



THE HONG KONG COLLEGE OF ANAESTHESIOLOGISTS

FINAL FELLOWSHIP EXAMINATION (INTENSIVE CARE) SHORT ANSWER PAPER

15 Questions

Monday 25 July 2022 (9:00 am - 11:30 am)

NOTICE

- (A) Write your answers to the 15 questions in separate books.
- (B) It is not necessary to rewrite the question in your answer book.
- (C) You should answer each question in ten minutes or less.
- (D) The questions are worth equal marks.
- (E) Record your number on the cover of each book and hand in all books.
- (F) Use ink or ball-point pen

Question 1

A 55-year old man had an accidental fall from a height of 3 meters and was brought to Accident and Emergency Department within 30minutes. He was found to have an unstable fracture pelvis and a laceration on his left leg with active bleeding. His blood pressure was 80/50 mmHg.

Outline your approach to fluid resuscitation and haemostasis in this trauma patient. (10 marks)

Question 2

Discuss the role of Dexmedetomidine in sedation for patients in ICU. (10 marks)

Question 3

A 60-year-old man was found drowning in the beach during his morning swimming exercise and was sent to your hospital for resuscitation. He was hypothermic with body temperature of 30°C degree. Cardiopulmonary resuscitation was started by paramedic on scene and Return of Spontaneous Circulation (ROSC) was observed upon arrival to the Accident and Emergency Department (AED). He was intubated and mechanically ventilated.

- i) What is the Pathophysiology of Salt water drowning (3 marks)
- ii) Outline your management of his hypothermia (4 marks)
- iii) List 3 predictors of poor neurological outcome (3 marks)

Question 4

Describe the advantages and disadvantages of the available methods for allowing speech in a patient with a tracheostomy tube in situ (Excluding electronic larynx) (10 marks)

Question 5

- i) List 5 causes of metabolic alkalosis (5 marks)
- ii) A 60-year old woman was admitted to ICU for repeated vomiting and abdominal pain. She was awake but lethargic. Her blood pressure was 100/ 40, pulse 110 bpm and SpO₂ 99% on room air.

Her investigation results are shown below:

parameter	value
pH	7.5
PaCO ₂	6.4 kPa
PaO ₂	10.2 kPa
HCO ₃	34mmol/L
Base excess	9

- a) What is the acid base disorder? (0.5 mark)
What is the most likely cause of such disorder? (0.5mark)
- b) Outline your initial investigations and managements (4 marks)

Question 6

A patient has developed oliguric acute kidney injury during the ICU stay.

- i) Describe how the furosemide stress test is performed and it's physiological basis. (6 marks)
- ii) After failing the furosemide stress test, it was decided to initiate Prolonged Intermittent Renal Replacement Therapy (PIRRT) for the patient. List 8 potential ways to prevent haemodynamic instability during PIRRT. (4 marks).

Question 7

- i) Describe the mechanism of action on how mannitol reduces intracranial pressure (ICP) in a neurosurgical patient. (4 marks)
- ii) What are the theoretical advantages and disadvantages of hypertonic saline compared to mannitol when used as an osmotherapy (clinical evidence not needed)? (4 marks)
- iii) How many millimoles (mmol) of sodium is contained in 60ml of 5.85% NaCl? (2 marks)

Question 8

A 32-year old man was sent to the Accident and Emergency Department (AED) of a community hospital which has no neurosurgical service after a road traffic accident. On arrival his blood pressure was low and he was unconscious at the scene. He was intubated and ventilated at AED. His blood pressure was 100/60mmHg, pulse 95/min after fluid resuscitation. He now needs to be transferred to the major hospital with neurosurgical unit which is 15km away.

Outline your management to minimize risks associated with the transportation of this patient. (10 marks)

Question 9

- i) Classify different causes of pulmonary hypertension with examples. (5 marks)
- ii) Outline the therapeutic strategies with rationale for the treatment of right ventricular dysfunction. (5 marks)

Question 10

A 50-year-old man with a background of hepatitis B cirrhosis is admitted to the Intensive Care Unit with massive hematemesis. Endoscopy showed three columns of esophageal varices and banding was performed.

- i) List 4 clinical findings of portal hypertension. (2 marks)
- ii) Outline the risk factors of re-bleeding from varices. (2 marks)
- iii) Discuss the strategies for controlling the re-bleed, and the relative advantage and disadvantages of each option. (Details of initial resuscitation not needed) (6 marks)

Question 11

List 5 essential trace elements that are added in total parental nutrition, and briefly state the clinical importance of each trace element. (10 marks)

Question 12

- i) What are the clinical features of theophylline poisoning? (4 marks)
- ii) Outline the management of a patient with acute theophylline overdose. (6 marks)

Question 13

- i) What is tumour lysis syndrome (TLS)? (1 mark)
- ii) What are the clinical features of TLS? (3 marks)
- iii) What are the risk factors for TLS? (2 marks)
- iv) Outline the preventive measures that can be taken. (4 marks)

Question 14

- i) Outline the causes of adrenal insufficiency (4 marks)
- ii) What are the consequences of adrenal insufficiency in the critically ill? (3 marks)
- iii) Outline the management of adrenal insufficiency in the critically ill. (3 marks)

Question 15

A trainee proposes to conduct a study to devise a predictive score (X score) to predict the outcomes of patients with pneumonia in the Intensive Care Unit (ICU).

The trainee plans to develop the predictive score from 3,000 patients with pneumonia attending the Emergency Department (ED) and then verify the predictive score in patients with pneumonia in the ICU prospectively.

- i) What are the potential bias in developing the predictive score from the patients with pneumonia in the ED? Please explain. (4 marks)
- ii) In the validation study, what other outcome measures in the ICU would you like to suggest apart from the ICU mortality? (2 marks)

The results of the study is shown in the table.

Score X (0 to 10)	ICU Dead		
	Yes	No	
<3	5	25	30
>=3	20	50	70
	25	75	100

- iii) What is the Sensitivity, Specificity and Accuracy of Score X at cut-off of >=3 in predicting ICU mortality of the patients with pneumonia? Please also comment on the usefulness of the score. (4 marks)

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