

WRITTEN TEST FOR MFCP OF SCIENTIFIC ASSISTANT (ANAESTHESIA) TO
SR. SCIENTIFIC ASSISTANT (ANAESTHESIA)

08.09.2017

- 1) If the O₂ supply pressure to the anaesthesia machine suddenly drops to 20 psi, which of the following will **NOT** happen?
 - a) the O₂ flow will be maintained
 - b) 100% O₂ will be delivered
 - c) pressure sensor valve will shut off delivery of nitrous oxide and other gases
 - d) the O₂ flow will not be maintained
- 2) The pressure gauge on a size "E" compressed-gas cylinder containing O₂ reads 1600 psi. How long could O₂ be delivered from this cylinder at a rate of 2 L/min?
 - a) 90 minutes
 - b) 140 minutes
 - c) 250 minutes
 - d) 320 minutes
- 3) After induction and intubation with confirmation of tracheal placement, the O₂ saturation begins to fall. The O₂ analyzer shows 4% inspired oxygen. The oxygen line pressure is 65 psi. The O₂ cylinder on the back of the anaesthesia machine has a pressure of 2100 psi and is turned on. The oxygen saturation continues to fall. The next step should be to:
 - a) Exchange the cylinder
 - b) Replace pulse oximeter probe
 - c) Disconnect O₂ line from hospital source
 - d) Extubate and start mask ventilation
- 4) Each of the following is cited as an advantage of calcium hydroxide lime (Amsorb Plus, Drägersorb) over soda lime **EXCEPT**:
 - a) Compound A is not formed
 - b) Carbon Monoxide is not formed
 - c) More absorptive capacity per 100 g of granules
 - d) It does not contain NaOH or KOH
- 5) What is the storage life of whole blood stored with citrate phosphate dextrose?
 - a) 14 days
 - b) 21 days
 - c) 35 days
 - d) 42 days
- 6) A number 6 endotracheal tube indicates which size?
 - a) 6-mm internal diameter
 - b) 6-mm external diameter
 - c) 6-mm external circumference
 - d) 6-mm internal circumference
- 7) Optimal laryngoscopy position for most patients is:
 - a) flexion of lower cervical spine and extension of the head at atlanto-occipital joint
 - b) extension of lower cervical spine and flexion of the head at atlanto-occipital joint
 - c) flexion of lower cervical spine and flexion of the head at atlanto-occipital joint
 - d) extension of lower cervical spine and neutral position of the head at atlanto-occipital joint
- 8) The maximum leakage allowed through electrodes or catheters in contact with the heart is:
 - a) 10 µA (micro Ampere)
 - b) 100 µA (micro Ampere)
 - c) 1 µA (micro Ampere)
 - d) 0.1 µA (micro Ampere)
- 9) Liquid oxygen must be stored well below its critical temperature because gases can be liquefied by pressure only if stored below their critical temperature. What is its critical temperature?
 - a) -119°C
 - b) 0°C
 - c) -150°C
 - d) -180°C
- 10) What is the drug of choice for treating anaphylaxis?
 - a) Adrenaline
 - b) Hydrocortisone
 - c) Atropine
 - d) Antihistamine
- 11) What is the normal value of % FEV₁?
 - a) 50-60%
 - b) 70-83%
 - c) 90-94%
 - d) 95-97%

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- 12) Which one of the following is **INCORRECT** regarding Pin index system?
- a) Air 1, 5
 - b) Oxygen 2, 5
 - c) Nitrous oxide 3, 5
 - d) Carbon dioxide (<7.5% in O₂) 2, 4
- 13) Which of the following is **NOT** an indication for tracheal suctioning?
- a) A rise in peak pressure
 - b) Increased airway resistance
 - c) Decreased tidal volume during pressure-limited ventilation
 - d) Decreased end-tidal carbon dioxide
- 14) Blood products that transmit viruses include all the following **EXCEPT**:
- a) Fresh frozen plasma
 - b) Platelets
 - c) Cryoprecipitate
 - d) Albumin
- 15) How many litres does a size "E" compressed-gas cylinder completely filled with N₂O contain?
- a) 1160 L
 - b) 1470 L
 - c) 1590 L
 - d) 1640 L
- 16) What is the induction dose of propofol in a healthy adult patient?
- a) 1 to 2 mg/kg intravenous
 - b) 5 to 10 mg/kg intravenous
 - c) 5 to 10 microgram/kg intravenous
 - d) 1 to 2 microgram/kg intravenous
- 17) The normal vital capacity for a 70-kg man is
- a) 1 L
 - b) 2 L
 - c) 5 L
 - d) 7 L
- 18) Which of the following systems prevents attachment of gas-administering equipment to the wrong type of gas line?
- a) Pin index safety system
 - b) Diameter index safety system
 - c) Fail-safe system
 - d) Proportion-limiting control system
- 19) What is the intubating dose of Atracurium?
- a) Intubating dose: 0.5 to 0.6 mg/kg
 - b) Intubating dose: 1 to 2 mg/kg
 - c) Intubating dose: 5 to 10 mg/kg
 - d) Intubating dose: 1 to 2 microgram/kg
- 20) When electrocardiogram (ECG) electrodes are placed for a patient undergoing a magnetic resonance imaging (MRI) scan, which of the following is true?
- a) Electrodes should be as close as possible and in the periphery of the magnetic field
 - b) Electrodes should be as close as possible and in the centre of the magnetic field
 - c) Placement of electrodes relative to field is not important as long as they are far apart
 - d) ECG cannot be monitored during an MRI scan
- 21) Which of the following arrangements of rotameters on the anaesthesia machine manifold is safest with left-to-right gas flow?
- a) O₂, CO₂, N₂O, air
 - b) CO₂, O₂, N₂O, air
 - c) Air, CO₂, O₂, N₂O
 - d) Air, CO₂, N₂O, O₂
- 22) The minimal ventricular fibrillation threshold of current applied to the skin is:
- a) 1 mA
 - b) 10 mA
 - c) 100 mA
 - d) 500 mA
- 23) Oxygen may be supplied to the pipeline system by all of the following **EXCEPT**:
- a) G and H cylinders
 - b) Oxygen concentrators
 - c) Bulk liquid systems
 - d) C cylinders

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- 24) Which is **NOT** an indication for tracheal suctioning?
- a) A rise in peak pressure
 - b) Increased airway resistance
 - c) Decreased tidal volume during pressure-limited ventilation
 - d) Decreased end-tidal carbon dioxide
- 25) Which one of the following is **FALSE** regarding Ethylene Oxide?
- a) Is flammable in concentrations of 3% or greater
 - b) Is not useful for items containing petroleum-based lubricant
 - c) Is odorless
 - d) Items for gas sterilization must be free of water droplets
- 26) The most sensitive means of detecting venous air embolism is:
- a) End-tidal CO₂
 - b) Doppler probe
 - c) Pulmonary arterial catheter
 - d) Transesophageal echocardiography
- 27) An excessively high pressure in the breathing system may be caused by all of the following **EXCEPT**:
- a) The patient coughing or straining
 - b) Use of the oxygen flush during the inspiratory phase of the ventilator cycle
 - c) A punctured ventilator bellows
 - d) Increased compliance
- 28) A rise in peak airway pressure may occur as a result of all the following **EXCEPT**:
- a) An increase in tidal volume
 - b) An increase in inspiratory flow rate
 - c) An increase in resistance
 - d) An increase in compliance
- 29) Which one of the following is **FALSE**?
- a) Calibration of the transducer is an adjustment in system gain to ensure proper response to a known reference pressure value
 - b) Zeroing exposes the transducer to ambient atmospheric pressure through an open stopcock
 - c) Leveling assigns the zero reference point to a specific position on the patient's body
 - d) Raising the patient above the transducer will produce spuriously low pressures
- 30) Regarding electrocardiography, which one of the following is **FALSE**?
- a) A main source of artifact from ECG leads is loss of integrity of lead insulation
 - b) Electrocautery is the important source of interference on the ECG in the operating room
 - c) To avoid the problem of muscle artifact, electrodes should be placed over bony prominences, whenever possible
 - d) Signal loss cannot occur at the skin electrode interface and therefore it is not necessary to prepare skin optimally before placing electrodes
- 31) Which one of the following is **FALSE** regarding oxygen E cylinders?
- a) As the cylinder empties, remaining gauge pressure is not proportionate to the number of litres of oxygen left in the cylinder
 - b) A full cylinder contains 625 litres of oxygen
 - c) A full cylinder has a pressure of 2000 PSIG
 - d) The pressure-reducing valve on the cylinder will allow oxygen to exit at 45 to 51 PSIG

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- 32) Which one of the following is **TRUE**?
- a) Boiling (100°C) for 15 minutes kills bacteria, but spores may escape destruction
 - b) Australian antigen virus is destroyed by boiling
 - c) Autoclaving is not useful for metal objects and fabrics
 - d) Disinfection achieves the same reduction in microbial contamination levels as sterilization
- 33) The pressure and volume per minute delivered from the central hospital oxygen supply are:
- a) 2100 psi and 650 L/min
 - b) 1600 psi and 100 L/min
 - c) 75 psi and 100 L/min
 - d) 50 psi and 50 L/min
- 34) Which anesthetic agent is associated with the highest level of carbon monoxide formation?
- a) Halothane
 - b) Sevoflurane
 - c) Isoflurane
 - d) Desflurane
- 35) 1 kPa is approximately equivalent to all of the following **EXCEPT**:
- a) 10 cm H₂O
 - b) 14.7 psi
 - c) 0.76 mm Hg
 - d) 100 mbar
- 36) A Eutectic Mixture of Local Anesthetics (EMLA) cream is a mixture of which local anaesthetics?
- a) Lidocaine 2.5% and prilocaine 2.5%
 - b) Lidocaine 2.5% and benzocaine 2.5%
 - c) Prilocaine 2% and benzocaine 2%
 - d) Lidocaine 4%
- 37) A ventilator pressure-relief valve stuck in the closed position can result in
- a) Barotrauma
 - b) Hypoventilation
 - c) Hyperventilation
 - d) Low breathing circuit pressure
- 38) Gas from a N₂O compressed-gas cylinder enters the anaesthesia machine through a pressure regulator that reduces the pressure to
- a) 60 psi
 - b) 45 psi
 - c) 30 psi
 - d) 15 psi
- 39) The correct location for placement of the V5 lead is:
- a) Midclavicular line, third intercostal space
 - b) Anterior axillary line, fourth intercostal space
 - c) Midclavicular line, fifth intercostal space
 - d) Anterior axillary line, fifth intercostal space
- 40) When electrocardiogram (EKG) electrodes are placed for a patient undergoing a magnetic resonance imaging (MRI) scan, which of the following is true?
- a) Electrodes should be as close as possible and in the periphery of the magnetic field
 - b) Electrodes should be as close as possible and in the center of the magnetic field
 - c) Placement of electrodes relative to field is not important as long as they are far apart
 - d) EKG cannot be monitored during an MRI scan
- 41) Select the **FALSE** statement regarding non-invasive arterial BP monitoring devices.
- a) If the width of the BP cuff is too narrow, the measured BP will be falsely lowered
 - b) The width of the BP cuff should be 40% of the circumference of the patient's arm
 - c) If the Blood Pressure cuff is wrapped around the arm too loosely, the measured BP will be falsely elevated
 - d) Frequent cycling of automated BP monitoring devices can result in edema distal to the cuff

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- 42) Basic Life Support single rescuer cardiac compression-ventilation ratio for infant, child, and adult victims (excluding newborns) is:
a) 10:1 b) 15:2 c) 30:2 d) 60:2
- 43) Which one of the following is a disadvantage of steam sterilization?
a) Adequate penetration into a pack may not occur with large packs
b) All spores may not be killed
c) Danger to processing personnel
d) Instrument damage
- 44) Which one of the following is **FALSE** regarding plasma sterilization?
a) No worker exposure or environmental contamination
b) Presence of toxic residues
c) Compatible with ceramics, silica, glass, and many plastics
d) Sterilized products are immediately available for use
- 45) Advantages of Ethylene Oxide sterilization include all the following **EXCEPT**:
a) Items can be pre-packaged
b) A large amount of equipment can be sterilized at one time
c) It can be used for items that heat or moisture could damage
d) Short processing time
- 46) The **BEST** way to detect an esophageal intubation is:
a) Seeing the tube pass through the vocal cords
b) Observing chest wall movement during inspiration and exhalation
c) Hearing breath sounds during controlled ventilation
d) Monitoring CO₂ in exhaled gases
- 47) All the following are true regarding cleaning and sterilizing the Laryngeal Mask Airway (LMA) **EXCEPT**:
a) It should first be washed with detergent and water
b) The LMA can be sterilized by using the steam autoclave
c) Ethylene oxide should not be used to sterilize the LMA
d) The LMA can be soaked in liquid chemical agents for up to 30 minutes
- 48) How can the low-pressure system in all anaesthesia machines be checked for leaks?
a) Positive pressure from the breathing system test
b) Elapsed time pressure test
c) Fresh gas line occlusion test
d) A negative pressure test
- 49) Which one of the following is **FALSE** regarding Cracking a cylinder valve?
a) Is momentarily opening it to blow away foreign matter from the outlet
b) Should be performed before attachment of a dispensing device
c) Reduces the likelihood of flash fires
d) Refers to a fracture of the stem of the valve
- 50) For greatest accuracy, the gas flow sensor should be placed
a) In the inspiratory limb at the absorber
b) Between the inspiratory limb and the Y-piece
c) Between the Y-piece and the patient
d) Between the Y-piece and the expiratory limb

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-ANSWER KEY (08/09/2017)

1	D	26	D
2	C	27	D
3	C	28	D
4	C	29	D
5	B	30	D
6	A	31	A
7	A	32	A
8	A	33	D
9	A	34	D
10	A	35	D
11	B	36	A
12	D	37	A
13	D	38	B
14	D	39	D
15	C	40	B
16	A	41	A
17	C	42	C
18	B	43	D
19	A	44	B
20	B	45	D
21	D	46	D
22	C	47	D
23	D	48	D
24	D	49	D
25	C	50	C