

**Fellowship course**

**Week 4 - Pathology**

**WRITTEN EXAMINATION**

**SHORT ANSWER QUESTIONS**

EXAMINATION TIME: 63 Minutes

**Question 1 (10 marks) 6 minutes**

A 47-year-old man with a history of chronic liver disease and schizophrenia is brought to your emergency department with acute confusion.

His observations are:

GCS 12 E3, V4, M5

HR 120 /min

BP 120/60 mmHg

RR 40 /min

**Selected biochemistry is taken.**

1. Provide two (2) calculations to help you to interpret these results. (2 marks)

Derived value 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Question 1 (continued)**

1. List four (4) likely explanations for these results. (4 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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You assess the patient as being moderately dehydrated.

1. List four (4) points in your approach to his fluid replacement regime. (4 marks)
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**Question 1**



**Question 2 (12 marks) 6 minutes**

A 45-year-old man with type 1 diabetes mellitus is brought in by ambulance with an altered conscious state.

**Initial investigations are taken.**

His observations are:

BP 90/70 mmHg

HR 120 bpm

Temperature 36.8 °C

Oxygen saturation 97% on 8L by Hudson mask

GCS 12 E4, V3, M5

1. Provide three (3) calculations to help you to interpret these results. (3 marks)

Derived value 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Provide a unifying explanation for this clinical picture based on these results. (3 marks)

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**Question 2 (continued)**

1. Complete the following table demonstrating three (3) key specific treatment tasks in the first 2 hours of the emergency department stay. For each choice, state how you would achieve each of these tasks. (6 marks)

|  |  |  |
| --- | --- | --- |
|  | **Key treatment task****(3 marks)** | **How will you achieve the task?****(3 marks)** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |

**Question 2**



**Question 3 (16 marks) 9 minutes**

A 27-year-old previously well woman presents with a headache for the last two days.

The patient is noted to have a temperature of 39°C. Following your clinical assessment, you decide that a lumbar puncture is indicated.

1. List five (5) contraindications to performing a lumbar before performing a CT Brain.

(5 marks)

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**Question 3 (continued)**

**A lumbar puncture is performed:**



**Question 3 (continued)**

1. State two (2) points of interpretation for the Red blood cell count. (2 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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4. List five (5) likely differential diagnoses for these results. (5 marks)
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 3 (continued)**

1. List two (2) medications that you would commence for the specific treatment of this patient. Provide one (1) justification for each choice. (4 marks)

|  |  |  |
| --- | --- | --- |
|  | **Medication****(2 marks)** | **Justification****(2 marks)** |
| 1. |  |  |
| 2. |  |  |

**Question 4 (14 marks) 6 minutes**

A 29-year-old man presents with fever and acute ankle and wrist pain with no history of trauma.

**An aspiration of his ankle joint is performed:**

Appearance Cloudy

Microscopy WCC 50,000 (Mainly neutrophils)

Gram stain No bacteria seen

Crystals None seen

1. List four (4) likely differential diagnoses for these results. (4 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Question 4 (continued)**

1. List five (5) further investigations that you would perform in the Emergency department. Provide one (1) justification for each choice. (10 marks)

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| --- | --- | --- |
|  | **Investigation****(5 marks)** | **Justification****(5 marks)** |
| 1. |  |  |
| 2. |  |  |
| 3. |  |  |
| 4. |  |  |
| 5. |  |  |

**Question 5 (14 marks) 6 minutes**

A 65-year-old woman with a history of osteoporosis and depression presents with two weeks of increasing confusion and malaise.

Her observations are:

BP 130/85 mmHg

HR 100 /min

Temperature 36 °C

GCS 13 E4, V4, M5

**Initial blood test is taken.**

1. Provide one (1) calculation to help you to interpret these results. (1 mark)

Derived value 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. List three (3) significant abnormal findings in these results. (3 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Question 5 (continued)**

1. List four (4) likely differential diagnoses for this presentation. (4 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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6. Complete the following table demonstrating three (3) key treatment tasks. State how you would achieve each of these tasks. (6 marks)

|  |  |  |
| --- | --- | --- |
|  | **Key treatment task(3 marks)** | **How will you achieve it?****(3 marks)** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |

**Question 5**



**Question 6 (13 marks) 6 minutes**

A 77-year-old man presents to your emergency department feeling generally unwell for several days.

His observations are:

BP 120/80 mmHg supine

HR 36 /min

**Blood test are taken soon after arrival:**



**Question 6 (continued)**

1. List five (5) calculations to help you to interpret these results. (5 marks)

Derived value 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 5: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Question 6 (continued)**

1. Using the scenario and the derived values, list the primary acid/base abnormality/s. (2 marks)

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1. Using the scenario and the derived values, define the secondary acid/base abnormality/s. (1 mark)

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1. List one (1) likely unifying explanation for these results. (1 mark)

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1. List two (2) key treatments that you would institute in the emergency Department in the first 1 hour. Provide one (1) justification for each choice. (4 marks)

|  |  |  |
| --- | --- | --- |
|  | **Treatment****(2 marks)** | **Justification****(2 marks)** |
| 1. |  |  |
| 2. |  |  |

**Question 7 (12 marks) 6 minutes**

A 65-year-old man presents with abdominal pain and vomiting for 24 hours. He is known to have chronic excessive alcohol excess.

**Several pathology tests are taken.**

Observations on arrival:

BP 110/50 mmHg

HR 120 /min (regular)

RR 26 /min

SaO2 95 % on air

Temp 37 deg C

GCS 15

1. State a unifying diagnosis for this patient. (1 mark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. List six (6) findings in these investigations that support this diagnosis. (6 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Question 7 (Continued)**

1. State five (5) key treatments that you would commence for this patient in the first 30 minutes of your care. (5 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Question 7**

 Reference range

Na+ 135 mmol/l 134-146

K+ 4.0 mmol/l 3.4- 5.0

Cl- 85 mmol/l 98- 106

Bicarbonate 12 mmol/l 22- 28

Urea 12.5 mmol/l 2.5- 6.4

Creatinine 0.05 mmol/l 0.05- 0.1

Glucose 6.8 mmol/l

Lactate 2.0

Total bilirubin 15 µmol/ L 0- 20

Protein 64 g/L 60- 80

Albumin 31 g/L 33- 47

Alk phosphatase 85 U/L 30- 100

LDH 210 U/L 120- 250

γGT 250 U/L 0-50

AST 90 U/L 0- 35

ALT 50 U/L 0- 40

FWT Ketones ++ (others normal)

**Question 8 (8 marks) 6 minutes**

A 59-year-old obese man receives 5 mg of intravenous morphine for analgesia for abdominal pain. Thirty minutes later, his GCS has fallen to 12 and investigations are performed.

**Arterial blood gas and serum biochemistry is taken- Reference Range**

 **FiO2 0.21**

 **pH 7.24 7.35-7.45**

 **pCO2 92 mmHg 35-45**

 **pO2 45 mmHg 80-95**

 **Bicarbonate 49 mmol/L 22-28**

 **Base excess 10 -3 - +3**

 **O2 saturation 78 % > 95**

 **Lactate 1.2 mmol/L < 1.3**

 **Na+ 142 mmol/L 134-146**

 **K+ 3.8 mmol/L 3.4-5**

 **Cl- 86 mmol/L 98-106**

 **Glucose 11.4 mmol/L 3.5-5.5**

 **Haemoglobin 184 g/L 135–180**

 **Carboxy Hb 7 % < 6%**

Provide two (2) calculations to help you to interpret these results. (2 marks)

Derived value 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Question 8 (continued)**

1. Using the scenario and the derived values, state the primary abnormality/s. (2 marks)

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1. Using the scenario and the derived values, state the secondary abnormality/s. (2 marks)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Provide a unifying explanation for these results. (2 marks)

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**Question 9 (11 marks) 6 minutes**

A 74-year-old man is brought to your emergency department with 1 week of shortness of breath and chest pain.

His observations are:

BP 135/870 mmHg supine

HR 110 /min

Temperature 38 °C

**Arterial blood gases and serum biochemical results are taken.**

1. Provide two (2) calculations to help you to interpret these results. State the significance of each finding. (4 marks)

Derived value 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Significance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Derived value 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Significance: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Using the scenario and the derived values, state the primary acid/base abnormality/s. State two (2) points. (2 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 9 (continued)**

1. State five (5) alternative unifying causes for these pathological findings for this patient. (5 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 9**



**Question 10 (11 marks) 6 minutes**

A 34-year-old woman presents to your ED with a history of abdominal pain, vomiting and diarrhea for 2 weeks. Examination reveals dehydration and generalised abdominal tenderness.

**Blood tests are taken soon after arrival:**



**Question 10 (continued)**

1. Provide three (3) calculations to help you to interpret these results. (3 marks)

Derived value 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Derived value 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Derived value 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Using the scenario and the derived values, state the primary acid/base abnormality/s. (1 mark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 10 (continued)**

1. Using the scenario and the derived values, define the secondary acid/base abnormality/s. (1 mark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. State a unifying explanation for these results. (3 marks)

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She is provided with analgesic and antiemetic.

1. List three (3) other key treatments for this condition. (3 marks)
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_