COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND

SECOND PART EXAMINATION

EXAM REPORT

MARCH / MAY 2021

This report is prepared to provide candidates, tutors, and Supervisors of Training with information regarding the assessment of candidates' performance in the CICM Second Part Examination. The information provided is to demonstrate the type of questions that will be asked in the written paper, as well as the type of scenarios that candidates are required to work though in the viva and clinical sections of the examination. For each of the written SAQs there is a summary statement which outlines the important aspects which were required of candidates, for them to score well in the question.

Trainees should discuss the report with their tutors so that they may prepare appropriately for future examinations. Trainees should not rely solely on writing practice answers to previous exam questions for exam preparation, and first establish a strong knowledge base from learning at the bedside and studying relevant texts, journals and on-line sources.

The exam comprises a written section and an oral section. The written exam consists of two 2.5 hour papers of 15 short answer questions each. The pass mark for the written section is derived by the Angoff method and for this sitting was set at 52.0%. The oral exam consists of eight interactive vivas conducted online, and two separate clinical "hot cases" which were completed locally.

The tables below provide an overall statistical analysis as well as information regarding performance in the individual sections. A comparison with data from the four previous exams is provided.

In all sections of the exam the candidate must demonstrate performance consistent with that of a trainee who is ready to enter the transition year of the CICM training program, i.e., that of junior consultant by demonstrating they have the ability for safe, effective, independent practice as an Intensivist. Candidates who are not at this level are strongly encouraged to defer their attempt at the exam

Overall Performance	2021.1	2020.2	2020.1	2019.2	2019.1	2018.2
Presenting for written (Including OTS)	54	45	50	57	44	67
Carrying a pass or exempted from a previous attempt	25	2	11	7	13	7
OTS Exempt	0	0	0	0	0	0
Total number presenting (written + carry + OTS)	79	47	61	64	57	74
Invited to orals (passed written section)	40	29	37	34	20	47
Total number invited to oral section	66	31	48	40	33	54

Sectional Pass Rates	2021.1			2020.1 / 2020.2			2019.2		2019.1		2018.2	
	Pass rate		Highest individual mark	Pass rate		Highest individual mark	Pass rate	Highest individual mark	Pass rate	Highest individual mark	Pass rate	Highest individual mark
Hot case 1	58%		85%	55%		57%	57%	88%	64%	88%	57%	85%
Hot case 2	44%		85%	51%		65%	65%	83%	55%	80%	65%	90%
	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3	Day 1		Day 1		Day 1	
Viva 1	80% / 89%	91% / 90%	78% / 82%	87% / 95%	55% / 76%	73% / 72%	83%	92%	73%	80%	56%	75%
Viva 2	71% / 73%	77% / 68%	48% / 83%	57% / 88%	77% / 85%	82% / 85%	80%	80%	61%	85%	46%	95%
Viva 3	33% / 73%	45% / 80%	30% / 57%	70% / 78%	55% / 71%	95% / 85%	90%	85%	76%	77%	74%	85%
Viva 4	62% / 71%	41% / 60%	61% / 63%	63% / 79%	82% / 75%	73% / 90%	50%	85%	61%	93%	63%	95%
Viva 5	67% / 64%	23% / 66%	13% / 64%	37% / 85%	41% / 100%	91% / 85%	65%	90%	48%	83%	70%	83%
Procedure Viva	62% / 80%	64% / 78%	83% / 73%	53% / 85%	41% / 93%	86% / 83%	45%	93%	85%	90%	81%	95%
Radiology Viva	52% / 69%	32% / 60%	17% / 56%	40% / 89%	59% / 69%	36% / 61%	90%	91%	36%	67%	30%	77%
Communication Viva	43% / 88%	68% / 78%	74% / 95%	57% / 95%	50% / 95%	91% / 88%	50%	95%	67%	88%	56%	75%

Analysis of Performance in Individual Sections	2021.1	2020.1 / 2020.2		2019.2	2019.1	2018.2
Successful in the written section	40/54 74%	29/45 64%	37/50 74%	34/57 60%	20/44 45%	47/67 70%
Successful in the Hot case section	35/66 53%	45/74 61%		27/40 68%	24/33 73%	33/54 61%
Successful in both Hot cases	22/66 33%	26/74 35%		15/40 38%	11/33 33%	19/54 35%
Successful in the Viva section	40/66 61%	55/74 74%		33/40 83%	26/33 79%	36/54 67%

Oral Section Pass Rates	2021.1	2020.2	2020.1	2019.2	2019.1	2018.2
Candidates who passed in written section and passed the overall exam	24/40 **60%**	14/29 **48%**	28/37 **76%**	24/34 **71%**	17/20 **85%**	35/47 **75%**
All candidates invited to oral section and passed the overall exam (written + carry + OTS)	32/66 **48%**	16/31 **52%**	36/48 **75%**	30/40 **75%**	26/33 **79%**	39/54 **72%**
Overall Pass Rate	32/79 **40%**	16/47 **34%**	36/61 **59%**	30/64 **47%**	26/57 **46%**	39/74 **53%**

EXAMINERS' COMMENTS

Written Paper

The pass rate for the written section was 74%.

As in previous exams, candidates who failed questions did so for one or more of the following reasons:

- Insufficient knowledge of the topic in question
- Insufficient detail and/or depth of the answer
- Poorly structured answer
- Inadequate reference to supportive evidence where relevant
- Failure to answer the question that was asked
- Omission of all or part of the question

Candidates are reminded that all questions are worth equal marks, hence time should be apportioned accordingly. When a question is not attempted, this denies the candidate an opportunity to gain valuable marks. The written component of the examination is to test the candidate's breadth of knowledge, and when this is demonstrated satisfactorily, they are permitted to attempt the oral component of the examination, where their knowledge application is tested in depth in specified areas, as well as the clinical environment.

Candidates are advised to read the question accurately, especially the taxonomy regarding the type of question that is being asked. The glossary (provided on the next page), which is on the front page of both papers, gives a clear indication of the expectation for how the knowledge content within the answer should be presented, and to what breadth, depth, and context. **Candidates are reminded to make sure their writing is legible and to avoid using non-standard abbreviations**. Candidates are also reminded that professional conduct is assessed throughout the exam process and that inappropriate comments written on the answer paper are not acceptable.

Candidates that failed questions most often gave insufficiently detailed answers that were not at the level expected of a junior consultant. Candidates often gave generic “proforma” answers that did not deal with the specific issues in the question. As with previous examinations, examiners commented that candidates had not appeared to consider the mark distribution in some multi-part questions, spending too little time on the sections which were allocated more marks.

Candidates who failed the written section scored an average of 48% compared with those candidates who passed, whose average score was 61%.

SECOND PART WRITTEN EXAMINATION

(A) Write your answers in the blue book provided

(B) Start each answer on a **new page** and indicate the **question number**. It is not necessary to rewrite the question in your answer book

(C) You should aim to answer each question in **ten** minutes

(D) The questions are worth **equal** marks

(E) Record your **candidate number** and each **question number** on the cover of each book and hand in all books

GLOSSARY OF TERMS

Critically evaluate:	Evaluate the evidence available relating to a topic.
Outline:	Provide a summary of the important points.
List:	Provide a list.
Compare and contrast:	Provide a description of similarities and differences. You may tabulate your answer.
Assessment:	Generic term that implies determining an underlying diagnosis, encompassing; history, clinical examination, and relevant investigations
Management:	Generic term that implies determining an overall management plan, encompassing; resuscitation, initial and ongoing monitoring, supportive treatment, and definitive treatment.
Discuss:	Explain the underlying key principles. Where appropriate, this may include controversies and/or pros and cons.
Explain:	Make plain, interpret, and account for.

NOTE

Where laboratory values are provided, abnormal values are marked with an asterisk (*****).

Please note that in this report all images from the SAQs have been removed.

Question 1

Outline the pathophysiology, diagnosis, and treatment of mesenteric ischaemia in the critically ill patient.

This question was answered well, as most candidates provided outlines around the specified categories. Pathophysiology involved an outline of various ways in which the blood supply can be disrupted, and diagnosis was based around aspects of history, examination and investigation. Management involved various aspects of resuscitative measures and disease specific measures.

Maximum Score	8.5
Percentage scoring >5/10	75.9%

Question 2

A 71-year-old male is transferred to your ICU following a mechanical aortic valve replacement and coronary artery bypass surgery. The anaesthetist reports that he came off bypass readily, has not required any inotropic support, and has epicardial pacing wires in situ. However, shortly after arrival his blood pressure falls to 60/30 mmHg.

a) **Outline your differential diagnosis for his hypotension. (20% marks)**

b) **List <u>four</u> likely causes of excessive post-operative bleeding in this setting. (20% marks)**

c) **Outline your immediate management. (60% marks)**

This question was answered well, as most candidates were able to outline sufficient potential differential diagnoses. Candidates are reminded that is a question asks for 4 likely causes, only the first four causes listed will be taken into consideration. Candidates were required to demonstrate a stepwise logical approach to for the immediate management.

Maximum Score	9.0
Percentage scoring >5/10	94.4%

Question 3

3.1

A blood film from a patient is reported as showing a left shift and toxic changes.

a) **What is the likely diagnosis?**

b) **What is meant by a left shift?**

c) **What constitutes 'toxic changes'?**

(25% marks)

3.2

A patient returns for review 8 weeks following severe gunshot injuries to the chest and abdomen. His blood film is reported as showing Howell Jolly bodies.

a) **What is the significance of this finding?**

b) **What other changes associated with this problem may be noted on blood film?**

c) **What specific infections is this patient at risk from (requiring vaccination)?**

d) If the blood film for this patient also reported basophilic stippling of the red cells, what might be the cause?

(25% marks)

3.3

A blood film from a patient is reported as showing a "dimorphic population of red cells".

a) What is meant by dimorphic population?

b) Give four causes of this picture.

(25% marks)

3.4

A 54-year-old male presents with new onset confusion followed by seizures and convulsions, leading to intubation. His full blood count is shown:

Parameter	Patient Value	Adult Normal Range
Haemoglobin	105 g/L*	135 – 145
Mean Cell Volume	98 fL	80 – 100
Platelets	67 x 10^9/L*	150 – 400
White Cell Count	110 x 10^9/L*	4 – 11
Blasts	52%*	0

a) What is the likely cause of his presentation and underlying diagnosis?

b) What other organ is most likely to be affected by this phenomenon?

(15% marks)

Post intubation, the patient's SpO_2 holds steady at 98% on FiO_2 25%. An arterial blood gas result arrives from the lab:

Parameter	Patient Value	Adult Normal Range
pH	7.31*	7.35 – 7.45
$PaCO_2$	54 mmHg*	35 – 45
PaO_2	45 mmHg*	80 – 100
SpO_2	67%*	93 – 100

c) What is the likely cause of this discrepancy? (10% marks)

This question was answered reasonably well, although many candidates did not attempt some parts of the question or gave incorrect answers.

Maximum Score	7.5
Percentage scoring >5/10	57.4%

Question 4

With respect to pathological conditions of the spinal cord, list <u>two</u> causes of, and the clinical findings for each of the following syndromes:

a) **Complete cord transection.**

b) **Cord hemisection.**

c) **Central cord syndrome.**

d) **Anterior cord syndrome (anterior spinal artery syndrome).**

e) **Cauda Equina syndrome.**

You may tabulate your answer.

This question was answered well, as most candidates did tabulate their answer around the specified categories. Candidates lost marks when some of the answers were incomplete or lacked accuracy.

Maximum Score	8.6
Percentage scoring >5/10	94.4%

Question 5

Discuss the factors that may affect your choice of antimicrobial agent in a critically ill septic patient, giving examples where relevant.

This question was answered poorly. Good answers referred to aspects such as patient factors, context of the microbiological site and organism, hospital factors, and medication factors. Better answers ensured that these categories were accompanied by relevant examples.

Maximum Score	6.8
Percentage scoring >5/10	31.5%

Question 6

Outline the mechanism of action and list the indications, contraindications, and complications of the TIPSS procedure (Transjugular intrahepatic portosystemic shunt).

This question was answered well, as most candidates provided a summary of the important points for the categories that were listed in the question.

Maximum Score	9.0
Percentage scoring >5/10	79.6%

Question 7

You are called to urgently review a 70-year-old patient who is being ventilated following admission with severe community-acquired pneumonia. She had a tracheostomy five days ago. She has now acutely desaturated with a saturation of 85% and developed high airway pressures but is haemodynamically stable.

Outline your differential diagnosis and initial management of this problem.

This question was answered well, with most candidates using the DOPE mnemonic to situate their answer for the differential diagnosis. Good answers demonstrated a stepwise approach to working through the clinical problem, with reasoning at each stage.

Maximum Score	8.0
Percentage scoring >5/10	75.9%

Question 8

Outline the pathophysiological changes associated with end-stage kidney disease (dialysis dependent) that may impact on the management of critically ill patients.

This question was answered well, and most candidates used a body system approach considering cardiovascular, respiratory, gastrointestinal, immunological etc. Better answers considered other aspects such as vascular access and pharmacological aspects. Good answers should include an attempt at demonstrating a multisystem effect of ESRF and outlining the follow-on effects for ICU therapy not just a list of pathophysiological changes.

Maximum Score	8.0
Percentage scoring >5/10	70.4%

Question 9

9.1

A previously fit and well 41-year-old male underwent an anterior resection under general anaesthesia with regional blockade. In recovery he required additional analgesia for escalating pain and treatment for nausea, following which he had an apparent seizure.

The following arterial blood gas sample was taken during resuscitation

Parameter	Patient Value	Adult Normal Range
FiO_2	0.6	
pH	6.91*	7.35 – 7.45
pCO_2	64 mmHg (8.5 kPa) *	35 – 45 (4.6 – 6.0)
pO_2	158 mmHg (21 kPa) *	75 – 98 (10 – 13)
SaO_2	96%	
Bicarbonate	12 mmol/L*	22 – 26
Base Excess	-18 mmol/L*	-2 – +2
Sodium	145 mmol/L	135 – 145
Potassium	4.1 mmol/L	3.5 – 5.2
Chloride	110 mmol/L	95 – 110
Lactate	16 mmol/L*	< 2

a) **State the acid-base abnormality, and show your calculations for Anion Gap, A-a gradient and Delta gap.**

b) **List <u>three</u> reasons for the lactataemia.**

(30% marks)

9.2

The following venous blood results are from a 52-year-old female who has had a prolonged ICU course following extensive surgery for resection of a pelvic sarcoma, complicated by sepsis and multi-organ dysfunction.

Parameter	Patient Value	Adult Normal Range
pH	7.06*	7.32 – 7.43
PCO_2	42 mmHg (5.5 kPa)	27 – 50 (3.5 – 6.6)
PO_2	44 mmHg (5.8 kPa)	36 – 44 (4.7 – 5.8)
Bicarbonate	11 mmol/L*	22 – 38
Base Excess	-18 mmol/L*	-3 – +3
O_2 Saturation	80%	70 – 80
Sodium	140 mmol/L	135 – 145
Potassium	3.8 mmol/L	3.5 – 5.2
Chloride	119 mmol/L*	95 – 110
Calcium Ionised	1.30 mmol/L	1.12 – 1.32
Glucose	10.6 mmol/L*	3.0 – 5.4
Lactate	1.0 mmol/L	< 1.5
Haemoglobin	116 g/L	115 – 160
Urea	9.3 mmol/L*	3.0 – 8.0
Creatinine	244 μmol/L*	45 – 90

a) **State the acid-base disturbance in the above results.**

b) **List <u>three</u> likely explanations for the acid-base status.**

(30% marks)

9.3

Hypoalbuminemia is common in the long-term ICU patient.

a) **How does this finding alter your interpretation of acid-base data?**

b) **List <u>two</u> methods of how you would adjust for this.**

(40% marks)

This question was answered well, and most candidates demonstrated their calculations and made their interpretations clear in their answers.

Maximum Score	8.8
Percentage scoring >5/10	94.4%

Question 10

Regarding randomised clinical trials:

a) **What is a noninferiority trial? (10% marks)**

b) **What is the null hypothesis in a noninferiority trial? (10% marks)**

c) **Why would a noninferiority trial be undertaken instead of a superiority trial? (40% marks)**

d) **What are the limitations of noninferiority trials? (40% marks)**

This question was answered well. Candidates had clearly learned many required knowledge aspects of Evidence Based Medicine.

Maximum Score	9.0
Percentage scoring >5/10	92.6%

Question 11

The following set of questions relate to invasive arterial blood pressure monitoring.

11.1

What are the major advantages, disadvantages and complications of radial, brachial and femoral arterial lines for monitoring arterial pressure in a critically ill patient? Include in your answer the general complications of all sites as well as complications that are site specific. (50% marks)

11.2

The image (Figure 11.2) below represents a tracing of the arterial wave form.

(Image removed from report.)

a) **What procedure has been performed and what is its purpose? (10% marks)**

b) **What is your impression of the fidelity of the arterial system? Give <u>two</u> reasons. (10% marks)**

11.3

List <u>six</u> important pieces of information that may be obtained from an arterial pressure waveform. (30% marks)

This question was answered well. Many candidates tabulated their answer to part (a), although there was no requirement to. Candidates are reminded to observe the numbers underlined in the answers, as giving more reasons that are required does not gain more marks and can lose candidates valuable writing time.

Maximum Score	8.9
Percentage scoring >5/10	87.0%

Question 12

This is an image (Figure 12) of a 13-year-old male who rode his motorbike into a single strand of fencing wire, was thrown off and walked 500 metres for help. He now complains of difficulty in breathing. On examination he has stridor.

(Image removed from report.)

a) **List the potential associated injuries possible in this patient. (30% marks)**

b) **Discuss the specific management options for securing his airway. Include in your answer the advantages and disadvantages of each and your preferred option. (70% marks)**

This question was answered well, and candidates were expected to give a list of injuries across the three main anatomical systems i.e., Tracheal/ Vascular/ Skeletal injuries. A list of reasonable management options with the rationale was required.

Maximum Score	8.3
Percentage scoring >5/10	79.6%

Question 13

With reference to intensive care outcomes, discuss the advantages and limitations of each of the following endpoints as a measure of quality of care:

a) **ICU mortality. (25% marks)**

b) **Hospital mortality. (25% marks)**

c) **90-day mortality. (25% marks)**

d) **1-year functional outcome. (25% marks)**

This question was answered poorly. Many candidates had knowledge gaps in this area which is an integral part of future Intensive Care Medicine knowledge and understanding, governance and quality assurance.

Maximum Score	7.8
Percentage scoring >5/10	44.4%

Question 14

A 57-year-old female has required intubation and mechanical ventilation for hypoxaemic respiratory failure with symptoms of cough and dyspnoea that have been gradually progressive over 4 weeks. There is a diffuse bilateral infiltrate on her chest X-ray. She has a history of rheumatoid arthritis and is receiving treatment with methotrexate and prednisolone and has no previous history of respiratory disease.

a) **List the likely differential diagnosis. (20% marks)**

b) **Briefly outline the specific management issues relating to diagnosis and treatment of this patient, excluding acute resuscitation. (80% marks)**

This question was answered well. Candidates are reminded to read the question, and in this case the wording was around likely differential diagnoses, not all possible diagnoses. It is important that the practice of Intensive Care Medicine is contextualised to the clinical situation we are presented with.

Maximum Score	8.5
Percentage scoring >5/10	74.1%

Question 15

Discuss the management of Enterocutaneous fistulae (ECF) in the critically ill patient.

This question was answered poorly. Good answers required a discussion involving fluid and electrolyte resuscitation, source control, nutritional management, wound care and effluent management, along with any other aspects which were relevant.

Maximum Score	6.8
Percentage scoring >5/10	42.6%

Question 16

List the clinical signs and tests used for neuro-prognostication after cardiac arrest and discuss their limitations.

This question was answered reasonably well. Answers were required that listed aspects and limitations of neurological examination, electrophysiology, imaging, and biomarkers.

Maximum Score	8.0
Percentage scoring >5/10	63.0%

Question 17

a) **List the indications, contraindications, uses and adverse effects of high-flow nasal cannulae (HFNC). (40% marks)**

b) **Critically evaluate the use of HFNC use in adult ICU patients. (60% marks)**

This question was answered reasonably well, as most candidates provided accurate knowledge for part (a) of thew question. The critically evaluate aspect required evaluation of the evidence, which encompassed trails such as FLORALI, THRIVE, and PREOXYFLOW

Maximum Score	7.3
Percentage scoring >5/10	68.5%

Question 18

Regarding regional citrate anticoagulation for continuous renal replacement therapy (CRRT):

a) **What is the mechanism by which citrate provides anticoagulation? (20% marks)**

b) **What is the metabolic fate of the citrate? (10% mark)**

c) **What are the features of citrate toxicity? (30% marks)**

d) **What conditions may increase the risk of citrate toxicity? (20% marks)**

e) **What alternative(s) to citrate could you use in a patient with severe Heparin Induced Thrombocytopaenia (HIT)? (20% marks)**

This question was answered well, and most candidates demonstrated good knowledge of the working of CRRT using citrate

Maximum Score	8.3
Percentage scoring >5/10	70.4%

Question 19

You are called to review an 86-year-old female, with severe pleuritic chest pain and difficulty breathing following dilation of an oesophageal stricture. Her CT thorax scan confirms an oesophageal perforation.

Outline your management of this problem, including the options for definitive treatment.

This question was answered well. Good answers included outlining aspects such as resuscitation, heamodynamic monitoring, source control and antimicrobials, analgesia, nutritional support, and the consideration of operative / interventional management vs non-operative options.

Maximum Score	7.8
Percentage scoring >5/10	87.0%

Question 20

A morbidly obese 49-year-old female is referred from the Emergency Department to ICU following a motor vehicle crash and has left sided fractured ribs and a flail chest. She has seatbelt bruising over her chest wall and abdomen. She has had a CT scan of head, neck, chest, abdomen and pelvis that has shown left rib fractures and left sided lung infiltrates. There are no other injuries evident. She is receiving oxygen via a Hudson mask, is conscious and has significant left sided pleuritic chest pain.

Discuss the differences in management of this patient compared to a non-obese patient.

This question was answered well, and good answers included the consideration of aspects around management of airway, breathing, circulatory support, renal injury, as well as spinal precautions, nutrition, and the logistics of managing morbidly obese patients. Some candidates tabulated their answer; however, this was not required.

Maximum Score	8.0
Percentage scoring >5/10	81.5%

Question 21

a) **List <u>four</u> patient factors that determine central venous pressure (CVP). (20% marks)**

b) **List <u>four</u> clinical conditions that may be detected from an abnormal central venous waveform in a euvolaemic patient and for each condition describe the associated waveform features. (20% marks)**

c) **Explain how one performs and interprets a passive leg raise manoeuvre including its physiological basis, reliability, and limitations in clinical practice. (60% marks)**

This question was answered reasonably well. Most candidates were able to list answers to parts (a) and (b), however, candidates did not gain marks in part (c) as their answers lacked an explanation. Candidates are reminded to read the question, especially the first word so they know how to structure their answer and what depth of knowledge is required based on the defined glossary.

Maximum Score	9.0
Percentage scoring >5/10	66.7%

Question 22

Outline the causes and management of severe postpartum haemorrhage (PPH).

This question was answered well. Many candidates referred to the '4Ts' in their answer for the causes – tone, trauma, tissue, and thrombin. Management needed to aim at aspects of generic and focussed resuscitation, as well as consideration of operative and non-operative options.

Maximum Score	9.0
Percentage scoring >5/10	92.6%

Question 23

23.1

a) **What does the following pressure-volume loop (Figure 23.1) indicate?**

b) **What is the likely underlying diagnosis?**

(20% marks)

(Image removed from report.)

23.2

The following pressure-volume loop (Figure 23.2) was obtained from a mechanically ventilated patient.

a) **What does it indicate?**

b) **What changes would you make to the ventilator settings to correct the abnormality?**

(20% marks)

(Image removed from report.)

23.3

Outline <u>four</u> causes for the below capnograph trace (Figure 23.3) obtained from a critically ill patient.

(20% marks)

(Image removed from report.)

23.4

A 58-year-old female ventilated in intensive care for a week following a motor vehicle accident was noted to drop her oxygen saturation suddenly, requiring an increase in FiO_2 from 0.4 to 0.6. The nurse has performed an arterial blood gas analysis.

Parameter	Patient Value	Adult Normal Range
FiO_2	0.6	
pH	7.48*	7.36 – 7.44
PCO_2	41 mmHg (5.4 kPa)	35 – 45 (4.6 – 6.0)
PO_2	86 mmHg (11.3 kPa)	

Ventilator data:

Tidal Volume	**700 mL**
Respiratory rate	**14 breaths/min**
Peak pressure	**28 cmH_2O**
Plateau pressure	**18 cmH_2O**
PEEP	**7.5 cmH_2O**
SpO_2	**94%**
$EtCO_2$	**28 mmHg**

What is the most likely diagnosis? Give the reasons for your diagnosis. (40% marks)

This question was answered well. Ventilatory management and an understanding and application of ventilatory parameters is an integral aspect of Intensive Care Medicine clinical practice.

Maximum Score	9.0
Percentage scoring >5/10	87.0%

Question 24

With respect to chylothorax in the critically ill:

a) **Define chylothorax. (10% marks)**

b) **Outline how it should be diagnosed. (40% marks)**

c) **Describe the principles of management. (50% marks)**

This question was answered well. Diagnosis should have included aspects such as common precipitants, suspicious appearance and specific investigations of the effusion. Management should have included a description of aspects such underlying principles, nutrition, pharmacological consideration, as well as definitive options.

Maximum Score	8.5
Percentage scoring >5/10	85.2%

Question 25

a) **Describe the various types of brain herniation with clinical features and radiological features. (70% marks)**

b) **Describe the role of decompressive craniotomy in Traumatic Brain Injury. (30% marks)**

This question was answered poorly. Good answers included the following types of brain herniation along with the requested clinical and radiological features: Uncal (or temporal transtentorial), central, subfalcine (cingulate or transfalcine), transcalvarial, upwards trans-tentorial, and cerebellar tonsillar herniation. The role of decompressive craniectomy required a reference to evidence from trial such as DECRA and RESCUE ICP.

Maximum Score	8.9
Percentage scoring >5/10	46.3%

Question 26

A 74-year-old male has been intubated for respiratory failure developing two weeks after oesophagectomy for adenocarcinoma. He has no other significant past medical history. After intubation, an audible air leak was apparent. Urgent bronchoscopy demonstrated a fistula between the proximal left main bronchus and the oesophago-gastric anastomosis.

Outline the immediate management priorities and the priorities for the ongoing ICU management of this patient.

This question was answered reasonably well. A good answer included aspects such as: immediate management priorities, overall approach and perspective, priorities for ongoing ICU management, management of ventilation, anticipation of respiratory complications, and ongoing supportive care.

Maximum Score	7.7
Percentage scoring >5/10	64.8%

Question 27

Outline the diagnostic clinical features, appropriate investigations and early management of necrotising fasciitis associated with Group A Streptococcal (GAS) infection.

This question was answered well. Good answers used the specified categories. Early management included aspects such as antimicrobial therapy, early operative intervention, and ongoing supportive care.

Maximum Score	8.7
Percentage scoring >5/10	77.8%

Question 28

Critically evaluate the use of selective decontamination of the digestive tract (SDD) in the ICU.

This question was answered reasonably well. Good answers outlined the principles and rationale for SDD including the four classical components of practice, as well as recognising that variations do exist. Better answers summarised the overall current evidence and gave an indication how they translated this evidence into their clinical practice.

Maximum Score	8.8
Percentage scoring >5/10	66.7%

Question 29

29.1

A 24-year-old female with a history of depression presents with seizures and decreased consciousness. Her arterial blood gas analysis is shown below, taken on FiO_2 0.3.

Parameter	**Patient Value**	**Adult Normal Range**
Barometric pressure	**760 mmHg (100 kPa)**	
pH	**7.39**	**7.35 – 7.45**
PCO_2	**40 mmHg (5.3 kPa)**	**35 – 45 (4.6 – 6.0)**
PO_2	**110 mmHg (14.6 kPa)**	
Bicarbonate	**24 mmol/L**	**22 – 27**
Base Excess	**-0.4 mmol/L**	**-2 – +2**

Sodium	**136 mmol/L**	**135 – 145**
Potassium	**4.0 mmol/L**	**3.5 – 4.5**
Chloride	**118 mmol/L***	**110 – 110**
Glucose	**4.2 mmol/L**	**3.0 – 7.8**
Lactate	**0.8 mmol/L**	**0.5 – 2.2**

a) What is the likely cause of her presentation?

b) State the reasoning for your answer.

(20% marks)

29.2

A 64-year-old male has been an in-patient in your ICU for one week following a subarachnoid haemorrhage. The following data were obtained from a CSF sample taken from the external ventricular drain:

Parameter	Patient Value	Adult Normal Range
Glucose	**3.8 mmol/L**	**2.2 – 3.9**
Protein	**0.46 G/L**	**0.15 – 0.50**
White Cell Count	**20 x 10^6/L***	**< 5**
Red Cell Count	**10,000 x 10^6/L***	**< 5**

a) Interpret these results in the context of the brief history given. (20% marks)

29.3

A 25-year-old female with a 5-day history of anorexia, nausea and vomiting presents to hospital after a convulsion and is transferred immediately to your ICU. She is G3P2 and 30/40 gestation. The following blood results are obtained:

Parameter	Patient Value	Adult Normal Range
FiO_2	**0.28**	
pH	**7.54***	**7.35 – 7.45**
PO_2	**87 mmHg (11.6 kPa)**	
PCO_2	**33.0 mmHg (4.4 kPa) ***	**35.0 – 45.0 (4.6 – 6.0)**
SpO_2	**94%**	
Bicarbonate	**28.0 mmol/L***	**22.0 – 26.0**
Base Excess	**4.5 mmol/L***	**-2.0 – +2.0**
Sodium	**127 mmol/L***	**135 – 145**
Potassium	**2.3 mmol/L***	**3.5 – 5.0**
Chloride	**84 mmol/L***	**95 – 105**
Glucose	**4.8 mmol/L**	**3.5 – 6.0**
Creatinine	**354 µmol/L***	**45 – 90**
Urea	**29.0 mmol/L***	**3.0 – 8.0**
Haemoglobin	**177 g/L***	**120 – 160**
White Cell Count	**25.4 x 10^9/L***	**4.0 – 11.0**
Platelet count	**29 x 10^9/L***	**150 – 350**
Prothrombin time	**15.0 sec**	**12.0 – 16.5**
International normalised ratio (INR)	**1.1**	**0.9 – 1.3**

Activated partial thromboplastin time (APTT)	**28.0 sec**	**27.0 – 38.5**
Fibrinogen	**5.7 g/L***	**2.0 – 4.0**
D-Dimer	**16.8 mg/L***	**< 0.5**

a) Describe the important metabolic abnormalities and give <u>one</u> explanation for each.
(40% marks)

29.4

The following results were obtained from a 32-year-old male:

Parameter	**Patient Value**	**Adult Normal Range**
Plasma		
Sodium	**138 mmol/L**	**135 – 145**
Potassium	**3.4 mmol/L**	**3.4 – 5.0**
Chloride	**118 mmol/L***	**100 – 110**
Bicarbonate	**15 mmol/L***	**22 – 27**
Arterial Blood Gas		
FiO_2	**0.3**	
pH	**7.32***	**7.35 – 7.45**
PO_2	**125 mmHg (16.4 kPa)**	
PCO_2	**30 mmHg (4.0 kPa) ***	**35 – 45 (4.6 – 6.0)**
Base Excess	**-10 mmol/L***	**-2 – +2**
Urine		
pH	**5.0**	**4.6 – 8.0**
Sodium	**40 mmol/L**	
Potassium	**10 mmol/L**	
Chloride	**80 mmol/L**	

a) Describe the abnormalities on the blood investigations.

b) What is the underlying mechanism for the primary abnormality?
(20% marks)

This question was answered well. Good answers gave very clear and concise descriptions and interpretations of the data presented.

Maximum Score	9.8
Percentage scoring >5/10	74.1%

Question 30

A 45-year-old male with a background of chronic liver disease is admitted to the Emergency Department with massive haematemesis secondary to a variceal bleed. He is managed with endoscopy and sclerotherapy.

a) List the clinical indicators for risk of re-bleeding from the gastric varices. (20% marks)

b) List the pharmacological agents that may reduce the risk of a re-bleed. (20% marks)

c) Briefly discuss the haemoglobin transfusion trigger you will use in the clinical management of this patient (20% marks)

d) List, in order of priority, <u>four</u> specific non-pharmacological options for controlling variceal re-bleed AND, where appropriate, the relative advantages and disadvantages of these.
(40% marks)

This question was answered well. Good answers discussed the transfusion triggers in part (c) and prioritised their options in part (d).

Maximum Score	8.6
Percentage scoring >5/10	79.6%

EXAMINERS' COMMENTS

Clinicals "Hot cases" Section

The hot cases run for twenty minutes with an additional two minutes at the start of each case for the candidate to be given both a verbal and a written introduction to the case in question. This is to give candidates more opportunity to take in the relevant information and to plan a focussed approach to examination of the patient.

The following comments are a guide to the expected standard for performance in the hot cases:

- Candidates should demonstrate professional behaviour, treating the patient with consideration and respect.
- Candidates should address and answer the question asked of them in the introduction to the hot case.
- Candidates should interpret and synthesise information as opposed to just describing the clinical findings.
- Candidates need to seek information relevant to the clinical case in question.
- Candidates should be able to provide a sensible differential diagnosis and appropriate management plan. A definitive diagnosis is not always expected and, in some cases, may yet to be determined.
- Candidates should not rely on a template answer or key phrases but answer questions in the context of the clinical case in question.
- Candidates must be able to describe, with justification, their own practice for specific management issues.

Candidates who performed well in the hot cases, as in previous exams, were able to demonstrate the following:

- A professional approach showing respect and consideration for the patient.
- Competent, efficient and structured examination technique and also able to appropriately adapt the examination to suit the clinical case in question.
- Seeking of information relevant to the case.
- Appropriate interpretation and synthesis of their findings.
- Presentation of their conclusions in a concise and systematic fashion, addressing the issue in question.
- Listing of a differential diagnosis that is relevant to the clinical case in question.
- Appropriate interpretation of relevant investigations.
- Discussion of management issues in a mature fashion, displaying confident and competent decision-making.
- An appreciation of the complexities and key issues of the case.
- Overall performance at the expected level (Junior Consultant).

Candidates who did not perform at the acceptable standard did so for reasons including the following:

- Missing or misinterpreting key clinical signs on examination.
- Failure to perform a focussed examination relevant to the case in question.
- Incomplete or poor technique for examination of a system.
- Poor synthesis of findings with limited differential diagnosis, sometimes compounded by missed key clinical signs on examination.
- Poor interpretation of imaging and data.
- Failure to grasp the key issues relevant to the case in question and a lack of insight into the problems.
- Inability to construct an appropriate management plan for the case in question.
- Hesitancy and/or uncertainty in stating a management plan.
- The need for significant prompting during the discussion with knowledge gaps.
- Limited time for discussion as a consequence of taking too long to present the clinical findings or to interpret basic data.
- Inability to convey the impression that he/she could safely take charge of the unit.

It is apparent that some candidates are very nervous, and this affects their exam performance. Candidates badly affected by nerves may benefit from sessions with a performance psychologist, drama coach, public speaking coach or similar.

Candidates are advised that they should not sit the Second Part Examination until they can confidently examine patients, present the relevant clinical findings, synthesise all the information and discuss management issues at the appropriate level, **i.e., that of junior consultant by demonstrating they have the ability for safe, effective, independent practice as an Intensivist.** Candidates should practise hot cases from the commencement of their exam preparation. To this end, candidates are encouraged to do the following in their daily clinical practice as preparation for the hot cases:

- Seek the opportunity to take charge of the unit and be responsible for management decisions.
- Practise examination of individual systems.
- Treat every case to be assessed at work as a hot case, i.e. pose a relevant question (e.g. ‘Why is this patient not progressing?’ ‘What is the cause of the new fever?’ ‘Is this patient ready for extubation?’), perform a focussed exam and then present your findings to a colleague.

Vivas

The overall pass rate for the vivas was 61%, compared with 74% for the written paper and 53% for the hot cases. Six out of the eight vivas had a pass rate of 50% or lower across the three days, the radiology viva in particular, being answered poorly. Candidates who failed a viva mostly did so because of knowledge gaps, poorly structured answers and inability to give the rationale for their responses. As in the discussion for the hot cases, candidates should not rely solely on generic statements, key phrases and template answers, and, instead, tailor their responses to the specifics of the question and be able to justify and expand their response. Candidates are encouraged to practise viva technique and to discuss patient management, including the rationale for their decisions, with senior colleagues. As with the hot cases, candidates who are very nervous or have a poor technique may benefit from training with a performance coach.

CLINICALS "HOT CASES" SUMMARIES

The clinical 'hot cases' require candidates to assess patients currently in the ICU, with regard to answering specific questions around clinical assessment, diagnosis, investigations, and management. Five examples of clinical 'hot case' questions from this examination sitting are given below.

- *This patient presented to a peripheral hospital with shortness of breath, lethargy, and new atrial fibrillation. She deteriorated and required intubation and ventilation. Please examine her, outline her current clinical issues supported by your clinical findings, give a differential diagnosis for her presentation, and then we will discuss further investigation and management*

- *This patient presented to the ED with hypotension 2 weeks after a robotic right partial nephrectomy. He was found to have haemorrhagic shock which required multiple procedures. Please examine him, outline the current clinical issues supported by your clinical findings, and discuss your intensive care management plan for these issues.*

- *This 56-year-old man is day 1 post AVR and MVR. He had a NSTEMI 2 weeks ago with subsequent cardiac failure leading to pre-op ejection fraction of 25%. You are taking over his care after his cardiac surgery. Outline your assessment and management plan to move him forward.*

- *This 38-year-old woman presented to the hospital three days ago with a sudden loss of consciousness. She has a background history if hypertension. Please assess her, identifying the clinical issues and describing your management plan.*

- *This patient is day 4 in the ICU, having been admitted post-operatively after the evacuation of a traumatic subdural haematoma due to a fall from a height. He has a background history of normal pressure hydrocephalus and previous CVA. Please examine him with a view to determining what is contributing to his slow neurological recovery*

The clinical 'hot cases' were assessed at the following venues:

New Zealand
- Auckland City Hospital
- Wellington Hospital

Hong Kong
- Princess Margaret Hospital (HK)

NSW, Australia
- Liverpool Hospital
- Nepean Hospital
- Royal North Shore Hospital
- Royal Prince Alfred Hospital

QLD, Australia
- Gold Coast University Hospital

VIC, Australia
- Austin Hospital
- Monash Medical Centre
- Royal Melbourne Hospital

SA, Australia
- Flinders Medical Centre
- Royal Adelaide Hospital

WA, Australia
- Fiona Stanley Hospital

VIVAS STEMS

DAY 1

Viva 1

You are asked to urgently review a 72-year-old male who was recently admitted to ICU following an apparently uneventful elective right carotid endarterectomy. He is complaining of shortness of breath and is refusing to lie flat. He has a BMI of 40. He has the following observations:

- SpO_2 93% on 15L O_2
- Respiratory rate of 40 breaths/min
- Stridor
- Heart rate 120 beats/min
- Blood pressure 200/110 mmHg

Describe your immediate management priorities.

Maximum Score	8.95
Percentage Passed	81%

(This viva dealt with the assessment and management of a patient with severe obesity developing airway obstruction after undergoing vascular surgery)

Viva 2

You are asked to review a confused 65-year-old female with ischaemic heart disease, obstructive airways disease, and atrial fibrillation in the Emergency Department, who has presented with abdominal pain and vomiting.

Her vital signs, after 4 litres 0.9% normal saline intravenously are as follows:

Temperature	39.5^{o}C
Respiratory rate	30 breaths/min
SpO_2	92% on 15 L/min oxygen via a non re-breather mask
Heart rate	120 beats/min (atrial fibrillation)
Blood pressure	88/48mmHg

She is icteric, has right upper quadrant tenderness, and is mildly confused.

What is your differential diagnosis?

Maximum Score	7.25
Percentage Passed	71%

(This viva dealt with the assessment and management of a patient with undifferentiated abdominal pain)

Viva 3

A 56-year-old male is brought to the Emergency Department with trauma following a motor vehicle accident. His initial blood tests reveal the following results:

Parameter	Result	Reference Range
Bilirubin	18 µmol/L	0 – 18
Aspartate Transaminase (AST)	730 U/L *	0 – 30
Alanine Aminotransferase (ALT)	1034 U/L *	0 – 30
Alkaline Phosphatase (ALP)	130 U/L *	30 – 100
Gamma Glutamyl Transferase (GGT)	94 U/L *	0 – 35
Total protein	62 g/L	60 – 82
Albumin	36 g/L	36 – 52
Blood glucose	12.1 mmol/L *	4.0 – 6.0
International normalised ratio (INR)	1.1	

What is your interpretation of these results?

Maximum Score	7.25
Percentage Passed	33%

(This viva dealt with the assessment and management of a patient suffering a hepatic injury post trauma)

Viva 4

A 51-year-old female with a 20 pack-year history of smoking is now day 10 in your ICU, initially admitted with community acquired pneumonia.

The bedside nurse calls you and describes increasing oxygen requirements over 15 minutes, high airway pressure alarms on the ventilator, and persistently low oxygen saturations.

She is mechanically ventilated via an oral endotracheal tube with a moderate volume of sputum on suctioning, on volume-controlled ventilation with the following parameters:

FiO2 0.80
Tidal volume (Vt) 400 mls
Respiratory rate 15 per min
PEEP 10 cmH2O
Peak airway pressure 35 cmH2O

Her ABG result shows pH 7.25, pCO2 60 mmHg, pO2 50 mmHg.

Describe your assessment and management.

Maximum Score	7.10
Percentage Passed	62%

(This viva dealt with the assessment and management of a ventilation in a patient with respiratory failure)

Viva 5

A 72-year-old male was admitted to ICU five days ago following primary resection and anastomosis of a perforated sigmoid diverticulum. He has a stable vasoactive agent requirement and is receiving empiric antibiotics. Over the last 12 hours he has produced a total of 200 mls of urine, and his creatinine has doubled from baseline to a value of 300 µmol/L.

What is your differential diagnosis for the oliguria and how will you manage these?

Maximum Score	6.35
Percentage Passed	67%

(This viva dealt with the management of acute kidney injury post abdominal surgery)

Viva 6 – Procedure Station

This is your first day on clinical duties after annual leave. The Registrars have changed rotations while you were away. A Registrar you have never met before approaches you to ask if you would supervise them for the insertion of a central venous line in an admitted patient.

What you understand of the concept of supervision? In your answer, please explore levels of supervision you aware of.

Maximum Score	8.00
Percentage Passed	62%

(This viva dealt with the supervision of junior colleagues undertaking central venous catheter insertion)

Viva 7 – Radiology Station

Maximum Score	6.93
Percentage Passed	52%

(The radiology station consisted of 4 plain X-rays and 3 CT scans.)

Viva 8 – Communication Station

Mavis is a 77-year-old previously independent female who collapsed yesterday in a shopping centre with a seizure. She was intubated and ventilated before being transferred to your Emergency Department.

A CT brain showed an acute SAH with small volume of blood and no midline shift. The neurosurgeons are planning to perform a DSA and coiling of her ICA.

She is hemodynamically stable and breathing spontaneously on PSV 5/5. On neurological examination she opens eyes to pain and localises on the right side with propofol of 6mls/hr and fentanyl of 40 mcg/hr.

She has been very clear about her end of life wishes and has an advanced health directive that states in the event of a deterioration she is not to be resuscitated or receive “heroic “measures.

You are about to have a videoconference with one of her children Sam, who is interstate and unable to visit until tomorrow. The bedside nurse tells you they sounded upset and angry that she is on life support, as it’s something she has never wanted.

Maximum Score	8.75
Percentage Passed	43%

(This viva consisted of a discussion with the family of a patient who further questions and clarifications around aspects of his clinical management)

DAY 2

Viva 1

A 58-year-old female has been brought to the Emergency Department having been found with a reduced level of consciousness. Witnesses describe possible seizures. She has been unwell for a number of weeks with complaints of dysuria, frequency, and progressive lethargy.

Her current medications are atorvastatin and metoprolol. She has been intubated in the Emergency Department because of her level of consciousness. She is easy to ventilate and haemodynamically stable. Non-contrast CT brain is normal.

What are the likely causes for this patient's presentation?

Maximum Score	9.00
Percentage Passed	91%

(This viva dealt with the assessment and management of seizures due to unknown aetiology)

Viva 2

A 59-year-old male presents to the Emergency Department of your outer metropolitan hospital with severe respiratory failure. He described a one-week history of cough, myalgia, fevers and increasing shortness of breath.

He has been intubated and ventilated by the Emergency Department staff and transferred to the Intensive Care Unit for further management.

What is your differential diagnosis?

Maximum Score	6.75
Percentage Passed	77%

(This viva dealt with the assessment and management of acute respiratory failure)

Viva 3

A 76-year-old male has presented 4 hours of severe chest and back pain. He is awake and responsive with a blood pressure of 80/50 mmHg. His past medical history includes hypertension, and a 40 pack-year smoking history.

What are the life-threatening causes for this presentation?

For each cause, list two clinical examination findings you would use to differentiate between the causes.

Maximum Score	8.05
Percentage Passed	45%

(This viva dealt with the assessment and management of aortic dissection)

Viva 4

A previously well, 49-year-old female has been referred to you by the Emergency Department. She sustained a left finger laceration that required debridement and suturing 3 days previously.

She has presented today with intense pain in left hand, profound fatigue, and lassitude, followed by a pre-syncopal episode.

Her vital parameters are:

Heart Rate:	137 beats/min
Blood pressure:	78/50 mmHg
Temperature:	39.7°C
Respiratory Rare:	28 breaths/min
SpO_2:	100% breathing 2 litre Oxygen via nasal prongs

What is your initial assessment and management of this patient?

Maximum Score	6.05
Percentage Passed	41%

(This viva dealt with the assessment and management of a patient with septic shock, due to a peripheral skin injury)

Viva 5

You have been called to review a 66-year-old male in the Emergency Department. He fell from a height and was admitted complaining of neck pain and weakness in all four limbs.

He was intubated shortly after admission for rapid shallow breathing and hypoxia. His current blood pressure is 75/40 mmHg.

Describe your immediate assessment and management.

Maximum Score	6.60
Percentage Passed	23%

(This viva dealt with the assessment and management of a patient with a traumatic spinal injury)

Viva 6 – Procedure Station

You have been called to Emergency Department to see a well-known 63-year-old male with alcoholic liver disease. He has presented to the Emergency Department with melena, nausea and vomiting for three days and a haemoglobin of 54.

He has been on self-prescribed Voltaren for 1 week after a sprained ankle. He has no allergies and is a current smoker. He has a history of ischaemic heart disease and had an endograft inserted into an abdominal aneurysm 7 years ago.

His observations are:

Blood pressure:	90/40 mmHg
Heart rate:	90 beats/min
Temperature:	37.2°C
Respiratory rate:	26 breaths/min
SpO2:	93% on room air

As you are assessing the patient, he vomits a large amount of blood into a kidney dish.

What is your differential diagnosis for his melena and your immediate priorities?

Maximum Score	7.75
Percentage Passed	64%

(This viva dealt with the assessment and management pf upper GI bleeding, and the use of a Sengstaken-Blakemore tube)

Viva 7 – Radiology Station

Maximum Score	6.00
Percentage Passed	32%

(The radiology station consisted of 4 plain X-rays and 3 CT scans.)

Viva 8 – Communication Station

You are the Intensivist caring for Mr George Deckers, a 56-year-old male readmitted to the ICU following inadvertent placement of a vascath into the right carotid artery and massive stroke.

Mr Deckers was first admitted to ICU nearly 4 weeks ago with septic multi-organ failure following a community acquired pneumonia. He made good recovery to the point of obeying commands and being weaned off the ventilator with a tracheostomy. He was discharged to the ward with ongoing intermittent dialysis.

Prior to his readmission, he was progressing well, but still required dialysis. The Renal Advanced Trainee performed the procedure and found it difficult. Carotid Artery dilatation and insertion of vascath into the carotid artery was not immediately recognised. Mr Deckers was found to be unresponsive on the ward a few hours later, and a CT brain showed a large hemispheric infarct.

It is now Day 3, and he is still deeply comatose. He appears to have suffered significant neurological damage based on repeated clinical assessments and sequential CT brain studies.

You have organised a teleconference with the patient's partner to disclose the iatrogenic injury leading to their partner's deterioration, and to initiate discussion about the likely outcome.

Maximum Score	7.75
Percentage Passed	68%

(This viva dealt with the principles and practice of open disclosure)

DAY 3

Viva 1

You have been asked to assess a 34-year-old female who has presented with progressive lethargy, malaise, and confusion.

She has a background of previous morbid obesity and underwent bariatric surgery in the last 6 months, with subsequent extensive weight loss.

She has been intubated for a low level of consciousness in the Emergency Department.

On examination she is dehydrated, afebrile with a blood pressure 120/80 mmHg, heart rate 118 beats/min, SpO_2 99% on FiO_2 of 0.3

Prior to intubation she was noted to have bilateral nystagmus.

What is your differential diagnosis?

Maximum Score	8.15
Percentage Passed	78%

(This viva dealt with the provision of nutrition to the critically ill patient)

Viva 2

A 75-year-old previously fit and well female was admitted to the ICU with hypoxaemic respiratory failure, due to community acquired pneumonia.

She developed multi-organ failure over the first 3 days and required extensive support. Her cardiorespiratory status gradually improved although she remains ventilator dependent at day 10.

What might be the specific barriers to her weaning from the ventilator, and how might they be managed?

Maximum Score	8.25
Percentage Passed	48%

(This viva dealt with weaning from ventilation after respiratory failure)

Viva 3

A 55-year-old female with no reported comorbid conditions has been admitted unexpectedly to your tertiary intensive care unit from the recovery area of the operating theatres. She had an uneventful general anaesthetic for a total hip replacement.

Forty-five minutes after the completion of the operation, she was found unarousable by the attending nurse. An arterial blood gas sample showed the following results:

Parameter	Patient Value	Normal Adult Range
pH	7.01*	7.35 – 7.45
$PaCO_2$	110 mmHg (14.5 kPa) *	35 – 45 (4.6 – 6.0)
PaO_2	100 mmHg (13.1 kPa) (15 L/min oxygen via non-rebreather mask)	
Base excess	+2 mmol/L	-2 – +2
Lactate	1.1 mmol/L	< 1.5

She was urgently reintubated and transferred to your ICU. She is hemodynamically stable.

Give the most likely differential diagnoses.

Maximum Score	5.70
Percentage Passed	30%

(This viva dealt with the assessment and management of a metabolic acidaemia after major orthopaedic surgery)

Viva 4

You are the consultant intensivist in charge for the day, with a new registrar in his first week working in the ICU. You are called about a 53-year-old male who developed hypotension, 30 minutes after elective admission post coronary artery bypass grafts, and mitral valve repair.

He had an acute myocardial infarction 4 weeks ago; his pre-operative echo showed moderate left ventricular dysfunction, and moderate to severe mitral regurgitation. His blood pressure is now 70/45 mmHg, and the registrar requests your immediate help at the bedside.

Describe your management approach to this problem, including the major differential diagnoses you would consider.

Maximum Score	6.30
Percentage Passed	61%

(This viva dealt with the assessment and management of left ventricular failure after cardiac surgery)

Viva 5

You are asked to admit a 48-year-old female to the ICU, who received ablative chemotherapy and an allogeneic bone marrow transplant 2 weeks ago for acute myeloid leukaemia. She has progressively become more dyspnoeic in the ward. A chest X-ray demonstrates a diffuse pulmonary infiltrate.

Initial observations:

GCS:	14
Temperature:	38.4ºC
Heart Rate:	140 beats/min
Blood Pressure:	90/40 mmHg
Respiratory Rate:	35 breaths/min
SaO_2:	88% on 10 L/min Oxygen

Parameter	Patient Value	Adult Normal Range
Haemoglobin	68 g/L*	135 – 180
White Cell Count	0.2 X 10^9/L*	4.0 – 11.0 (no differential)
Platelets	39 X 10^9/L*	150 – 400
Comment: Occasional tear drops, occasional elliptocytes, occasional lymphocytes and neutrophils seen.		

What is your differential diagnosis?

Maximum Score	6.35
Percentage Passed	13%

(This viva dealt with the assessment and management of neutropenic sepsis)

Viva 6 – Procedure Station

A code-blue has been called in your ICU. You walk in to find the registrar has just completed the task of inserting of a left-sided intercostal catheter, in an awake un-intubated patient.

The patient is a 56-year-old female who has been admitted from the ward for respiratory distress. A component of her distress involved a secondary pneumothorax with complete collapse of the lung. The history is suggestive of the lung being completely collapsed for several days.

The patient is currently hypoxic, and her vital signs are:

SpO_2:	86% on 15 L/min via a non-rebreather mask
Heart Rate:	130 beats/min
Blood Pressure:	178/93 mmHg

She is complaining of intense pain, speaking in short staccato phrases, and has grunting respirations.

Your registrar informs you the procedure went without incident and within 15 minutes of ICC attachment to the underwater drain she has rapidly become hypoxic and had clinically deteriorated.

What is your differential diagnosis, and how would you respond to this situation?

Maximum Score	7.25
Percentage Passed	83%

(This viva dealt with the principles and use of intercostal catheters)

Viva 7 – Radiology Station

Maximum Score	5.60
Percentage Passed	17%

(The radiology station consisted of 4 plain X-rays and 3 CT scans.)

Viva 8 – Communication Station

Ben is a 41-year-old male and has been in the ICU for 10 days with intra-abdominal sepsis. He was initially turned away from various Emergency Departments three times in 48 hours before collapsing at home with septic shock and a ruptured appendix. He has had a couple of laparotomies for source control and is recovering very slowly from multi-organ failure.

His family have been extremely demanding, ringing multiple times a day, and at times being verbally aggressive as they are overseas and unable to travel to Australia to visit him. They have made multiple complaints to the nursing staff and there was a clash of personalities with the prior treating ICU consultant, who is known for their brusque manner, and refused to speak to them.

There has been further conflict today with the family phoning and demanding to talk to the consultant “in charge” immediately.

You have organized a teleconference to address these issues.

Maximum Score	9.50
Percentage Passed	74%

(This viva consisted of a discussion with the family of a patient utilising the principles of conflict resolution, and ensuring the maintenance of respectful communication