AMREF INTERNATIONAL UNIVERSITY

SCHOOL OF MEDICAL SCIENCES

DEPARTMENT OF NURSING AND MIDWIFERY SCIENCES

HIGHER DIPLOMA IN CRITICAL CARE NURSING

END OF TRIMESTER EXAMINATIONS AUGSUT 2022

Course Unit: ACN120, Essentials of Critical Care Nursing

Date: Friday 5th August 2022

Time: 2 hours

Start: 9.00 AM Stop: 11.00 AM

Instructions

1) This paper has One section: Section A
2) Answer **ALL** questions in Section A
3) Use the University examination booklets provided
4) Re-writing the questions on your answer sheet is unnecessary

SECTION A: MULTIPLE CHOICE QUESTIONS (70 MARKS)

1. The amount of air that remains in the lungs after a maximum expiration is:

   a) Vital capacity
   b) Expiratory reserve volume
   c) Functional residual capacity
   d) Residual volume

2. Pulse oximetry is used to measure the proportion of:

   a) Hemoglobin in the blood
   b) Hemoglobin that is oxygenated
   c) Hemoglobin that is deoxygenated
   d) Hemoglobin concentration

3. Continuous Positive Airway Pressure (CPAP) ventilatory mode exerts positive airway pressure:

   a) Throughout the respiratory cycle during spontaneous breathing
   b) Throughout the respiratory cycle during controlled mode of ventilation
   c) Only during inspiratory phase of spontaneous breathing
   d) Only during expiratory phase of spontaneous breathing

4. 70% of carbon-dioxide is transported as:

   a) Dissolved in blood
   b) Bicarbonate
   c) Carbonic acid
   d) Carboxy -hemoglobin

5. Voluntary control of respiration occurs at the:
   a) Medulla
   b) Pons
   c) Brain stem
   d) Cerebral cortex

6. The percentage (%) of oxygen delivered by a non-rebreather mask is:

   a) 85 – 90%
   b) 70 – 90%
   c) 80 – 100%
   d) 24 – 55%

7. The most powerful buffer system in the extra-cellular fluid compartment (ECF) is:
    a) Phosphate
    b) Protein
    c) Chloride
    d) Bicarbonate

8. The most likely acid base disturbance when pH is 7.28, PCO_2 - 60mmhg, HCO_3 – 24mmol/l is:
    a) Metabolic acidosis
    b) Respiratory acidosis
    c) Respiratory alkalosis
    d) Metabolic alkalosis

9. Acute respiratory failure is evidenced by:
    a) High pH, Low PCO_2, Low PO_2
    b) Low pH, High PCO2, High PO2
    c) Low pH, High PCO2, Low PO2
    d) High pH, Low PCO2, High PO2

10. The volume of air that can be exhaled after normal exhalation is the:
    a) Tidal volume
    b) Residual volume
    c) Inspiratory reserve volume
    d) Expiratory reserve volume

11. The primary chemical stimulus for breathing is the concentration of:
    a) Carbon-monoxide in blood
    b) Carbon-dioxide in blood
    c) Oxygen in the blood
    d) Carbonic acid in the blood

12. The dorsal respiratory group is:
    a) Involved in forced expiration
    b) Sets the basic respiratory system
    c) Inactive during normal quiet respiration
    d) Delays the “switch off” signal of the inspiratory ramp

13. Functional residual capacity refers to:
    a) Volume of gas that can be forcefully exhaled after normal expiration
    b) Volume of gas remaining in the lungs after normal respiration
    c) Volume of gas exchanged in quiet breath
    d) Volume of gas remaining in the lungs after normal expiration

14. Mode of mechanical ventilation recommended for a patient with COVID 19 is:
    a) Pressure support ventilation (PSV)
    b) Assist control (AC)
    c) Continuous positive airway pressure (CPAP)
    d) Synchronized intermittent mandatory ventilation (SIMV)

15. The acid base imbalance in a patient with a respiratory rate of 32 b/min in severe pain and sustained tachypnea would be:
    a) Metabolic alkalosis
    b) Respiratory alkalosis
    c) Metabolic acidosis
    d) Respiratory acidosis

16. A Cerebral hemorrhage located underneath the dura is called:
    a) Epidural hemorrhage
    b) Subdural hemorrhage
    c) Sub-arachnoid hemorrhage
    d) Extra-dura hemorrhage

17. The permanent removal of a section of the cranium is:
    a) Craniotomy
    b) Burr-hole
    c) Craniectomy
    d) Cranioplasty

18. Decerebrate posturing refers to:
    a) Abnormal flexion of the upper limbs, flexion of the lower limbs
    b) Abnormal extension of the upper limbs, extension of the lower limbs
    c) Abnormal flexion of the upper limbs, extension of the lower limbs
    d) Abnormal extension of the upper limbs, flexion of the lower limbs

19. Acute pain signals are carried by:
    a) delta fibers
    b) C fibers
    c) B fibers
    d) Myelinated fibers

20. The fifth(5) cranial nerve is:
    a) Trigeminal
    b) Abducens
    c) Facial
    d) Vestibulo-cochlea

21. During a lumbar puncture (LP) the needle is inserted between:
    a) T12 – L1
    b) L1 – L2
    c) L2 – L3
    d) L3 – L4

22. Patients who are awake and conscious but have no means of producing speech, limb or face movements are described as:
    a) Comatose
    b) Persistent vegetative state
    c) Locked syndrome
    d) Minimally conscious state

23. The part of the spinal cord that when injured would lead to respiratory failure is:
    a) Thoracic
    b) Sacral
    c) Cervical
    d) Lumbar

24. The Anesthetic drug contraindicated in patients with hyperlipidemia is:
    a) Neostigmine
    b) Atropine
    c) Ketamine
    d) Propofol

25. The initial noticeable manifestations of myasthenia gravis include:
    a) Ptosis, easy fatigability, slurred speech, waddling gait
    b) Slurred speech , muscle weakness with activity, shortness of breath
    c) Ptosis, diplopia, dyspyhagia, slurred speech
    d) Dysphagia, slurred speech, bland facial expression, waddling gait

26. In tetanus disease, the toxins block release of:
    a) Inhibitory neurotransmitters, serotonin and gamma-aminobutyric acid
    b) Excitatory neurotransmitters, epinephrine and norepinephrine
    c) Excitatory neurotransmitters, acetycholine and dopamine
    d) Inhibitory neurotransmitters, glycine and gamma aminobutyric acid

27. Classical signs of autonomic dysreflexia include:
    a) Pounding headache, marked hypertension, diaphoresis, bradycardia
    b) Pounding headache, marked hypotension, diaphoresis, bradycardia
    c) Pounding headache, marked hypertension, flushing, tachycardia
    d) Pounding headache, marked hypotension, diaphoresis, tachycardia

28. Adverse consequences of status epilepticus include:
    a) Hypotension, hypoxia, acidosis
    b) Acidosis, hypothermia, hypotension
    c) Hypertension, hyperthermia, acidosis
    d) Hypotension, Diabetic Keto-acidosis (DKA), hyperventilation

29. Progressive ascending paralysis is mainly indicative of :
    a) Myasthenia gravis
    b) Multiple sclerosis
    c) Gullain barre syndrome
    d) Parkisons disease

30. The antidote that is indicated for a patient who presents with altered level of consciousness due to use of paracetamol is:
    a) Acetylcysteine
    b) Naloxone
    c) Flumazenil
    d) Glucagon

31. The following are signs of a decreased cardiac output:

a) Cold clammy skin
b) Chest pain
c) Hypotension
d) All of the above

32. The following occurs during the early diastole in the cardiac cardiac cycle:
a) There is active filling of the ventricles following atrial contraction
b) The ventricles fill with 30% of the remaining blood volume
c) The AV valves are closed
d) The right and left atriums fill passively in this phase

33. The “atrial kick” occurs during:
a) Early diastole
b) Isovolumic contraction
c) Atrial systole
d) Isovolumic relaxation

34. The following are functions of the AV Node:
a) Relaying Electrical impulses between atrium and the ventricles
b) Delaying impulses to allow for ventricular filling
c) Acts as a back up pacemaker when the SAN fails to fire
d) All the above

35. The following blood vessel is responsible for the physiologic cardiac shunt:
a) Right coronary artery
b) Thebesian vein
c) Anterior cardiac vein
d) small cardiac vein

36. In most adults, the dominant coronary artery is:
a) The Right Coronary Artery
b) The Left Anterior Descending
c) The circumflex artery
d) The left marginal artery

37. The following is true about the S1 heart sound :
a) It is created by closure of the AV valves
b) It is best auscaltated at the mitral area
c) It is a normal heart sound
d) All the above

38. The standard ECG machine is calibrated to record at a speed of:
a) 50 mm/sec
b) 100 mm/sec
c) 25 mm/sec
d) None of the above

39. P wave on the ECG represents.
   a) Atrial depolarization
   b) Atrial repolarization
   c) Ventricular depolarization
   d) Ventricular repolarization

40. A patient presents with hyperkalemia the ED, the following findings will be expected on the ECG.
   a) Hyperacute T waves
   b) Tall and peaked T waves
   c) A wide QRS complex
   d) Inverted T waves

41. The following are bipolar leads:
   a) Lead I, V1,V2,V3
   b) Lead II, AVF, Lead III
   c) AVF, V1,V2,V4
   d) Lead III, Lead II, Lead I

42. The following site of arterial line insertion carries the highest risk of infection:
   a) Brachial artery
   b) Femoral artery
   c) Radial artery
   d) Dorsalis Pedis artery

43. The phlebostatic angle is located on the:
   a) 2nd intercostal space mid clavicular line
   b) 5th intercostal space mid axilary line
   c) On the mitral area
   d) 4th intercostal space mid axilary line

44. The ratio of heparin to saline used for arterial line fluid set up is:
   a) 1:1
   b) 1:2
   c) 2:1
   d) 3:1

45. The normal CVP value is:
   a) 5-12 cm of H20
   b) 5-12 mm/hg
   c) 2-6 cm of H2O
   d) 12-15 mm/hg

46. A false high reading may be seen in central venous monitoring in the following situation:

   a) Air in the tubing

   b) Transducer higher than the phlebostatic axis

   c) Transducer lower than the phlebostatic axis

   d) Loose connections

47. The following is a common complication during removal of a pulmonary artery catheter:
    a) Cardiac tamponade
    b) Tricuspid valve prolapse
    c) Right ventricular premature ventricular complexes
    d) Left ventricular premature complexes

48. The nurse caring for a patient with a radial artery catheter would perform which of the following combination of interventions to correct a dampened waveform:
    a) Aspirate air bubbles from the tubing
    b) Reposition the wrist
    c) Reduce the pressure in the flush bag by 50mmHg
    d) Aspirate one ml of blood prior to flushing the tubing

49. The specialized layer of the heart is the :
    a) Myocardium
    b) Epicardium
    c) Endocardium
    d) Pericardium

50. The ends of the cardiac muscle fibres are anchored together by:
    a) Gap Junctions
    b) Desmosomes
    c) Sarcomeres
    d) Nucleus

51. The following is not a type of angina:
    a) Stable Angina
    b) unstable angina
    c) Invariant Angina
    d) Variant Angina

52. Valvular stenosis occurs when:
    a) Valves do not open completely
    b) Valves prolapse
    c) Valves fail to close
    d) None of the above

53. The following are causes of valvular lesions:
    a) Heart Attack
    b) Bacterial Endocarditis
    c) Rheumatic fever
    d) All the above

54. The following is not a classification of acyanotic heart defects:
    a) Tetrallogy of fallot
    b) Ventricular Septal Defects
    c) Atrial Septal Deffects
    d) Coarctation of the aorta

55. A 58 year old patient presents to the emergency department with paroxysmal supraventricular tachycardia, the following is not a priority in management:
    a) Adenosine
    b) Cardioversion
    c) Beta blockers
    d) Atropine

56. Gastric inflation is more likely to occur if the rescuer:
    a) Does not make a good seal between the face and the mask.
    b) Gives breaths too quickly or with too much force.
    c) Gives each breath over 1 second
    d) Gives volume just sufficient to see the chest rise.

57. Complete chest recoil contributes to CPR success by:
    a) Reducing the fatigue of the rescuer.
    b) Allowing the heart to refill with blood between compressions.
    c) Reducing the risk of rib fractures.
    d) Increasing the rate of chest compressions.

58. The following is a characteristic of high-quality CPR in adults:
    a) Minimizing recoil
    b) Compressing at a depth of about 1 inch
    c) Compressing at a depth of at least 2 inches and not exceeding 2.4inches
    d) Checking for a pulse every minute

59. The compression-to-ventilation ratio for 2-rescuer adult CPR is:
    a) 30:2.
    b) 5:1.
    c) 20:2.
    d) 15:2.

60. The proper compression rate for victims of all ages is at least:
    a) 30 compressions per minute.
    b) 50 compressions per minute.
    c) 100-120 compressions per minute.
    d) 200 compressions per minute.

61. The following victims needs CPR:
    a) A victim with a pulse who is having trouble breathing
    b) A victim with chest pain and indigestion
    c) A victim who is unresponsive with no normal breathing and no pulse
    d) A victim who is unresponsive but is breathing adequately

62. Ideally, interruptions in chest compressions should be:
    a) Limited to less than 10 seconds.
    a) Performed as often as needed to assess the victim.
    b) Longer than 10 seconds.
    c) Performed every 5 minutes.

63. The rescuer should deliver a shock with an AED after
    a. The AED advises a shock, charges, and prompts the rescuer to push the shock button.
    b. Completion of 2 cycles of compressions and breaths.
    c. Placement of an advanced airway.
    d. A check for a carotid pulse.
64. Why is it important to compress to the appropriate depth during CPR?
    a. Adequate depth of compression is needed to create blood flow during compressions.
    b. Adequate depth of compression is needed to create air flow into the lungs and adequate oxygenation.
    c. Adequate depth of compression is needed to prolong a systole.
    d. Adequate depth of compression is needed to stimulate spontaneous respirations.
65. If a victim of foreign body airway obstruction becomes unresponsive, the rescuer should send someone to activate the emergency response system and immediately.
    a. Performs abdominal thrusts
    b. Performs blind finger sweeps
    c. Start CPR beginning with compressions
    d. Calls the victim's doctor
66. The following is an appropriate scenario that warrants one to move an adult victim who needs CPR:
    a. When help is more than 15 minutes away from the scene
    b. To locate the AED when one is not available
    c. When the adult victim is in a dangerous environment
    d. As soon as the adult is found to be in arrest
67. To reduce rescuer fatigue during team CPR, compressor roles should be switched about every:
    a. 1 cycle.
    b. 3 cycles.
    c. 5 cycles.
    d. 8 cycles.
68. The following ventilation devices/techniques is not recommended for a single rescuer to provide breaths during CPR:
    a. Bag-mask device
    b. Mouth-to–barrier device technique
    c. Mouth-to-mouth technique
    d. Mouth-to-mask technique
69. The following options lists the correct compression and ventilation rates for 2rescuer CPR in the presence of an advanced airway:
    a. Compress at a rate of at least 100-120 per minute, 1 breath every 6 seconds.
    b. Compress at a rate of at least 60 per minute, 1 breath every 6 to 8 seconds.
    c. Compress at a rate of at least 100 per minute, 2 breaths every 5 to 10 seconds.
    d. Compress at a rate of at least 60 per minute, 1 breath every 5 to 10 seconds
70. High-quality CPR includes starting compressions within how many seconds after recognition of cardiac arrest in adults:
    a. 10
    b. 15
    c. 20
    d. 30