfusion related mortality is;

- A) Allergic reaction
- B) Infective
- C) Transfusion associated acute lung injury
- D) Transfusion associated circulatory overload

24. Preoperative autologous blood donation can be done in which of the following group of patients?

- A) Pediatric patients
- B) Patients with cyanotic heart disease
- C) Active seizure disorders
- D) Unstable angina

25. Impending herniation in ICP monitoring is characterized by

- A) Lundberg A Waves
- B) Lundberg B Waves
- C) Lundberg C Waves
- D) Lundberg D Waves

26. Which among the electrophysiological monitors is most sensitive to anaesthetic agents?

- A) Brain stem auditory evoked potential
- B) Motor evoked potential
- C) Somatosensory evoked potential
- D) Visual evoked potential

27. Which of the following anaesthetic agents increases the cerebral blood flow?

- A) Barbiturates
- B) Etomidate
- C) Ketamine
- D) Propofol

28. What is the osmolarity of Injection Mannitol 20%?

- A) 300 mOsm/L
- B) 514 mOsm/L
- C) 1024 mOsm/L
- D) 1098 mOsm/L

29. Average spinal cord blood flow is about?

- A) 40ml/100g/min
- B) 50ml/100g/min
- C) 60ml/100g/min
- D) 70ml/100g/min

30. Quality in health care includes all except

- A) Safety
- B) Timeliness
- C) Equity
- D) Reduced cost

31. Drug causing desensitisation of nicotinic cholinergic receptors is;

- A) Propofol
- B) Nimodipine
- C) Acetylcholine esterase
- D) Isoflurane

32. Diabetes insipidus is characterized by;
- A) Serum osmolality > 300mOM/L and urine specific gravity > 1.005
  - B) Serum osmolality < 300mOM/L and urine specific gravity < 1.005
  - C) Serum osmolality < 300mOM/L and urine specific gravity > 1.005
  - D) Serum osmolality > 300mOM/L and urine specific gravity < 1.005
33. The target blood sugars advocated in the perioperative neurosurgical population is:
- A) 70 – 110mg/dl
  - B) 110 – 10mg/dl
  - C) 140 – 180mg/dl
  - D) 180 – 200mg/dl
34. All the following are proposed mechanisms of cerebral protection by hypothermia except;
- A) Decrease in cerebral metabolism
  - B) Increase in excitatory neurotransmission
  - C) Preservation of ion homeostasis
  - D) Delayed anoxic/ischemic depolarization
35. The increase in dead space is more in;
- A) Lung abscess
  - B) Bronchiectasis
  - C) Multiple pulmonary embolus
  - D) children
36. Compliance of lung is seen low in all the following EXCEPT
- A) Low FRC
  - B) ARDS
  - C) Emphysema
  - D) Pulmonary fibrosis

37. Which of the following is synthesized by liver?
- A) Factor III
  - B) Factor VIII
  - C) Protein Z
  - D) Calcium
38. Which of the following is NOT a feature of portal hypertension?
- A) Increased blood volume
  - B) Increased renal excretion of sodium
  - C) Ortho deoxia
  - D) Thrombocytopenia
39. Sodium reabsorption from proximal convoluted tubules is increased by
- A) Rennin
  - B) Angiotensin
  - C) Aldosterone
  - D) Vasopressin
40. Complete cessation of urine flow is usually due to;
- A) Hypovolemia
  - B) Cardiac failure
  - C) Acute kidney failure
  - D) Post renal obstruction

41. Postoperative myocardial infarction is commonly a;

- A) Type 1 infarction
- B) Type 2 infarction
- C) ST elevation ischemia
- D) T inversion ischemia

42. What percent of body weight is the blood volume in a neonate?

- A) 6%
- B) 9%
- C) 15%
- D) 20%

43. Which of the following does not contribute to plasma osmolality?

- A) Sodium
- B) Glucose
- C) Albumin
- D) Chloride

44. The drug of choice in the treatment of refractory hypotension in the perioperative period in patients on long term ACE inhibitor is

- A) Noradrenaline
- B) Dobutamine
- C) Phenylephrine
- D) Vasopressin

45. Highest incidence of deep venous thrombosis is seen in
- A) Patients with Coronary artery disease
  - B) Prostate surgery
  - C) Surgeries for malignancy
  - D) Laminectomy
46. Predictor of requirement of intra operative pacing is
- A) Mitral valve disease
  - B) Aortic valve disease
  - C) First degree heart block
  - D) Symptomatic tachyarrhythmia
47. What constitutes post-operative respiratory failure?
- A) FVC < 20 ml/kg
  - B) PaO<sub>2</sub> < 60 mm of Hg on room air
  - C) PaCO<sub>2</sub> > 50mm of Hg on room air
  - D) Reintubation and mechanical ventilation
48. The anesthetic that can be safely used in patients with porphyria is;
- A) Thiopentone
  - B) Propofol
  - C) Ketamine
  - D) Diazepam

49. Which of the following is NOT associated with malignant hyperthermia?

- A) Kyphoscoliosis
- B) Hernia
- C) Down syndrome
- D) Central core disease

50. The duration of stopping aspirin prior to surgery is atleast

- A) 24 hours
- B) 2 days
- C) 3-4 days
- D) 7-10 days

51. The commonest cause of anaphylactic or anaphylactoid reactions in anesthesia is due to

- A) Latex
- B) Antibiotics
- C) Opioids
- D) Neuromuscular blockers

52. The time required for the adrenal responses to normalise in a patient who was on steroid therapy is;

- A) 48 hours
- B) 6 month
- C) 9 months
- D) 1 month

53. Preoperative preparation of a hyperthyroid patient with propranolol and iodides produces all the following EXCEPT:

- A) It shrinks the thyroid gland
- B) Decreases conversion of T4 to T3
- C) Treats symptoms
- D) Corrects abnormalities in left ventricular function

54. The characteristic ECG change in hypercalcemia is;

- A) Prolonged QT interval
- B) Shortened QT interval
- C) Ventricular tachyarrhythmia
- D) Tall T waves

55) A dial setting of 2% Sevoflurane with fresh gas flow of 1 litre will consume how much ml/hr of the agent?

- A) 3 ml/hr
- B) 6 ml/hr
- C) 8 ml/hr
- D) 10 ml/hr

56) Which of the following anesthetic agent affects the hypoxic ventilatory drive least?

- A) Isoflurane
- B) Halothane
- C) Sevoflurane
- D) Desflurane

57) The most common method for identifying occurrence of perioperative myocardial ischemia in OT is;

- A) ST analysis in ECG
- B) Regional wall motion abnormality in echo
- C) Elevation of serum cardiac enzymes like troponin
- D) Severe hypotension

58) The INR (international normalized ratio) required to be maintained following pulmonary embolism is?

- A) 1-1.5 times
- B) 2-3 times
- C) 1.5 to 2 times
- D) 3-4 times

59) Which of the following is not true of CO<sub>2</sub> pneumo peritoneum for laparoscopic surgeries?

- A) Reduced oxygenation
- B) Reduced FRC (functional residual capacity)
- C) Reduced Vital capacity
- D) Increased airway pressure

60) Which of the following anesthetic drug does not cause atelectasis?

- A) Midazolam
- B) Ketamine
- C) Propofol
- D) Thiopentone

61) Regarding MAC-awake (minimum alveolar concentration) which of the following is true?

- A) A low MAC awake means more anaesthetic drug is required.
- B) A high MAC awake means amnesia is more
- C) Pharyngeal reflex can be impaired despite MAC awake
- D) Nitrous oxide has lowest MAC awake.

62) "Pneumotaxic center" is located in;

- A) Pons
- B) Medulla
- C) Midbrain
- D) Diencephalon

- 63) In a patient with history of allergy which of the following drug has been found to have highest incidence of anaphylaxis?
- A) Antibiotics
  - B) Neuromuscular blocking agents
  - C) Intravenous anaesthetics
  - D) Latex
- 64) Which of the following muscle relaxant is metabolized by plasma choline esterase?
- A) Atracurium
  - B) Rocuronium
  - C) Cis atracurium
  - D) Mivacurium
- 65) Which of the following is not a dynamic index of cardiac preload?
- A) Pulse pressure Variation
  - B) Delta down
  - C) Systolic pressure variation
  - D) Left ventricular end diastolic area
- 66) Which of the following Bi-spectral index maximal value is recommended for general anesthesia?
- A) 30
  - B) 55
  - C) 65
  - D) 45
- 67) Which of the following is the major contributor for serum osmolarity?
- A) Chloride
  - B) Sodium
  - C) Proteins
  - D) Glucose

68) Which of the following is the hematocrit of packed RBCs?

- A) 70%
- B) 60%
- C) 50%
- D) 40%

69) Which of the following inhalational anaesthetic agent is more stable?

- A) Halothane
- B) Enflurane
- C) Desflurane
- D) Sevoflurane

70) Among the type of injury to laryngeal nerve injuries which of the following cause obstructed airway?

- A) Bilateral superior laryngeal nerve complete injury
- B) Bilateral superior laryngeal nerve incomplete injury
- C) Bilateral recurrent laryngeal nerve complete injury
- D) Bilateral recurrent laryngeal nerve partial injury

71) Regarding oculo cardiac reflex which of the following is not true?

- A) More common with stretching of medial rectus muscle
- B) More common under general anaesthesia
- C) Afferent is Trigeminal nerve
- D) Efferent pathway is vagus nerve

72) Which of the following opioid depends on renal clearance?

- A) Morphine
- B) Fentanyl
- C) Alfentanil
- D) Sufentanil

73) Which of the following irrigating fluids used in TURP (transurethral resection of prostate) has highest osmolarity?

- A) Glycine 1.5%
- B) 20% Mannitol
- C) 3.5% Sorbitol
- D) 1% urea

74) Autoregulation is not seen in which of the following blood flow?

- A) Cerebral blood flow
- B) Hepatic blood flow
- C) Coronary blood flow
- D) Uterine blood flow

75) A patient presenting with intracerebral bleed with blood pressure of 220/126 mm Hg is having:

- A) Hypertensive urgency
- B) Hypertensive emergency
- C) Acute hypertensive episode
- D) Accelerated hypertension

76) The metabolic syndrome described in obese patients is known as ?

- A) Syndrome O
- B) Syndrome X
- C) Syndrome B
- D) Syndrome A

77) Bradycardia is common in which of the following level of spinal cord injury?

- A) C1-2
- B) C5-6
- C) T 1-4
- D) T 6-9

78) Regarding cerebral perfusion pressure (CPP) which of the following is true?

- A) CPP= Mean arterial pressure-central venous pressure
- B) CPP= Mean arterial pressure-intracranial pressure
- C) CPP= Systolic arterial pressure-central venous pressure
- D) CPP= Systolic arterial pressure-intracranial pressure

79) For a change in PaCO<sub>2</sub> from 40 mm Hg to 20 mmHg, which of the following changes the cerebral blood flow (CBF) whole good?

- A) CBF increases twice
- B) CBF remains constant
- C) CBF decreases by half
- D) CBF stops to minimal

80) Which of the following level spinal cord injury following trauma is seen most often?

- A) C1-C2 level
- B) C3-C7 level
- C) D8-D10 level
- D) D12-L2 level

81) Which one of the following mechanism is not present in infants?

- A) Shivering
- B) Sweating
- C) Cutaneous vasoconstriction
- D) Non shivering thermogenesis

82) Transient neurological symptoms following spinal anesthesia is seen with which of the following drugs?

- A) Bupivacaine
- B) Lidocaine
- C) Mepivacaine
- D) Ropivacaine

- 83) Regarding low molecular weight heparin (LMWH) and epidural anesthesia which of the following statement is false?
- A) Epidural should be performed 10-12 hours after stopping LMWH
  - B) Removal of epidural catheters should be 10-12 hours after LMWH administration
  - C) LMWH should be restarted 10-12 hours after epidural catheter insertion
  - D) LMWH should be restarted 10-12 hours after epidural catheter removal
- 84) "FAST" (Face, Arm, Speech, Time) criteria is used in the pre hospital evaluation of which disease?
- A) Head injury
  - B) Stroke
  - C) Epilepsy
  - D) Coma
- 85) The current definition of Status epilepticus recommends the continuous seizure duration to be;
- A) 5 minutes
  - B) 10 minutes
  - C) 15 minutes
  - D) 30 minutes
- 86) Severe bleeding is seen during surgery of which of the following tumor ?
- A) Meningioma
  - B) Ganglioglioma
  - C) Pinealocytoma
  - D) Ependymoma
- 87) Metabolic acidosis is a complication of infusion of large quantities of which of the following fluid?
- A) 5% Dextrose
  - B) 0.9% Saline
  - C) 5% Dextrose with normal saline
  - D) Ringer Lactate

88) Which of the following ECG lead monitoring show greatest sensitivity to myocardial ischemia in the perioperative period?

- A) V3
- B) Lead III
- C) V5
- D) Lead II

89) What is the percentage prevalence of Patent Foramen Ovale (PFO) in the population?

- A) 0-5%
- B) 10-20%
- C) 20-30%
- D) 30-40%

90) Regarding (S) Ketamine which of the following is false as compared to its racemic mixture?

- A) More potent
- B) Longer duration of action
- C) Similar cardiovascular effects
- D) Similar dreaming effects

91) Which of the following produces highest level of carbon monoxide on reaction with soda lime?

- A) Sevoflurane
- B) Desflurane
- C) Isoflurane
- D) Halothane

92) The neurotransmitter that promotes the key aspects of neuronal development is;

- A) Acetyl choline
- B) Dopamine
- C) Gamma Amino Butric Acid (GABA)
- D) Orexin

93) All are true of anesthetic neurotoxicity EXCEPT:

- A) Anesthetics administered during the peak of synaptogenesis increases the intrinsic pathway of developmental apoptosis.
- B) General anesthesia activates the extrinsic pathway of neuronal apoptosis
- C) Anesthesia induced neurotropic mediated apoptotic cascade shows regional specificity
- D) The presence of beta- oestradiol augments anesthesia induced neurotoxicity

94) The recommendations to avoid anesthetic induced developmental neurotoxicity include

- A) Limit the duration of exposure to 4 hours
- B) The chances are less in children above 4 years of age
- C) Inhalational anesthesia is safer
- D) The evidence on anesthetic induced neurotoxicity is robust

95) The cranial nerve that forms part of parasympathetic nervous system is

- A) III<sup>rd</sup> cranial nerve
- B) IV<sup>th</sup> cranial nerve
- C) V<sup>th</sup> cranial nerve
- D) VI<sup>th</sup> cranial nerve

96) Early carotid endarterectomy is done in which of the following condition?

- A) Large stroke
- B) Reduced level of consciousness
- C) Ipsilateral carotid artery disease
- D) Presence of midline shift

97) Elective surgery is considered safe in a patient with acute stroke at which month?

- A) 1 week
- B) 3 months
- C) 6 months
- D) 1 year

98) Which of the following is NOT a hormone secreted by hypothalamus?

- A) Dopamine
- B) Noradrenaline
- C) Somatostatin
- D) Thyroid releasing hormone

99) Difficulty in endotracheal intubation in acromegaly is due to;

- A) High arched palate
- B) Thick neck
- C) Subglottic stenosis
- D) Decreased mobility of cervical spine

100) The commonest type of peri operative eye injury is due to;

- A. Corneal abrasion
- B. Raised intraocular pressure
- C. Ischemic optic neuropathy
- D. Central retinal artery occlusion

**ANSWER KEYS (DM&PDCC NEUROANESTHESIA) NOVEMBER 2016**

1	C	21	A	41	B	61	C	81	A
2	B	22	A	42	B	62	A	82	B
3	C	23	C	43	C	63	B	83	D
4	B	24	A	44	D	64	D	84	B
5	B	25	A	45	C	65	D	85	A
6	D	26	D	46	B	66	B	86	A
7	B	27	C	47	D	67	B	87	B
8	C	28	D	48	B	68	B	88	C
9	B	29	C	49	C	69	C	89	C
10	A	30	D	50	C	70	D	90	B
11	B	31	D	51	D	71	B	91	B
12	D	32	D	52	B	72	A	92	C
13	D	33	C	53	D	73	B	93	D
14	C	34	B	54	B	74	D	94	B
15	B	35	C	55	B	75	B	95	A
16	C	36	C	56	D	76	B	96	C
17	B	37	C	57	A	77	C	97	B
18	A	38	B	58	B	78	B	98	B
19	A	39	B	59	A	79	C	99	C
20	C	40	D	60	B	80	B	100	A

**Answer Keys (NOVEMBER 2016 DM NEUROANESTHESIA)**

1. C (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition page: 2)
2. B (Miller's Textbook of Anesthesia 8<sup>th</sup> edition pg: 408 Table 17.3 Churchill Livingstone)
3. C (Miller Textbook of Anesthesia 7th edition p: 212, Churchill Livingstone)
4. B ( Miller's Textbook of Anesthesia 8<sup>th</sup> edition pg;3108 Table 105-4)
5. B ( Miller Textbook of Anesthesia 8<sup>th</sup> edition pg;3104 Table 105-2)
6. D ( Miller Textbook of Anesthesia 8<sup>th</sup> edition pg;2531)
7. B (Miller Textbook of Anesthesia, 7th edition p:212, Churchill Livingstone)
8. C (Miller Textbook of Anesthesia, 7th edition p: 239, Churchill Livingstone)
9. B (Miller Textbook of Anesthesia, 7th edition p:206, Churchill Livingstone)
10. A( Miller Textbook of Anesthesia, 7th edition p:288, Churchill Livingstone)
11. B ( Miller Textbook of Anesthesia 8<sup>th</sup> edition pg" 3106 Table 105-2)
12. D (Miller Textbook of Anesthesia 8<sup>th</sup> edition, p; 1207)
13. D (Miller Textbook of Anesthesia 8<sup>th</sup> edition p-1297)
14. C (Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 1345)
15. B (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition page: 26)
16. C (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition page: 407)
17. B ( Miller Textbook of Anesthesia, 7th edition p:252, Churchill Livingstone)
18. A (Miller Textbook of Anesthesia, 7th edition p: 254, Churchill Livingstone)
19. A (Miller Textbook of Anesthesia, 7th edition p:269, Churchill Livingstone)
20. C( Duane Haines Neuroanatomy , p10, 9th edition, 2015, Wolters Kluver)
21. A ( Duane Haines Neuroanatomy , p 58, 9th edition, 2015, Wolters Kluver)
22. A ( Miller Textbook of Anesthesia 8<sup>th</sup> edition, p-1811)
23. C ( Miller Textbook of Anesthesia 8<sup>th</sup> edition , p-1830)
24. A ( Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 1883)
25. A (Miller Textbook of Anesthesia 8<sup>th</sup> edition, p; 3104)

26. D (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition p- 120)
27. C (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition p- 84)
28. D (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition P-148)
29. C (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition P-347)
30. D (Miller Textbook of Anesthesia 8<sup>th</sup> edition, p-88)
31. D (Miller Textbook of Anesthesia 8<sup>th</sup> edition, P-436)
32. D (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition page 407)
33. C (Miller Textbook of Anesthesia 8<sup>th</sup> edition,pg-2174)
34. B (Cottrell Textbook of Neuroanesthesia 5<sup>th</sup> Edition p- 407)
35. C (Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 447)
36. C (Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 448)
37. C ((Miller Textbook of Anesthesia 8<sup>th</sup> edition. P- 528)
38. B (Miller Textbook of Anesthesia 8<sup>th</sup> edition p- 540)
39. B (Miller Textbook of Anesthesia 8<sup>th</sup> edition p- 556)
40. D (Miller Textbook of Anesthesia 8<sup>th</sup> edition. p- 556)
41. B (Miller Textbook of Anesthesia 8<sup>th</sup> edition p- 1429)
42. B (Miller Textbook of Anesthesia 8<sup>th</sup> edition p- 1768)
43. C (Miller Textbook of Anesthesia 8<sup>th</sup> edition.p- 1770)
44. D (Miller Textbook of Anesthesia 8<sup>th</sup> edition.p- 1182)
45. C (Miller Textbook of Anesthesia 8<sup>th</sup> edition. P- 1189)
46. B (Miller Textbook of Anesthesia 8<sup>th</sup> edition. p- 1189)

47. D Miller Textbook of Anesthesia 8<sup>th</sup> edition P-1192)
48. B (Miller Textbook of Anesthesia 8<sup>th</sup> edition.p-1200)
49. C (Miller Textbook of Anesthesia 8<sup>th</sup> edition. p- 1201)
50. C ( Miller Textbook of Anesthesia 8<sup>th</sup> edition miller 8<sup>th</sup> ed p- 1126)
51. D (Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 1137)
52. B ( Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 1169)
53. D ( Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 1174)
54. B ( Miller Textbook of Anesthesia 8<sup>th</sup> edition, p- 1177)
55. B (Ehrenwerth J, Eisenkraft J. Anesthesia Equipment. p 78, Elsevier. 2nd edition)
56. D (Miller Textbook of Anesthesia, 7th edition p: 586, Churchill Livingstone)
57. A (Stoelting's Anesthesia and coexisting disease, p 29, 6th edition, Saunders)
58. B (Stoelting's Anesthesia and coexisting disease, p 213, 6th edition, Saunders)
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