

**UNIVERSITY OF SWAZILAND**  
**FACULTY OF HEALTH SCIENCES**  
**FINAL EXAMINATION MAY 2017**

**TITLE OF PAPER: ADVANCED MEDICAL/SURGICAL NURSING IV**

**COURSE CODE: NUR 511**

**ELEVEN (11) PAGES INCLUDING COVER PAGE**

**TIME ALLOWED: TWO (2) HOURS**

**MARKS: 75**

**INSTRUCTIONS:**

- 1. THERE ARE THREE (3) QUESTIONS IN THIS PAPER**
- 2. ANSWER ALL THREE (3) QUESTIONS**
- 3. EACH QUESTION IS ALLOCATED 25 MARKS**
- 4. WRITE LEGIBLE**

**THIS PAPER IS NOT TO BE OPENED UNTIL THE INVIGILATOR HAS GRANTED PERMISSION.**

## QUESTION 1

**Scenario:** Ms Rose is a double qualified registered nurse at the National TB hospital where she has been working for the past six (6) years. The Ministry of Health has realized that her setting has exposed her to latent TB which could progress to active tuberculosis. Hence she has been on Isoniazid (INH) prophylactic therapy for the past two (2) months. Last week she was admitted to Mbabane Government Hospital complaining of feeling confused. Several diagnostic tests were conducted and she was found to have a prothrombin time of 60 – 70 seconds, mean arterial pressure of 105 mm Hg, intracranial pressures of 40 mm Hg, hypoglycaemia, hypoalbumenia, elevated ammonia, and elevated leukocytes.

- A. What is the possible medical diagnosis of Ms Rose? (2)
- B. On assessing her upper extremities what typical symptom could confirm your diagnosis? (2)
- C. For each of the following articulate the scientific rationale and nursing implications.
- (i) Prothrombin time 60 - 70 seconds
- Scientific rationale (1)
- Nursing implications (3)
- (ii) Hypoalbumenia
- Scientific rationale (1)
- Nursing implications (3)
- (iii) Confusion
- Scientific rationale (1)
- Nursing implications (3)
- (iv) Elevated ammonia level
- Scientific rationale (1)
- Nursing implications (3)
- D. (i) What would you recommend, should Ms Rose be allowed to continue taking INH? (1)
- (ii) Justify your response. (2)
- E. Since Ms Rose's mean arterial pressure is 120 mm Hg with an intracranial pressure of 40 mm Hg
- (i) What is her cranial perfusion pressure (CPP)? (1)

- (ii) What conclusion will you make about her CPP and BP? (1)

**TOTAL 25 MARKS**

**QUESTION 2**

Muzi, A 31-year-old male was rock-climbing with two friends at Sibebe which is about 20 km away from the Mbabane Government Hospital when he suddenly lost his footing and slid 80 metres to the ground. Both friends who witnessed the fall said that he slid against a sharp rock all of the way down, landing almost in a standing-up position, finally dropping to the ground. They also said that his head was not jarred during the slide. The man was alert and oriented when his friends reached him, and could move all four extremities quite easily. He had multiple scratches over his anterior trunk and a large gash over his right anterior upper thigh (near the groin) which was bleeding profusely. An improvised tourniquet slowed the bleeding. The friends were able to contact Medical Emergency Services (EMS) who arrived after 30 minutes. A large-bore IV was placed in each arm in the ambulance, and normal saline fluid was administered intravenously. The patient became increasingly disoriented as the EMS drove him to Mbabane Government Hospital, reaching the Casualty about 45 minutes after the fall. The patient was lethargic but responsive to shouting and sternal pinch. He had multiple abrasions over his chin, neck, anterior thorax, and abdomen. The improvised tourniquet was soaked with blood.

Vital signs were: HR = 112 (supine) and 128 (sitting), BP = 108 / 60 (supine) and 92 / 52 (sitting), RR = 32, rectal temp = 38.2 °C. Skin was cold and clammy, and nail beds, palms, and mucous membranes were pale. Carotid, radial, left femoral, and dorsalis pedis pulses were all weak and thready. Pupils were equal, regular, and reactive to light.

External jugular venous collapse point was not visible in either the sitting or recumbent position. Heart sounds were regular, tachycardic, with no murmur, S<sub>3</sub> or S<sub>4</sub> sounds. Lungs were clear to percussion and auscultation. Abdominal guarding was noted, attributable to multiple lacerations; no masses were felt. Blood was drawn, typed, and crossed. A urethral catheter was placed to monitor urinary output, and another catheter was placed into the right subclavian vein and threaded into the superior vena cava to monitor central venous pressure. A cardiovascular surgeon was consulted for repair of the lacerated right femoral artery.

Laboratory studies of the venous blood revealed the following:

Blood Type A+	=
Total white blood cell (WBC) count = 7,400 WBCs /mm <sup>3</sup>	(normal = 4,000 to 11,000)
Differential WBC count revealed 59% neutrophils	(normal = 55-70%)
Hematocrit = 46%	(normal = 42-54%)
Hemoglobin = 15.0 gm / dl	(normal = 14-18 gm / dl)
Sodium (Na <sup>+</sup> ) = 138 mEq / L	(normal = 136-145 mEq / L)
Potassium (K <sup>+</sup> ) = 5.1 mEq / L	(normal = 3.5-5.1 mEq / L)
Chloride (Cl <sup>-</sup> ) = 104 mEq / L	(normal = 96-106 mEq / L)
BUN = 27 mg / dl	(normal = 6 - 23 mg / dl)
Creatinine = 1.9 mg / dl	(normal = 0.7 - 1.5 mg / dl)
Glucose = 165 mg / dl	(normal = 70 - 160 mg / dl)
SGPT = 41 IU / L	(normal = 0-33 IU / L)
SGOT = 48 IU / L	(normal = 0 41 IU / L)

Laboratory studies of the arterial blood revealed the following:

Blood pH = 7.28	(normal = 7.35-7.45)
pCO <sub>2</sub> = 31 mm Hg	(normal = 40 mm Hg)
pO <sub>2</sub> = 78 mm Hg	(normal = 90-100 mm Hg)
Hemoglobin - O <sub>2</sub> saturation = 88%	(normal = 94-100%)
[HCO <sub>3</sub> <sup>-</sup> ] = 14 mEq / L	(normal = 22-26 mEq / L)

- A. What Muzi's primary problem? (2)
- B. List all of the evidence you can that supports your answer to A. (4)
- C. Describe in detail how Muzi's body would compensate for his primary problem. (8)
- D. What is specifically causing each of the following findings?
  - A. elevated creatinine and BUN (3)
  - B. pale nail beds and mucous membranes (3)
  - C. disorientation and lethargy (2)
- E. How would you characterize this patient's acid-base status? Give specific evidence for your answer (3)

**TOTAL 25 MARKS**

### QUESTION 3

**Instructions:** For each of the following questions / statements choose and write **CLEARLY** the letter that corresponds with the most appropriate response in your answer sheet e.g. 1. B

1. A 76 year old gentleman presents in the emergency room complaining of severe left iliac fossa and loin pain which started one (1) hour ago. He had an episode of dizziness earlier which has settled now. On arrival he is afebrile, HR 120 /min, BP 90/50 and SaO<sub>2</sub> 98% on 2L oxygen. His past history includes hypertension, and diabetes mellitus. After resuscitation his parameters are HR 92 /min, BP 130/50. The most appropriate next step in his management would be:
  - A. Urine dipstick
  - B. Chest x-ray
  - C. Intravenous pyelogram (IVP)
  - D. CT scan abdomen
  
2. A 69-year-old lady who is on ibuprofen and dexamethazone for rheumatoid arthritis presents complaining of a sudden onset of severe epigastric pain and vomiting. On examination the abdomen was soft with mild tenderness in the epigastric and LUQ region. There is no guarding / rigidity. Bowel sounds are decreased. What is the most likely diagnosis for this lady?
  - A. Bleeding oesophageal varices
  - B. Gastric ulcer
  - C. Colitis
  - D. Diverticulitis
  
3. You are asked to see a 65-year-old unconscious patient, who was brought in by an EMS. He looks pale and his peripheries are cold and clammy. On examination his pulse is 60 b/min, BP 70/45 and saturation 96%, on 4L oxygen. His central venous pressure (CVP) is raised at 14cm of water. His most likely diagnosis is \_\_\_\_\_ shock.
  - A. Cardiogenic
  - B. Septic
  - C. Anaphylactic
  - D. Hypovolemic

4. A 73 year-old man is admitted with severe abdominal pain. His abdomen is soft with generalized tenderness. His past medical history includes ischemic heart disease and transient ischemic attacks. His blood tests are:  
White cell count (WCC) 21.5, HB 13.5, urea 13, creatinine 15, Na 139, K 5.1.  
His arterial blood gases are: pH 7.32, P<sub>O</sub><sub>2</sub> 98, P<sub>CO</sub><sub>2</sub> 31, BE -15.9, HCO<sub>3</sub> 14.1. His diagnosis is:
- A. Metabolic acidosis
  - B. Metabolic acidosis with respiratory compensation
  - C. Respiratory alkalosis
  - D. Respiratory alkalosis with metabolic compensation
5. A 62 year-old woman with lung cancer has a diagnosis of inappropriate ADH release. Which of the following tests results would be expected to be present in a patient with this diagnosis?
- A. Urine Na<sup>+</sup> of 82 mEq/l
  - B. Urine specific gravity of 1.002
  - C. Urine osmolality of 65 mOsm/l
  - D. Creatinine level of 2.2 mg/dl
6. An important risk factor for peptic ulcer hemorrhage includes all of the following **EXCEPT**:
- A. Non-steroidal anti-inflammatory drug use
  - B. Corticosteroid use
  - C. Cigarette smoking
  - D. Steroidal anti-inflammatory drug use
7. All of the following describe the natural history of chronic kidney disease **EXCEPT**:
- A. Progression of chronic kidney disease is reversible depending on the underlying cause.
  - B. Hypertension develops as a consequence of chronic kidney disease
  - C. Proteinuria itself contributes to glomerular damage and progress of kidney disease.
  - D. Onset of proteinuria is reflective of worsening kidney disease.

8. Which of the following patients is **MOST** likely to have complete recovery of kidney function?
- A. 70 year-old male with benign prostatic hypertrophy causing bladder outlet obstruction for three (3) months.
  - B. 24 year-old female with glomerulonephritis and creatinine of 8 mg/dl.
  - C. 54 year-old with diabetic nephropathy and creatinine 1.6 mg/dl.
  - D. 83 year-old with sepsis develops hypotension and becomes anuric.
9. Which factor is **MOST** important in explaining anaemia in a patient suffering from acute renal failure?
- A. Reduced erythropoietin
  - B. Reduced renal blood flow
  - C. Increased blood loss during dialysis
  - D. Malnutrition induced decreased oral intake of iron

**Scenario:** Mohammad is an 18 yr old man who was struck by a baseball bat in the L temple while playing baseball. He sustained a depressed skull fracture and is started on a dopamine infusion to support his BP. On his way to the CT scanner, Mohammad's left pupil suddenly becomes fixed and dilated

Questions 10 – 12 relate to the above scenario.

10. Mohammad's pupil remains dilated and his blood pressure has increased to 180/70 with a HR = 45. Which one of the following nursing interventions is a priority?
- A. Position head of bed flat
  - B. Administer lasix
  - C. Hyperventilation
  - D. Administer propranolol
11. Which pharmacological agent would you anticipate to treat Mohammad's raised intracranial pressure (ICP) with a BP of 180/55 and HR 45?
- A. Dobutamine
  - B. Nifedipine
  - C. Mannitol
  - D. Atrophine

12. Mohammad's condition deteriorates and he no longer responds to stimulation. Which one of the following lab tests is mandatory to confirm the diagnosis of neurological death (brain death)?
- A. PaO<sub>2</sub>
  - B. Lactate
  - C. PaCO<sub>2</sub>
  - D. Ammonia
13. Mrs. Mahlobo develops sepsis due to an infected prosthetic hip joint. She is started on antibiotic therapy. Which laboratory test is the best to evaluate her response to antibiotic therapy?
- A. Eosinophil Sedimentation Rate (ESR)
  - B. Protein C levels
  - C. C-Reactive Protein
  - D. Ionized calcium levels
14. Calculate Cerebral Perfusion Pressure(CPP) based on the following data: HR 75, BP 120/80 (MAP 65), CVP 12, ICP 15, RR 25, Minute Volume 10.5 L/min
- A.60
  - B.50
  - C.105
  - D.52
15. Mr. Veli suffered a right hemispheric stroke. He does not open his eyes, extends his left arm and makes grunting sounds to central pain. What is his score on the Glasgow Coma Scale?
- A. 5
  - B. 7
  - C. 8
  - D. 9



16. Acetaminophen (Tylenol) overdose may take up to two (2) weeks to resolve. From 72-96 hours from ingestion, if not treated, symptoms of ingestion will include which of the following?

- A. Increased renal function
- B. Pallor, lethargy, metabolic acidosis
- C. RUQ pain, increased serum liver enzymes
- D. Jaundice, confusion, coagulation disorders

17. Martha is admitted following a motor vehicle collision. Her past medical history includes daily prednisone for the treatment of systemic lupus. Despite fluid replacement therapy and initiation of norepinephrine, her blood pressure remains low. Which one of the following interventions is the priority?

- A. Prednisone
- B. Epinephrine
- C. Hydrocortisone
- D. Vasopressin

18. Mrs. Mafu admitted with cardiogenic shock following a myocardial infarction. She has the following findings: HR 68, BP 80/55, CVP 24, and SpO<sub>2</sub> 88%. Which one of the following interventions is the priority?

- (i) Norepinephrine
  - (ii) Epinephrine
  - (iii) Lasix
  - (iii) Propanolol
- A. i & iii
  - B. iii & iv
  - C. i & ii
  - D. ii & iv

19. Mrs. Nkomo had a thrombotic stroke 18 hours ago. She has the following findings: HR 85, BP 165/80 (MAP 80), CVP 13, RR 25, Temp 38.10C. Which one of the following pharmacological agents is the priority?

- A. Antipyretic
- B. Anticonvulsant
- C. Antihypertensive
- D. Beta-blocker

20. Anna is an ICU patient with new-onset of grand mal seizures. While at her bedside, you witness a seizure. What should your first action be?

- A. Hit the Red Button
- B. Hold the patient down to prevent injury
- C. Insert an oral airway and call for help
- D. Roll Anna to her right side and protect the airway

21. Eve is undergoing hemodialysis for renal failure as a result of uncontrolled Type I Juvenile Diabetes Mellitus. Her mother asks you, the critical care RN, how do you know that the dialysis is effective. Adequacy of hemodialysis is measured by which of the following?

- A. Creatinine clearance
- B. Sodium, Chloride and potassium levels
- C. Blood Pressure
- D. Urea Clearance

22. For a patient with disseminated intravascular coagulopathy (DIC), the primary goal of medical treatment is to:

- A. Accurately administer intravenous drip heparin to prevent “using up” clotting factors
- B. Administer subcutaneous fibrinolytics to dissolve clots formed in the microvasculature
- C. Identify and treat the underlying conditions that lead to the development of DIC
- D. Provide supportive care as needed until the DIC subsides.

23. Your 80 kg patient exhibits the following signs and symptoms:  $T = 40.1^{\circ}\text{C}$ ,  $\text{HR} = 136$  b/min,  $\text{BP } 90/50$ , urine output for last hour = 40 ml/hr,  $\text{WBC} = 10,000$ , lactate = 2mmol/L and cultures are negative. You suspect that the patient has which of the following?

- (i) Systemic Inflammatory Response Syndrome (SIRS)
  - (ii) Cardiogenic Shock
  - (iii) Septic Shock
  - (iv) Multiple Organ Dysfunction Syndrome (MODS)
- A. i, iii, & iv
  - B. iii & iv
  - C. i & iv
  - D. ii only

24. Which of the following patient data supports the diagnosis of multiple organ dysfunction syndrome (MODS)?

- A. urine output = 30ml/hr,  $\text{BUN} = 18 \text{ mg/dL}$ ,  $\text{WBC} = 5,120$ .
- B. Upper GI bleeding, a  $\text{GCS} = 15$ , and  $\text{Hct} = 25\%$ .
- C. A total bilirubin of 15 mg/dL, a serum creatinine of 8 mg/dL, and a platelet count (plt) of  $2,300 \text{ mm}^3$
- D. A respiratory rate = 45/min, a  $\text{PaCO}_2 = 60 \text{ mmHg}$ , and a chest x-ray with diffuse bilateral infiltration.

25. The nurse is performing an admission assessment on a patient diagnosed with diabetes insipidus. Which of the following assessment findings would the nurse expect to see in a patient with that condition?

- A. Elevated systolic blood pressure, tachycardia, decreased urinary output
- B. Elevated serum potassium, bradycardia, numbness in hands
- C. Polyuria, extreme thirst, decreased urinary specific gravity
- D. Widened pulse pressures, dilated pupils, decerebrate posturing

**TOTAL 25 MARKS**