UNIVERSITY OF SWAZILAND
FACULTY OF HEALTH SCIENCES
GENERAL NURSING DEPARTMENT

SEMESTER ONE
FINAL EXAMINATION PAPER-DECEMBER 2007

COURSE CODE:	**NUR 510**
COURSE NAME:	**ADVANCED MED/ SURGICAL NURSING SCIENCE**
TIME ALLOWED:	**2 HOURS**
MARKS ALLOCATED:	**75 MARKS**

INSTRUCTIONS:

1. **ANSWER ALL QUESTION**
2. **EACH QUESTION CONSISTS OF 25 MARKS**
3. **QUESTION ONE IS A MULTIPLE CHOICE TYPE, GIVE THE BEST ANSWER EG. 1-A**
4. **EACH CORRECT FACT IS WORTH ½ A MARK UNLESS INDICATED OTHERWISE**
5. **READ QUESTION CAREFULLY**
6. **WRITE CLEARLY**

QUESTION 1

Scenario:

A 69 year old male is admitted to your unit with the diagnosis of acute inferior wall myocardial infarction (M.I). He has a history of peripheral vascular disease and chronic obstructive pulmonary disease (COPD). He begins to complain of shortness of breath. His 12-lead ECG shows ST-Segment depression in the leads V1-V4. He has dependent crackles in his posterior lobes along with expiratory wheezing. His pulse oximeter is reading 0.95 on 2 L/min per nasal cannula he has the following laboratory data:

pH	7.37
$PaC0_2$	52mm Hg
$Pa0_2$	69mm Hg
$HC0_3$	33mEq/L
CPK	33
Troponin	0.5ng/ml

He has an S_3 (gallop) and a 11/V1 systolic murmur.
Has the following hemodynamic information:

Blood pressure	104/60 mmHg
Pulse	114 beats/mm
Cardiac index	2.0 L/mm
Arterial pressure	40/24mmHg
PWCP	22mm Hg
CVP	11mm Hg

1. Based on the above information, what is likely happening?

a. exacerbation of the COPD
b. development of congestive heart failure
c. development of inferior wall infarction
d. development of pericardial temponade

2. Based on the above information, what would be the best treatment to improve the symptoms?

a. oxygen therapy
b. dopamine
c. nicardipine
d. dobutamine

Scenario:

A 70 year old female is in the unit with the diagnosis of congestive heart failure (CHF). Pulmonary artery catheter is inserted to aid assessment of therapeutic interventions. One of the therapies selected is dobutamine to the treatment regimen.

3. Which parameters would you expect to see change if the therapy is successful?

a. increase in stroke volume
b. increase in wedge pressure
c. increase in systemic vascular resistance
d. decrease in mean arterial pressure

Scenario:

A 71 year old male is admitted to the unit with shortness of breath, orthopnea and progressive reduction in exercise tolerance. He states that he has "not ever been to a doctor". His lung sounds demonstrate crackles in most of his posterior lobes. A pulse oximeter indicates a value of 0.89. A pulmonary artery is inserted to help identify the origin of the shortness of breath. The following data is available:

Blood pressure	118/70 mm Hg
Pulse	110 beats/min
Respiratory rate	28 breaths/min
Temperature	37.1 ^{0}c
Cardiac index	2.2 L/min
Stroke index	20 L/min
Arterial pressure	36/22 mm Hg
PCWP	20mm Hg
CVP	6mm Hg

4. Based on the above information, what condition is likely to be developing?

a. noncardiogenic pulmonary edema
b. primary pulmonary hypertension
c. sepsis
d. left ventricular failure

5. What therapy would most likely improve his symptoms?

a. oxygen therapy
b. phenylephrine
c. furosemide
d. gentamycin

6. What is the approximate normal right atrial CVP (central venous pressure) value?

a. 2 to 6 mm Hg
b. 5 to 10 mm Hg

c. 8 to 12 mm Hg
d. 12 to 18 mm Hg

7. Which of the following is the outermost lining of the heart?

a. endocardium
b. myocardium
c. transcardium
d. pericardium

8. Left atrial pressure approximates which pressure?

a. pulmonary mean pressure
b. left ventricular end diastolic pressure
c. right atrial pressure
d. central venous pressure

9. Of the following four factors, three determine stroke volume. Ide ntify the factor that does not affect stroke volume.

a. preload
b. afterload
c. contractivity
d. mean arterial pressure

10. Phase 0 of cellular impulse transmission refers to which phase of electrical action?

a. depolarization
b. early repolarization
c. end repolarization
d. myocardial relaxation

11. Spontaneous diastolic repolarization occurs during which phase of cardiac action potential?

a. phase 0
b. phase 1
c. phase 3
d. phase 4

12. Which electrolyte is responsible for initial depolarization?

a. sodium
b. potassium
c. chloride
d. calcium

13. Which cation activate the second (slow channel) inward flow of ions during cardiac depolarization?

a. sodium
b. potassium
c. chloride
d. calcium

14. Which ion leaves the cell during depolarization to counter the inward flow of sodium?

a. phosphate
b. potassium
c. chloride
d. calcium

15. Normal arterial $p0_2$ levels (at see level) fall within which the following ranges?

a. 20 to 35 mm Hg
b. 35 to 45 mm Hg
c. 60 to 80 mm Hg
d. 80 to 100 mm Hg

16. Normal arterial haemoglobin saturation ($Sa0_2$) fall within which of the following ranges?

a. 0.40 to 0.60
b. 0.60 to 0.80
c. 0.80 to 0.90
d. > 0.95

17. Normal mixed venous haemoglobin saturation ($Sv0_2$) fall within which of the following ranges?

a. 0.40 to 0.60
b. 0.60 to 0.75
c. 0.80 to 0.90
d. > 0.95

18. When comparing finger oximetry values ($Sp0_2$) to $Sa0_2$ levels, which of the following statements is most accurate?

a. $Sp0_2$ values underestimate $Sa0_2$ values
b. $Sp0_2$ values overestimate $Sa0_2$ values
c. $Sp0_2$ values should equal $Sa0_2$ values
d. $Sp0_2$ values do not correlate with $Sa0_2$ values

Scenario:

A 74 year old male is admitted to your unit with the diagnosis of pneumonia. He is short of breath and has circumoral cyanosis. He has crackles throughout both lungs. His initial ABGs and vital signs are:

Blood pressure	122/62
Pulse	114 beats/min
Respiratory rate	30 breaths/min
Temperature	37.4^0c
$Spo0_2$	.77
pH	7.25
$Pa0_2$	34 mm Hg
$PaC0_2$	53 mm Hg
$HC0_2$	25 mEq/L

The physician request the following:

1. Place him on 40% oxygen via a face mask
2. Start gentamycin 80 mgm IV tid
3. Do not give sedatives

She asks that you should inform her of any changes which indicate that his condition is worsening. After administration of oxygen circumoral cyasiosis disappear. He states he feels about the same. His repeat ABGs and vital signs reveal the following:

Blood pressure	116/58 mm Hg
Pulse	115 beats/min
Respiratory rate	30 breaths/min
Temperature	37.5^0c
$Sp0_2$	.91
pH	7.21
Pa 0_2	61 mm Hg
$PaC0_2$	59 mm Hg

$HC0_3$ 25 mEq/L

19. Based on the above information, what do you think of the above patients condition?

a. he is getting better based on his improved $Sp0_2$ and $Pa0_2$
b. he is about the same based on his blood pressure pulse respiratory rate and $Hc0_3$
c. he is getting worse based on his pH and $PaC0_2$

20. What action is necessary if any, for the above situation?

a. no action is necessary, since he is improving
b. call the physician based on the abnormal data
c. repeat ABGs in 1hour but do not call physician, since his physical condition has not markedly changed.

21. Which of the following best describes vital capacity?

a. maximal inspiration followed by maximal expiration
b. normal inspiratory volumes
c. the amount of air vital to the person in 1 min
d. the amount of air in the lungs at rest.

22. The amount of air that does not participate in gas exchange is referred to by which of the following terms

a. minute ventilation
b. alveolar ventilation
c. dead space ventilation
d. bronchial ventilation.

23. Alveolar ventilation is described by which of the formulas ?

a. dead space ventilation plus tidal volume
b. minute volume – dead space ventilation
c. tidal volume and minute ventilation
d. respiratory rate plus tidal volume.

Scenario

A 58 year old male is admitted with the diagnosis of chronic obstructive pulmonary disease (COPD) presents with shortness of breath, circumoral cyanosis and orthopnea. He is alert and oriented, stating that these symptoms started a few days ago. He has the following blood gas values:

pH	7.36
$PaC0_2$	66 mm Hg
$Pa0_2$	50 mm Hg
$HC0_3$	37 mEq/L
$F10_2$	room air

24. Based on the above information, which condition is likely to be developing?

a. acute oxygenation failure
b. acute ventilation failure
c. metabolic acidosis
d. pure respiratory acidosis

25. Which treatment would be indicated for this patient?

a. intubation and mechanical ventilation
b. positive end expiratory pressure (PEEP) therapy
c. inverse ration ventilation
d. high-flow, low-flow $F10_2$ oxygen therapy

QUESTION 2

a. Discuss the care you could render to the patient who is experiencing an episode of an imbalance between mayocardial oxygen supply and demand resulting in impaired cardiac failure [15 marks]

b. Describe how you can differentiate between arterial and venous diseases on inspection and palpation of extremities. [10 marks]

TOTAL 25 MARKS

QUESTION 3

a. Describe the advantages of the following tubes:

1. orotracheal tubes [3]
2. nasitrachial tubes [3]
3. tracheostomy tubes [3]

b. Formulate the nursing care plan of a patient with a medical diagnosis of hospital acquired pneumonia. Using the following nursing diagnosis. Impaired gas exchange related to ventilation/perfusion mismatching or intrapulmonary shunting, under the following headings

i. defining characteristics [2]
ii. nursing interventions [10]
iii. rationale [4]

TOTAL 25 MARKS