

Candidate name: _____

Department of
Emergency Medicine

Princess Alexandra Hospital

FELLOWSHIP TRIAL EXAMINATION

2016.2

WRITTEN EXAMINATION

SHORT ANSWER QUESTIONS

EXAMINATION TIME: 3 HOURS

DIRECTIONS TO CANDIDATES

1. The booklet is divided in to three parts
 - Each part is composed of 9 questions
2. Each mark is of equal weight
3. Write your name on the front page of each question paper
4. Write your initials on each subsequent page of the question paper
5. Answer each question in the space provided
6. Cross out any errors completely
7. Do not begin the exam until instructed to do so
8. No examination papers or materials to leave the room

Candidate initials: _____

PAH 2016.2 trial SAQ paper

PART 1

Questions 1 – 9

1 hour

Candidate initials: _____

Q1 (12 min)

A 40 year old woman has presented to the ED with a severe headache.

You are considering the diagnosis of sub-arachnoid haemorrhage.

She has a Glasgow coma score of 15 on your initial assessment.

- 1. List 4 risk factors for subarachnoid haemorrhage. (4 marks)**

(1) _____

(2) _____

(3) _____

(4) _____

CT scan of the brain has confirmed the diagnosis.

- 2. List the classification of severity for subarachnoid haemorrhage as per the World Federation of Neurosurgical Societies. (5 marks)**

Candidate initials: _____

After 3 hours in the ED, the patient was noted to have suffered a decline in her level of consciousness.

3. List 5 likely potential causes of this problem.

(5 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____

On re-evaluation, her vital signs are:

GCS	8	E1 V2 M4
Pulse	90	/min
BP	220/120	mmHg
O2 saturation	99%	room air

Candidate initials: _____

4. List 5 clinical priorities in the assessment and management of this situation. State your justification for each priority. (10 marks)

Clinical priority	Justification

Q2

Your registrar had placed a 67 year old woman on bi-level non-invasive ventilation (NIV) after assessing her to be experiencing an infective exacerbation of chronic obstructive airways disease.

The patient has failed to improve.

An arterial blood gas after 15 minutes of NIV has been performed:

FiO ₂	0.9		
pH	6.88		(7.35 – 7.45)
pCO ₂	149	mmHg	(35 – 45)
pO ₂	335	mmHg	(80 – 100)
HCO ₃	44	mmol/L	(18 – 26)
Na	140	mmol/L	(135 – 145)
K	3.5	mmol/L	(3.2 – 4.5)
Cl	89	mmol/L	(100 – 110)

Candidate initials: _____

1. List 2 pathological processes related to the patient's acid-base status. For each, provide an explanation. (4 marks)

Pathological process	Explanation

2. List the other important pathological process. Include the formula you have used. (2 marks)

Pathological process	Formula

Candidate initials: _____

The patient's vital signs are:

GCS	3	
Pulse	120	/min
BP	95/55	mmHg
O2 saturations	100%	
RR	8	/min
Temperature	38.5	degrees

You agree with the registrar's diagnosis and feel that aggressive intervention is appropriate for the patient.

3. List 5 steps in the further management of this patient in the ED. (5 marks)

- (1) _____

- (2) _____

- (3) _____

- (4) _____

- (5) _____

Candidate initials: _____

Q3

A 25 year old fireman has been brought to ED after being pulled unconscious from an apartment fire. He has significant thermal burns.

On arrival his vital signs are:

GCS	12	E3 V4 M5
HR	105	/min
BP	120/60	mmHg
RR	28	/min
O2 saturation	95%	15L O2 via non-rebreather mask

1. List 5 findings on examination that would indicate an airway threatening burn.

(5 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____

2. List 4 relevant differential diagnoses for his altered level of consciousness

(4 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____

Candidate initials: _____

He has been successfully intubated.

On assessment you note that he has deep burns to the entirety of both upper limbs and his anterior trunk.

3. Calculate the % of body surface area involved in his burn injury. (1 mark)

4. Calculate this patient's fluid requirements using Parkland formula. Body weight is 100kg.

(3 marks)

FORMULA

RESULT

ADMINISTRATION PRINCIPLE

Candidate initials: _____

Q4

A 25 year old woman has been brought to the ED with neck pain after falling off a trampoline.

1. List the NEXUS low-risk criteria for the clinical exclusion of cervical spine fracture.
(5 marks)

Her cervical spine x-ray is provided in the **PROPS BOOKLET**.

Candidate initials: _____

2. List 4 important radiological abnormalities on this x-ray. (4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

3. What is the clinical relevance of this injury? (1 mark)

On examination, the patient has some upper limb weakness.

4. Complete the table, listing the nerve root supply for the following upper limb actions. (4 marks)

Upper limb action	Nerve root supply
Elbow flexion	
Elbow extension	
Wrist extension	
Finger abduction	

Candidate initials: _____

Q5

You have been asked to develop a regional protocol for clot retrieval in ischaemic stroke.

You are working in the major referral centre of a health district with 3 other urban hospitals.

- 1. List 4 important stakeholders you would involve from outside your Emergency Department. (4 marks)**

(1) _____

(2) _____

(3) _____

(4) _____

- 2. List 2 information sources you would review to establish the current standard of care for patients with ischaemic stroke. (2 marks)**

(1) _____

(2) _____

You undertake to write a draft protocol.

Candidate initials: _____

3. List 5 accepted inclusion criteria for the use of intra-arterial clot retrieval you might list on your protocol. (5 marks)

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

Candidate initials: _____

Q6

A 32 year old lady has presented with a fever and malaise for 12 hours. She is currently undergoing chemotherapy for breast cancer.

1. List 5 important features you would seek in your history.

(5 marks)

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

Candidate initials: _____

2. List 3 important features of your examination.

(3 marks)

(1) _____

(2) _____

(3) _____

Her full blood examination reveals severe neutropaenia.

3. List and justify 5 important factors that will impact your antimicrobial prescribing for this patient.

(5 marks)

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

Candidate initials: _____

Q7

Your director has asked you to establish a morbidity and mortality committee for your department.

- 1. List 5 key steps you will undertake in establishing a committee. (5 marks)**

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

You have established a committee.

One of your first tasks is to ensure that you are capturing all morbidity and mortality that may be a result of patient encounters in your emergency department.

Candidate initials: _____

2. List 7 different measures you may use to identify morbidity and mortality associated with emergency department presentations. (7 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____
- (6) _____
- (7) _____

Candidate initials: _____

Q8

A 3 year old boy has presented to the ED with a wheeze.

1. List 4 features of your clinical assessment (history and examination) that would support the diagnosis of foreign body aspiration. (4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

2. Complete the table with 2 other differential diagnoses for wheeze in this child. For each, give cardinal clinical assessment features that would support the diagnosis. (4 marks)

Differential diagnosis	Clinical assessment features

Candidate initials: _____

3. List 3 complications of foreign body aspiration.

(3 marks)

(1) _____

(2) _____

(3) _____

Candidate initials: _____

Q9

You are awaiting the arrival of a 35 year old female who has just delivered a term baby in an ambulance.

You do not have specific information regarding the status of the baby or mother.

1. List 3 key components of your preparation.

(3 marks)

(1) _____

(2) _____

(3) _____

On arrival, the mother has ongoing vaginal bleeding. The umbilical cord has been clamped and cut but the placenta has not been delivered. No medications have been given. Estimated blood loss is 500ml.

The mother's vital signs are:

GCS	15	
Pulse	90	/min
BP	120/75	mmHg
O2 saturation	99%	room air

Candidate initials: _____

2. List 5 management steps to address this situation.

(5 marks)

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

Other members of your team are assessing the baby. The child has been dried and stimulated.

3. Complete the following table for the appropriate actions in response to different newborn heart rates.

(3 marks)

Newborn Heart Rate	Management
<60/min	
60 – 100/min	
>100/min	

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PART 2

Questions 10 - 18

1 hour

Candidate initials: _____

Q 10 (9 min)

A 32 year old man has been brought to the ED after a high speed motor vehicle accident.

He was intubated in the field due to severe respiratory distress. There is no evidence of head injury.

His initial chest x-ray is provided in the **PROPS BOOKLET**.

1. List 3 pathological processes seen on this x-ray. For each, provide the radiological evidence. (6 marks)

Pathological process	Radiological evidence

Candidate initials: _____

The patient looks pale and sweaty.

His vital signs are:

Pulse	140	/min
BP	65/45	mmHg
O2 sats	92%	FiO2 1.0

The pelvic x-ray is normal. There are no long bone injuries.

FAST scan imaging from the right upper quadrant is provided in the **PROPS BOOKLET**.

2. Give your interpretation of this image. (2 marks)

3. State your fluid resuscitation principles, including end-points. (3 marks)

Candidate initials: _____

4. List your 4 main management steps, apart from fluid resuscitation. (4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

Candidate initials: _____

Q11 (9 min)

A 45 year old man has self-presented to your tertiary ED with 2 hours of central chest pain.

His ECG is provided in the **PROPS BOOKLET**.

1. State the primary underlying pathology with 3 supportive ECG findings. (4 marks)

Primary pathology:

Supportive findings:

(1) _____

(2) _____

(3) _____

Candidate initials: _____

2. State the most important complication shown on the ECG with 4 supportive ECG findings.
(5 marks)

Complication:

Supportive findings:

(1) _____

(2) _____

(3) _____

(4) _____

The patient's vital signs are:

GCS 15

BP 105/70 mmHg

O2 saturation 100% 6L O2 via Hudson mask

Temperature 36.5 degrees

Candidate initials: _____

3. List 5 treatments you would employ for the primary underlying pathology. (5 marks)

- (1) _____

- (2) _____

- (3) _____

- (4) _____

- (5) _____

4. List 2 pharmacological options for managing the complication demonstrated on the ECG.
Include doses. (2 marks)

- (1) _____
- (2) _____

Candidate initials: _____

Q12

A 64 year old man has been referred to ED with dyspnoea.

His CXR is provided in the **PROPS BOOKLET**.

1. List 4 important abnormalities on the above x-ray.

(4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

2. List 3 differential diagnoses for his radiologic abnormalities.

(3 marks)

(1) _____

(2) _____

(3) _____

Candidate initials: _____

3. List 4 investigations you may order to clarify the cause of this man's illness. For each response provide justification regarding the utility of the investigation. (8 marks)

INVESTIGATION	JUSTIFICATION

Candidate initials: _____

Q13

A 45 year old man has been brought to the ED with abdominal pain for 6 hours.

His abdominal x-ray is provided in the **PROPS BOOKLET**.

1. What is the pathology demonstrated?

(1 mark)

2. List 3 radiological features of the x-ray which support your diagnosis.

(3 marks)

(1) _____

(2) _____

(3) _____

Candidate initials: _____

3. List the 2 most common causes of this pathology. List one examination finding that would support each cause. (4 marks)

Cause	Examination finding

4. List 3 metabolic complications you might expect in this patient. Provide a likely cause for each complication. (6 marks)

Metabolic complication	Cause

Candidate initials: _____

Q14

A 9 year old boy has been brought to the ED with bleeding from his mouth. He underwent tonsillectomy at your hospital 6 days ago.

1. In order of increasing invasiveness, state four methods you could employ to reduce the amount of bleeding from the surgical site. (4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

After a short time in the ED, his bleeding has increased in volume.

The patient has become agitated and is having trouble managing his airway, with continuous coughing and choking episodes.

You have decided to intubate the patient to facilitate further safe management.

Candidate initials: _____

2. List 4 issues you would anticipate during the period around his intubation. For each, state how you will aim to manage the problem. (8 marks)

Issue	Management

Candidate initials: _____

Q15

A 64 year old man has presented to the ED after a transient loss of consciousness while at home.

On arrival to the ED, he has returned to normal consciousness and has normal vital signs.

He has no symptoms.

1. List 6 ECG findings that would warrant admission to a cardiac telemetry bed in the hospital. For each ECG finding, state the clinical significance. (12 marks)

ECG finding	Clinical significance

Candidate initials: _____

2. For each the following investigations, give a clinical indication for its use. (4 marks)

Investigation	Clinical indication
Chest x-ray	
Full blood count	
Electrolyte panel	
CT head	

Candidate initials: _____

Q16

A 65 year old lady has been brought to ED after taking an overdose of iron tablets in a suicide attempt.

1. List 5 key components of your toxicological risk assessment of the overdose. (5 marks)

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

2. Complete the table for assessment features (2 each for history, examination and investigations) that would be most predictive of a potentially lethal iron ingestion. (6 marks)

Assessment feature	Finding suggesting potentially lethal ingestion
HISTORY	
EXAMINATION	
INVESTIGATION	

Candidate initials: _____

3. List 2 methods of decontamination that might be useful in this patient. (2 marks)

(1) _____

(2) _____

4. Name the specific therapy for severe iron toxicity. (1 mark)

Candidate initials: _____

Q17

A 45 year old man has presented to the ED with right shoulder pain after falling on to his right arm while playing basketball.

His right shoulder x-ray is provided in the **PROPS BOOKLET**.

- 1. List 4 radiological abnormalities to describe the above injury. (4 marks)**

- (1) _____
- (2) _____
- (3) _____
- (4) _____

You plan to manage this injury in the ED prior to outpatient specialist referral.

The patient weighs 80kg and has no other medical problems.

- 2. List 3 techniques for correction of this problem in the ED. (3 marks)**

- (1) _____
- (2) _____
- (3) _____

Candidate initials: _____

3. List 4 different regimes for sedation and analgesia to facilitate your management.

(4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

Candidate initials: _____

Q18

A 58 year old woman has presented with a painful, swollen left foot.

There is no history of trauma nor any previous similar episodes.

A photograph of her foot is provided in the **PROPS BOOKLET**.

1. Give 2 statements describing the clinical image. (2 marks)

(1) _____

(2) _____

2. State the investigation which will be of most benefit in determining the cause of this problem. (1 mark)

Candidate initials: _____

3. Complete the table. Give your 2 main differential diagnoses. For each diagnosis, give 2 supportive features you would expect from your investigation in Q2. (6 marks)

Differential diagnosis	Supportive features
1.	
2.	

Candidate name: _____

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PART 3

Questions 19 - 27

1 hour

Candidate initials: _____

Q19 (12 min)

A four week old neonate has been brought to the ED by her mother. The mother states that the baby “won’t stop crying”.

1. In the table below, list 5 differential diagnoses for possible pathology in the child. For each, list one cardinal finding on assessment (history and examination) that would be supportive. (10 marks)

Differential diagnosis	Assessment finding

Candidate initials: _____

On assessment, the baby appears well, with no signs of pathology. You are worried about possible post-natal depression in the child's mother.

2. List 8 factors that would put this mother at risk of post-natal depression. (8 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____
- (6) _____
- (7) _____
- (8) _____

Your assessment is of significant post-natal depression.

3. List 4 indications for admission to hospital. (4 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____

Candidate initials: _____

After you inform her that she needs admission for further treatment, she tells you she wants to leave.

- 4. List 4 components of your verbal de-escalation strategy that you could employ to engage her to stay for further management. (4 marks)**

(1) _____

(2) _____

(3) _____

(4) _____

Your attempts at verbal de-escalation have been unsuccessful. The mother is now very agitated and attempting to leave.

- 5. List 2 key criteria for the use of involuntary treatment for this patient under your local Mental Health laws. (2 marks)**

(1) _____

(2) _____

Candidate initials: _____

6. List 2 drugs you could use for parental sedation, including doses. (2 marks)

(1) _____

(2) _____

Candidate initials: _____

Q20

You are part of a pre-hospital medical team that has been tasked to the scene of a school sporting carnival where a 12 year old boy has collapsed. The boy is unconsciousness and is not breathing.

1. Complete the following table regarding Advanced Life Support in this situation.

(6 marks)

CPR ratio of compressions:breaths	
Energy dose for defibrillation	
Dose of adrenaline	
Timing of adrenaline	
Dose of amiodarone	
Timing of amiodarone	

Candidate initials: _____

2. List 8 causes you would look to correct during the cardiac arrest management.

(8 marks)

- (1) _____
- (2) _____
- (3) _____
- (4) _____
- (5) _____
- (6) _____
- (7) _____
- (8) _____

Candidate initials: _____

Q21

A 38 year old man is brought to ED with back pain and fever.

1. List 4 key features in his past medical history that would put this man at increased risk of an epidural abscess. (4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

Assessment reveals spinal tenderness at T12.

2. List 3 key components of your examination, including the significance of each. (3 marks)

(1) _____

(2) _____

(3) _____

Candidate initials: _____

3. List and justify 3 investigations you may utilise in the diagnostic approach to suspected epidural abscess. (6 marks)

TEST	JUSTIFICATION

Your assessment has confirmed an epidural abscess.

The patient has anaphylaxis to penicillin.

4. List your antimicrobial therapy. (1 mark)

Candidate initials: _____

Q22

A 45 year old man has presented to the ED with left sided abdominal pain.

Two images from his abdominal CT scan are provided in the **PROPS BOOKLET**.

1. State your diagnosis.

(2 marks)

2. List 3 supportive radiological findings on the CT images.

(3 marks)

(1) _____

(2) _____

(3) _____

Candidate initials: _____

3. Complete the table by listing your 2 most relevant other investigations with justification for their use. (4 marks)

Investigation	Justification

4. List 4 criteria that would need to be met for discharge of this patient. (4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

Candidate initials: _____

Q23

A 70 year old man has presented to the ED with dizziness.

His ECG is provided in the **PROPS BOOKLET**.

1. Give your diagnosis, supported by 3 ECG abnormalities. (4 marks)

Diagnosis _____

ECG abnormalities

(1) _____

(2) _____

(3) _____

2. List 4 possible causes of this problem. (4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

Candidate initials: _____

3. List 3 clinical indications for initiating chemical or electrical pacing in this patient.

(3 marks)

(1) _____

(2) _____

(3) _____

4. List 3 agents you could use for chemical pacing.

(3 marks)

(1) _____

(2) _____

(3) _____

Candidate initials: _____

Q24

An 12 month old girl has been brought to the ED with a seizure. The child has been experiencing fevers and has been lethargic for one day.

1. List 4 criteria for a simple febrile convulsion.

(4 marks)

(1) _____

(2) _____

(3) _____

(4) _____

The seizure was self-limiting.

Candidate initials: _____

2. Complete the following table, with justification for the use of the following investigations.
(7 marks)

Investigation	Justification
No investigation	
Urine bag specimen	
Urine supra-pubic aspiration or catheter specimen	
Blood culture	
Chest x-ray	
Lumbar puncture	
Full blood count	

Q25

A 45 year old man has been brought to the ED after falling off a horse.

His pelvic x-ray is provided in the **PROPS BOOKLET**.

1. List 3 abnormalities on the pelvic x-ray.

(3 marks)

(1) _____

(2) _____

(3) _____

2. Classify the injury.

(1 mark)

On completion of your full assessment, no other injuries have been identified.

His vital signs are:

GCS	14	E3 V4 M6
Pulse	140	/min
BP	75/40	mmHg
O2 saturation	100%	6L O2 via Hudson mask

The patient is agitated.

You have decided in collaboration with your trauma team, that the patient will require attempted embolization of bleeding pelvic vessels in the interventional radiological theatre.

Candidate initials: _____

3. List 4 steps in your management of this patient, providing rationale for each. (8 marks)

Management step	Rationale

Candidate initials: _____

Q26

A 4 year old boy has been brought to ED with a petechial rash.

Investigations have revealed a platelet count of $5 \times 10^9/L$. (ref range $150-450 \times 10^9/L$)

1. In the following table, list 3 possible causes of thrombocytopaenia in this child. For each cause, list 2 key historical or examination features that would support this diagnosis, and 2 laboratory findings or investigations that would be useful in confirming the diagnosis.

(15 marks)

Diagnosis	History/Exam findings	Laboratory Findings/ Investigations
1		
2		
3		

Candidate initials: _____

Q27

A 30 year old male has presented after an intentional slow-release paracetamol overdose.

- 1. List 2 specific indications for administration of activated charcoal in this patient. (2 marks)**

(1) _____

(2) _____

After initial assessment, the patient was commenced on an N-AcetylCysteine infusion whilst awaiting results. The serum paracetamol at 6 hours is shown on the nomogram in the **PROPS BOOKLET**.

- 2. List the criteria for cessation of N-AcetylCysteine therapy in this patient. (3 marks)**

Candidate initials: _____

3. List 5 criteria for transfer to a liver transplant service in the context of hepatotoxicity from paracetamol. (5 marks)

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____