COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND

SECOND PART EXAMINATION

EXAM REPORT

AUGUST / OCTOBER 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. Answers provided are not necessarily model answers but a guide as to what was expected and for use as an educational resource. 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 2.5hr 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 50.0%. The oral exam consists of eight interactive vivas and two separate clinical "hot cases". Due to COVID, the vivas were completed online over three consecutive days, and the clinicals were completed locally in several locations over a few weeks.

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	2021.2	2021.1	2020.2	2020.1	2019.2	2019.1
Presenting for written (Including SIMG)	64	54	45	50	57	44
Carrying a pass or exempted from a previous attempt	26	25	2	11	7	13
SIMG Exempt	4	0	0	0	0	0
Total number presenting (written + carry + SIMG)	94	79	47	61	64	57
Invited to orals (passed written section)	46	40	29	37	34	20
Total number invited to oral section	70	66	31	48	40	33

Analysis of Performance in Individual Sections	2021.2	2021.1	2020.1 / 2020.2		2019.2	2019.1
Successful in the written section	46/64 72%	40/54 74%	29/45 64%	37/50 74%	34/57 60%	20/44 45%
Successful in the Hot case section	37/70 53%	35/66 53%	45/74 61%		27/40 68%	24/33 73%
Successful in both Hot cases	25/70 36%	22/66 33%	26/74 35%		15/40 38%	11/33 33%
Successful in the Viva section	56/70 80%	40/66 61%	55/74 74%		33/40 83%	26/33 79%

Sectional Pass Rates	2021.2			2021.1			2020.1 / 2020.2			2019.2		2019.1	
	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	67%		80%	58%		85%	55%		57%	55%	88%	64%	88%
Hot case 2	49%		90%	44%		85%	51%		65%	60%	83%	55%	80%
	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3	Day 1		Day 1	
Viva 1	79% / 90%	100% / 86%	74% / 80%	80% / 89%	91% / 90%	78% / 82%	87% / 95%	55% / 76%	73% / 72%	83%	92%	73%	80%
Viva 2	58% / 66%	83% / 76%	65% / 73%	71% / 73%	775 / 68%	48% / 83%	57% / 88%	77% / 85%	82% / 85%	80%	80%	61%	85%
Viva 3	46% / 72%	65% / 71%	57% / 75%	33% / 73%	45% / 80%	30% / 57%	70% / 78%	55% / 71%	95% / 85%	90%	85%	76%	77%
Viva 4	71% / 77%	100% / 79%	74% / 79%	62% / 71%	41% / 60%	61% / 63%	63% / 79%	82% / 75%	73% / 90%	50%	85%	61%	93%
Viva 5	54% / 66%	43% / 78%	22% / 70%	67% / 64%	23% / 66%	13% / 64%	37% / 85%	41% / 100%	91% / 85%	65%	90%	48%	83%
Procedure Viva	67% / 83%	96% / 96%	61% / 94%	62% / 80%	64% / 78%	83% / 73%	53% / 85%	41% / 93%	86% / 83%	45%	93%	85%	90%
Radiology Viva	42% / 60%	17% / 60%	57% / 69%	52% / 69%	32% / 60%	17% / 56%	40% / 89%	59% / 69%	36% / 61%	90%	91%	36%	67%
Communication Viva	58% / 90%	48% / 90%	48% / 85%	43% / 88%	68% / 78%	74% / 95%	57% / 95%	50% / 95%	91% / 88%	50%	95%	67%	88%

Oral Section Pass Rates	2021.2	2021.1	2020.2	2020.1	2019.2	2019.1
Candidates who passed in written section and passed the overall exam	27/46 **59%**	24/40 **60%**	14/29 **48%**	28/37 **76%**	24/34 **71%**	17/20 **85%**
All candidates invited to oral section and passed the overall exam (written + carry + SIMG)	41/70 **59%**	32/66 **48%**	16/31 **52%**	36/48 **75%**	30/40 **75%**	26/33 **79%**
Overall Pass Rate	41/94 **44%**	32/79 **40%**	16/47 **34%**	36/61 **59%**	30/64 **47%**	26/57 **46%**

EXAMINERS' COMMENTS

Written Paper

The pass rate for the written section was 64%. As with 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 as asked
- Omission of all or part of the question

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.

Candidates are advised to read the questions carefully and thoroughly and ensure they answer the question as asked and address all parts of each question. Examiners commented that candidates had not appeared to consider the mark distribution in some multi part questions, spending too little time on the more important sections. 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 and may impact the subsequent mark.

Candidates who failed the written section scored an average of 49% compared with those candidates who passed, whose average score was 59%. Some of the marks in this examination sitting were very low, suggesting that candidates did not have the breadth of knowledge and application required to pass the written component of the part 2 exam. **Candidates are encouraged to listen to feedback and advice from their SOTs and educational advisors when considering the correct time for them to attempt the part 2 examination.**

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.

EXAMINER COMMENTS

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 above, 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.

Question 1

A 25-year-old male is admitted to the Emergency Department with fatigue, fevers, and hypotension. He is now stable, requiring moderate dose vasopressor support, and has been transferred to the ICU for ongoing management.

Blood cultures taken on admission have grown Staphylococcus aureus, resistant to penicillin but sensitive to methicillin.

Outline your assessment and specific management related to the staphylococcal bacteraemia.

This question was answered poorly by many candidates. The answer required a focus on MSSA bacteraemia, and many candidates wrote extensively about sepsis in general. The specific antecedent history, risk factors and management choices indicated in candidates' answers, demonstrated large knowledge gaps in this area of knowledge.

Maximum Score	7.25
Percentage scoring >5/10	40.6%

Question 2

Discuss the use of trans-oesophageal echocardiography (TOE) in the ICU. Use the following headings in your answer: rationale for use, data obtained, and how it assists clinical management, associated risks, and limitations.

Candidates who did well in this question were those who tailored their answers to the data obtained by TOE and how it assists with medical management. Most candidates were able to provide the risks and limitations of TOE, but only the stronger candidates were able to provide a good rationale for use of TOE in ICU.

Maximum Score	7.75
Percentage scoring >5/10	78.1%

Question 3

Regarding COVID-19 vaccine induced immune thrombotic thrombocytopaenia (VITT):

a) **Outline the pathophysiology and risk factors.** **(20% marks)**

b) **Outline the clinical presentation.** **(35% marks)**

c) **List <u>three</u> differential diagnoses.** **(15% marks)**

d) **Outline the supportive and specific management.** **(30% marks)**

This question was answered reasonably well, and many candidates demonstrated good knowledge regarding a topic that was current.

Maximum Score	8.00
Percentage scoring >5/10	60.9%

Question 4

A 66-year-old male presents to hospital with hypotension, having had intermittent chest pain throughout the day. He develops runs of broad complex bradycardia requiring adrenaline boluses to maintain output. He is alert, and not in respiratory distress. His blood pressure is 90/40 mmHg, and his heart rate is 113 beats/min.

Past medical history includes Type 2 diabetes mellitus (T2DM) with end stage kidney disease. Baseline blood tests include K^+ 5.8 mmol/L, urea 20 mmol/L, creatinine 430 µmol/L, Hb 96 g/L. Further questioning reveals a 4-day history of loose, dark bowel motions.

Blood gas results are shown below:

Parameter	Admission value	Adult Normal Range
FiO_2	0.28	
pH	7.14*	7.35 – 7.45
pO_2	78 mmHg	
pCO_2	31.0 mmHg*	35.0 – 45.0
SpO_2	94%	
Bicarbonate	10.3 mmol/L*	22.0 – 26.0
Base Excess	-14 mmol/L*	-2.0 – +2.0
Lactate	3.1 mmol/L*	0.5 – 1.6

Parameter	Patient Value	Adult Normal Range
Sodium	133 mmol/L*	135 – 145
Potassium	6.9 mmol/L*	3.5 – 5.0
Chloride	109 mmol/L*	95 – 105
Glucose	16.8 mmol/L*	3.5 – 6.0
Urea	41.5 mmol/L*	3.0 – 8.0
Creatinine	489 µmol/L*	45 – 90
Magnesium	0.95 mmol/L	0.75 – 0.95
Albumin	35 g/L	35 – 50
Calcium corrected	2.40 mmol/L	2.12 – 2.62
Phosphate	1.5 mmol/L	0.8 – 1.5
Creatinine Kinase	1692 U/L*	55 – 170
Hs troponin	6501 ng/L*	0 – 34
Cortisol	438 nmol/L	170 – 500
CRP	< 3	< 5

Parameter	Patient Value	Adult Normal Range
Haemoglobin	66 g/L*	120 – 160
Mean Cell Volume	93 fL	80 – 99
White Cell Count	14.2 x 10^9/L*	4.0 – 11.0
Platelet count	258 x 10^9/L	150 – 350

Parameter	Patient Value	Adult Normal Range
Prothrombin time	14.5 sec	12.0 – 16.5
INR	1.1	0.9 – 1.3
APTT	32.0 sec	27.0 – 38.5
Fibrinogen	4.1 g/L*	2.0 – 4.0

a) List the abnormalities and explain the potential cause of each. (60% marks)

The patient's ECG (ECG 4.1) is shown on page 5.

(Image removed from paper.)

b) List the abnormal ECG findings and list the likely diagnosis. (20% marks)

c) List how you would confirm this diagnosis. (20% marks)

Most candidates answered this question well, however, some candidates did not consider a posterior infarct on the ECG. Many candidate answers were unstructured and very difficult to follow especially where ABG calculations were mixed in with the answers

Maximum Score	9.25
Percentage scoring >5/10	98.4%

Question 5

A 75-year-old female has been admitted to the ICU from the rehabilitation ward with respiratory failure due to community acquired pneumonia. She has a background history of chronic obstructive pulmonary disease (COPD) and congestive cardiac failure (CCF). The resident tells you the patient is now receiving non-invasive ventilation (NIV) on the ward.

a) Explain how NIV can improve the underlying pathophysiology in this patient. (50% marks)

b) Explain how you would assess efficacy of NIV in this patient. (50% marks)

This question was answered well, although part (a) was not answered as well as part (b) as candidates did not answer the specific question asked

Maximum Score	8.12
Percentage scoring >5/10	79.7%

Question 6

The medical director of the ICU in which you work, is considering changing from a "traditional" specialist roster (based on Monday to Friday business hours) to an "extended hours" roster with rostered on-site specialist cover on weekends and weekday evenings.

Outline important aspects that will need to be considered in the implementation of such changes.

Candidates who used a clearly outlined structure for a change management process did reasonably well on this question, and many candidates failed to gain good marks as their answers were superficial, or failed to consider in all detail either rationale for change or clinical, financial, and non-clinical implications

Maximum Score	7.50
Percentage scoring >5/10	40.6%

Question 7

Explain the following statistical terms:

a) Sensitivity. (20% marks)

b) Specificity. (20% marks)

c) Receiver Operating Characteristic (ROC) Curve. (60% marks)

This question was answered reasonably, although parts (a) and (b) were commonly repeated statistical questions, and part (c) was answered better. EBM and the understanding of common statistical terms is an expected part if ICM practice, and these terms would commonly be discussed at journal clubs in most departments.

Maximum Score	9.50
Percentage scoring >5/10	65.6%

Question 8

Regarding blood supply to the abdominal viscera:

a) **List the abdominal structures supplied by the coeliac axis, superior mesenteric artery (SMA) and inferior mesenteric artery (IMA). (30% marks)**

b) **Explain which areas of intestine are more susceptible to mesenteric arterial ischaemia. (10% marks)**

c) **Compare and contrast the risk factors, clinical characteristics, treatment, and prognosis of mesenteric arterial ischaemia (occlusive and non-occlusive) and mesenteric venous thrombosis. (60% marks)**

This question was answered reasonably well, however part (c) where most marks were allocated was answered poorly, as many answers lacked specific points that would differentiate the types of mesenteric ischaemia

Maximum Score	7.90
Percentage scoring >5/10	71.9%

Question 9

Outline your approach to the assessment and management of atrial fibrillation in the critically ill patient.

Better answers included CVS stability in assessment/management and recognised various levels of urgency. Anticoagulation was commonly not discussed as was rate versus rhythm control. Many candidates only focussed on AF as a primary problem, without mention of common issue secondary to underlying critical illness. Many answers did not outline correct/complete assessment and management, just listed as options without any reference to evidence/discussion about risk/benefit/indication.

Maximum Score	8.50
Percentage scoring >5/10	68.8%

Question 10

a) Outline how frailty can be assessed in a patient admitted to the ICU. (40% marks)

b) Outline the limitations of assessing frailty of a patient at the time of ICU admission. (30% marks)

c) Outline how a frailty score might be used in the management of critically ill patients. (30% marks)

This question was answered poorly by many candidates. Answers commonly lacked structure and addressed the questions at a superficial level. Many candidates did not mention scoring systems/scales (only a list of elements of history/examination), and many candidates did not mention 'subjective' assessment of frailty and inter-rater variability as issues. Goals of care was recognised by most, but many did not mention management strategies around resource allocation and triage.

Maximum Score	7.25
Percentage scoring >5/10	35.9%

Question 11

11.1

A 50-year-old female is admitted to ICU following an elective anterior communicating artery aneurysm clipping procedure. The patient was extubated post-procedure. Her background medical conditions include hypertension, Type 2 diabetes mellitus (T2DM) and dyslipidaemia. Her medications include perindopril, metformin, pioglitazone, empagliflozin, and atorvastatin. The following arterial blood gas analysis was taken on day 2 post-operative.

Parameter	Patient Value	Adult Normal Range
FiO_2	0.21	
pH	6.81*	7.35 – 7.45
pO_2	138 mmHg (18.4 kPa)	
pCO_2	11.0 mmHg (1.5 kPa) *	35.0 – 45.0 (4.6 – 6.0)
SpO_2	98%	
Bicarbonate	2.0 mmol/L*	22.0 – 26.0
Base Excess	-31.3 mmol/L*	-2.0 – +2.0
Lactate	3.2 mmol/L*	0.5 – 1.6
Sodium	142 mmol/L	135 – 145
Potassium	4.3 mmol/L	3.5 – 5.0
Chloride	116 mmol/L*	95 – 105
Glucose	10.5 mmol/L*	3.5 – 6.0
Osmolal gap	8	< 10

a) List the abnormalities on the blood gas analysis. (20% marks)

b) Explain the most likely diagnosis and outline how you would investigate this further. (20% marks)

11.2

A 64-year-old female patient is admitted to ICU following lung volume reduction surgery for bullous emphysematous lung disease. She is an ex-smoker with 40 pack year history, with a background history of hypertension and cor pulmonale. She was extubated post-procedure, prior to ICU admission. Her medications include amlodipine, frusemide, and bronchodilators. The following blood gas analysis was done on day 2 post-operative.

Parameter	Patient Value	Adult Normal Range
FiO_2	0.25	
pH	7.40	7.35 – 7.45
pO_2	57 mmHg (7.6 kPa)	
pCO_2	64.0 mmHg (8.5 kPa) *	35.0 – 45.0 (4.6 – 6.0)
SpO_2	88%	
Bicarbonate	39.0 mmol/L*	22.0 – 26.0
Base Excess	12.3 mmol/L*	-2.0 – +2.0
Lactate	0.8 mmol/L	0.5 – 1.6
Sodium	134 mmol/L*	135 – 145
Potassium	4.4 mmol/L	3.5 – 5.0
Chloride	101 mmol/L	95 – 105
Glucose	7.7 mmol/L*	3.5 – 6.0

a) Explain the likely causes of the abnormal results. (30% marks)

11.3

A 72-year-old female is admitted to ICU after decortication of her left lung, due to empyema. Her background history includes insulin dependent diabetes mellitus, rheumatoid arthritis, and hypertension. She was previously hospitalised 2 weeks ago for a methicillin sensitive Staphylococcus aureus bacteremia and is on high dose intravenous flucloxacillin. She is persistently febrile.

Parameter	Patient Value	Adult Normal Range
FiO_2	0.6	
pH	6.94*	7.35 – 7.45
pO_2	85.0 mmHg (11.3 kPa)	
pCO_2	43.0 mmHg (5.7 kPa)	35.0 – 45.0 (4.6 – 6.0)
SpO_2	98%	
Bicarbonate	9.0 mmol/L*	22.0 – 26.0
Base Excess	-15 mmol/L*	-2.0 – +2.0
Lactate	4.0 mmol/L*	0.5 – 1.6
Sodium	141 mmol/L	135 – 145
Potassium	5.0 mmol/L	3.5 – 5.0
Chloride	92 mmol/L*	95 – 105
Glucose	3.8 mmol/L	3.5 – 6.0
Urea	18.0 mmol/L*	3.0 – 8.0
Creatinine	145 µmol/L*	45 – 90

a) List the abnormalities on the blood gas analysis. (15% marks)

b) Outline how you would investigate this further. (15% marks)

As with many data interpretation questions, this question was answered well, and this would be the expectation when the Angoff committee consider the difficulty of the expected 'borderline candidate' performance for the question.

Maximum Score	9.50
Percentage scoring >5/10	95.3%

Question 12

A 50-year-old female with a history of depression and osteoarthritis has presented to hospital with a suspected ingestion of 50 tablets of Panadol Osteo® (modified release paracetamol 665 mg/tablet). It is believed there was suicidal intent and roughly occurred five hours prior. She remains asymptomatic, is remorseful of her actions, and quite anxious.

Her vital parameters are stable; and paracetamol level is plotted in the nomogram below (Figure 12.1):

(Image removed from paper.)

a) **Outline the initial specific investigations and management. (30% marks)**

b) **Explain the role and rationale of N-acetylcysteine (NAC) (based on nomogram) in this patient. (30% marks)**

c) **List the criteria for cessation in patients who require NAC beyond 20 hours. (20% marks)**

d) **List the criteria for consultation with liver transplant unit in patients with paracetamol toxicity. (20% marks)**

This question was answered reasonably well. Candidates should read and have a clear understanding of the context of the question to gain more marks, for example in part (d) many candidates wrote about the 'King's College criteria' for consultation with the liver transplant unit. These are criteria for liver transplantation and the lower threshold for consultation was not reflected in most answers.

Maximum Score	7.25
Percentage scoring >5/10	46.9%

Question 13

a) **Explain the medical management of a patient with confirmed Type B aortic dissection. (60% marks).**

b) **List the indications for consideration of non-medical management of this condition. (40% marks)**

A comprehensive management plan for type B dissection was expected. Candidates who scored well were able to present not only the haemodynamic management but also a detailed plan for overall management and a list of specific indications for surgical management. Some candidates demonstrated good knowledge and answered well. Many candidates showed knowledge gaps with poorly structured and superficial answers.

Maximum Score	7.50
Percentage scoring >5/10	60.9%

Question 14

Regarding thyroid dysfunction in critically ill patients:

a) **List the likely clinical and laboratory findings that are seen in a patient with severe hypothyroidism, that requires ICU management. (25% marks)**

b) **Outline your approach to managing this patient in a). (40% marks)**

c) **List the laboratory findings in 'euthyroid sick' syndrome (ESS) in a critically ill patient. (20% marks)**

d) **Outline your approach to managing a patient with ESS in the ICU. (15% marks)**

This question was answered well by most candidates. A significant number of candidates wrote about the findings and management of **hyper**thyroidism. This emphasises the need to read questions carefully.

Some of the candidates gave very superficial answers and showed knowledge gaps. Some of the can biochemical descriptions / lab data for euthyroid sick syndrome were often incorrectly described.

Maximum Score	7.50
Percentage scoring >5/10	60.9%

Question 15

Regarding peri-partum cardiomyopathy (PPCM):

a) **Define peri-partum cardiomyopathy. (20% marks)**

b) **List <u>five</u> differential diagnoses. (20% marks)**

c) **Outline the management. (60% marks)**

Most candidates were able to define some elements of peripartum cardiomyopathy, although many were unable to give precise and completely accurate definitions. The management outline was often lacking in both breadth and specifics related to the condition - candidates often failed to mention specific treatments. Candidates who performed well were able to concisely list and give specific aims for supportive care, note the difficulties and differences related to pregnancy, and list specific short and medium/long term therapies as part of management.

Maximum Score	8.75
Percentage scoring >5/10	62.5%

Question 16

Regarding Deep Hypothermic Circulatory Arrest (DHCA) during cardiac surgery:

a) **Explain the rationale for DHCA.** **(30% marks)**

b) **List <u>six</u> indications for DHCA.** **(30% marks)**

c) **Outline the adverse effects of DHCA that may be encountered in ICU post DHCA.** **(40% marks)**

Most of the candidates divided into those who correctly explained what DHCA was (and seemed to have some understanding of the intraoperative course) and those applied the term to routine mild hypothermia associated with cardiac surgery. Those who demonstrated understanding of what DHCA was, generally did well. Candidates were very frequently unsure whether bypass was still running during circulatory arrest, and this led to many of their answers listing complications of bypass and hypothermia, rather than the context of DHCA.

Maximum Score	8.00
Percentage scoring >5/10	57.8%

Question 17

a) Outline the surgical differences between the following operations for carcinoma of the oesophagus:
- **i. 3 Stage (modified McKeown) Oesophagectomy.**
- **ii. Ivor Lewis Oesophagectomy.**
- **iii. Transhiatal Oesophagectomy . (15% marks)**

b) List the complications of the above procedures that are of relevance to the ICU management. (60% marks)

c) Outline specific post-operative management strategies of an oesophagectomy patient that reduce mortality and morbidity. (25% marks)

This question was answered relatively poorly. There is a knowledge requirement to ICM practice around the surgical procedures that are managed in the ICU post-operatively, and whilst this level of knowledge does not have to be extensive, there is a level required to enable ICM practice. The actual knowledge of the surgical approaches did not represent a large amount of the marks, and sensible and thorough approach to post-operative management was required – understanding the complications and reducing the potential risks.

Maximum Score	6.75
Percentage scoring >5/10	34.4%

Question 18

The following blood tests are obtained for a newly admitted patient in the ICU, who is intubated and mechanically ventilated.

Parameter	Patient Value	Adult Normal Range
FiO_2	0.5	
pH	7.17*	7.35 – 7.45
pO_2	93 mmHg (12.2 kPa)	
pCO_2	40.0 mmHg (5.2 kPa)	35.0 – 45.0 (4.6 – 6.0)
SpO_2	95%	
Bicarbonate	14.0 mmol/L*	22.0 – 26.0
Base Excess	-13.8 mmol/L*	-2.0 – +2.0
Lactate	1.4 mmol/L	0.5 – 1.6
Glucose	7.3 mmol/L*	3.5 – 6.0

Parameter	Patient Value	Adult Normal Range
Sodium	129 mmol/L*	135 – 145
Potassium	5.5 mmol/L*	3.5 – 5.0
Chloride	96 mmol/L	95 – 105
Bicarbonate	14.0 mmol/L*	22.0 – 26.0
Urea	16.3 mmol/L*	3.0 – 8.0
Creatinine	659 µmol/L*	45 – 90
Albumin	27 g/L*	35 – 50
Protein	45 g/L*	60 – 80
Total bilirubin	148 µmol/L*	< 26
Aspartate transferase	1,945 U/L*	< 35
Alanine transferase	1,218 U/L*	< 35
Alkaline phosphatase	43 U/L	30 – 110
γ-Glutamyl transferase	68 U/L*	< 40
Ionised calcium	0.97 mmol/L*	1.10 – 1.35
Phosphate	1.11 mmol/L	0.80 – 1.50
Ferritin	181,900 µg/L*	30 – 400

Parameter	Patient Value	Adult Normal Range
Haemoglobin	132 g/L	120 – 160
White Cell Count	5.2 x 10^9/L	4.0 – 11.0
Platelet count	24 x 10^9/L*	150 – 350

Parameter	Patient Value	Adult Normal Range
Prothrombin time	20.0 sec*	12.0 – 16.5
INR	1.8*	0.9 – 1.3
APTT	77.0 sec*	27.0 – 38.5
Fibrinogen	0.7 g/L*	2.0 – 4.0
D-Dimer	66.7 mg/L*	< 0.5

a) List the abnormalities. (60% marks)

b) List the most likely diagnosis. (10% marks)

c) List appropriate further investigations, and the initial specific pharmacological treatments of this condition. (30% marks)

A rare but important illness leading to critical illness, which all trainees are likely to have encountered in their training by the time they sit the part 2 examination.

Maximum Score	6.62
Percentage scoring >5/10	17.8%

Question 19

a) **Outline the specific diagnostic investigations for:**

   i. Clostridium Difficile Infection (CDI).
   ii. Complications of CDI. **(30% marks)**

b) **List the features of severe CDI.** **(10% marks)**

c) **Discuss the management of CDI, with specific reference to severity and episode (first/recurrence).** **(60% marks)**

Most marks in this question were for part (c), and many candidates simply listed a series of complications with no attempt to classify them or discuss as per the question requirement. This led to lower scores than candidates may have achieved if they had expanded on their answers.

Maximum Score	8.25
Percentage scoring >5/10	75.0%

Question 20

You are a mentor to one of the junior registrars in your department.

During a scheduled mentoring meeting, they mention to you that they have experienced bullying by the Director of ICU. They have asked you not to mention the bullying to anyone, because they are worried that it might make their situation worse and could affect future job prospects.

a) Outline how you would respond to the trainee's comments. **(60% marks)**

b) What are the advantages and disadvantages of respecting the trainee's request? **(40% marks)**

Most candidates answered b) reasonably well, and section (a) where most marks were allocated was answered less well. Candidates are reminded to focus their answers with alignment of the marking allocation.

Maximum Score	7.75
Percentage scoring >5/10	70.3%

Question 21

Critically evaluate the role of therapeutic hypothermia following out of hospital cardiac arrest.

Poor understanding of the rationale, Superficial / sometimes incorrect understanding/ interpretation of the evidence

Most candidates had a good structure to the answer - rationale/advantages/disadvantages/review of literature/practice. Many candidates demonstrated a poor or superficial understanding of the rationale and demonstrated a poor understanding of the evidence or failed to critically evaluate the key landmark studies. Some candidates presented trial evidence for the use of hypothermia in management of intracranial hypertension, which was not the question asked.

Maximum Score	7.50
Percentage scoring >5/10	50.0%

Question 22

a) **What is the current Sepsis-3 definition of sepsis and septic shock? (20% marks)**

b) **Discuss the challenges of developing definitions for sepsis and septic shock, and the advantages of standardised definitions. (80% marks)**

Part (b) of the answer sought to explore the broad understanding of future intensive care practitioners of the challenges and advantages of developing a universal sepsis definition. Candidates who scored well mentioned that it was difficult to develop definitions for a syndrome with varied clinical presentations/phenotypes and no validated diagnostic test and that a universal definition would lead to improved care processes and reduced mortality.

Maximum Score	7.00
Percentage scoring >5/10	48.4%

Question 23

(Images removed from paper.)

23.1

An 85-year-old male presents to the Emergency Department following a collapse. There was no loss of consciousness. His ECG (ECG 23.1) is shown on page 9.

a) List the major abnormalities. (5% marks)

b) List the likely aetiologies for these abnormalities. (20% marks)

c) List the potential cardiac complication is this patient. (5% marks)

23.2

A 48-year-old male presented with chest pain. His ECG (ECG 23.2) is shown on page 10.

a) List the abnormal ECG findings. (15% marks)

b) List <u>two</u> likely differential diagnoses consistent with these ECG findings. (10% marks)

c) Explain how to differentiate these <u>two</u> differential diagnoses using ECG criteria. (20% marks)

23.3

A 35-year-old male is brought to the Emergency Department after an out-of-hospital cardiac arrest. His ECG (ECG 23.3) is shown on page 11.

a) What was the likely underlying rhythm at the time of the arrest? Please provide your reasoning. (10% marks)

b) List <u>three</u> likely aetiologies for these abnormalities. (15% marks)

Most candidates answered this question well, however many candidates were unable to provide potential differentiating points between ST-elevation MI & Pericarditis.

Maximum Score	8.00
Percentage scoring >5/10	78.1%

Question 24

A 38-year-old female presents to the Emergency Department with complaints of lower abdominal pain and vaginal bleeding. On examination, she is confused and, with cool peripheral perfusion and patchy ecchymoses over her extremities. Vaginal examination reveals clots, with tissue resembling products of conception. She is tachypneic, tachycardic with a non-invasive blood pressure of 88/42 mmHg.

(Parts 24.1 and 24.2 of the question are related to the initial blood results obtained from this patient.)

24.1

A peripheral venous blood sample including a venous blood gas analysis shows the following results:

Parameter	Patient Value	Adult Normal Range
FiO_2	0.21	
pH	7.36	7.35 – 7.45
pO_2	46.0 mmHg (6.0 kPa)	
pCO_2	20.0 mmHg (2.6 kPa) *	45.0 – 51.0 (5.5 – 6.8 KPa)
SpO_2	82%	
Bicarbonate	11.0 mmol/L*	23.0 – 29.0
Base Excess	-12.0 mmol/L*	-2.0 – +2.0
Sodium	134 mmol/L*	135 – 145
Potassium	2.9 mmol/L*	3.5 – 5.0
Chloride	100 mmol/L	95 – 105
Glucose	5.4 mmol/L	3.5 – 6.0

a) Explain the acid base status, including your mathematical calculations where appropriate. (20% marks)

b) List the most likely source of the metabolic acidosis in this patient. (10% marks)

c) List the most likely clinical diagnosis and underlying pathophysiology in this patient. (10% marks)

d) Outline the advantages and disadvantages of a peripheral venous blood gas in critically ill patients. (20% marks)

24.2

Full blood count and coagulation results are shown below:

Parameter	Patient Value	Adult Normal Range
Haemoglobin	93 g/L*	120 – 160
Mean Cell Volume	85 fL	80 – 100
Mean Corpuscular Haemoglobin (MCH)	28.0 pg	27.5 – 33.0
White Cell Count	24.0 x 10^9/L*	4.0 – 11.0
Platelet count	25 x 10^9/L*	150 – 350

Parameter	Patient Value	Adult Normal Range
Prothrombin time	24.0 sec*	12.0 – 16.5
INR	2.2*	0.9 – 1.3
APTT	> 200.0 sec*	27.0 – 38.5
Fibrinogen	< 0.4 g/L*	2.0 – 4.0

a) **Explain the abnormalities for the full blood count and coagulation parameters, and list <u>one</u> likely pathological diagnosis. (20% marks)**

b) **This patient continues to have ongoing vaginal bleeding along with ooze from invasive lines. Outline your principles of management. (20% marks)**

As with previous data interpretation questions, candidates answered these vignettes well.

Maximum Score	8.75
Percentage scoring >5/10	92.2%

Question 25

A 39-year-old female has just been admitted to your unit with severe multiple injuries following a motor vehicle accident. Her injuries are right sided frontal intra-cerebral haemorrhage (ICH), multiple rib fractures with bilateral flail segments and lung contusions, grade III liver laceration, bilateral pubic rami, and sacral fractures. She has a BMI of 39.

a) **Outline the advantages and disadvantages of methods available to reduce the risks of pulmonary embolism (PE) in this patient. (40% marks)**

On day 4 of the patient's ICU admission, they develop multiple pulmonary emboli.

b) **Outline the rationale of inserting an IVC filter in this patient. (30% marks)**

c) **List the advantages and disadvantages of using an IVC filter in this patient. (30% marks)**

Most candidates mentioned chemoprophylaxis and mechanical devices but failed to mention important advantage/disadvantages in particular the risk of HITTS with heparin/LMWH and the difficulties with obesity and devices or dosing. Many candidates failed to recognise the patient already had a PE with regards to part (b) and wrote about the use of IVC filter generally and did not frame their answers around the importance of preventing further right ventricular strain/cv collapse from further PE, as the rationale for inserting IVC filter.

Many candidates did not document advantages/disadvantages of IVC filter including recognition that patients will still need anticoagulation and that a significant issue with IVC filters is loss to follow up and filters remaining in situ. Most candidates failed to appreciate insertion of IVC filter is a relatively simple and minimally invasive procedure. Answers which were able to explain the rationale in the morbidly obese female patient with multitrauma scored maximum marks.

Maximum Score	7.20
Percentage scoring >5/10	23.4%

Question 26

A 23-year-old male of Southeast Asian descent is admitted to the Emergency Department following an episode of syncope. He is currently resident in a medical research facility, taking part in a phase 1 trial of a novel anti-inflammatory agent. An extensive pre-trial health questionnaire did not reveal any concerns.

In the Emergency Department he is alert and comfortable with no respiratory distress and noted to have an SpO_2 of 83% on 15L O_2 via a non-rebreathe mask.

His initial arterial blood gas results are shown below:

Parameter	Patient Value	Adult Normal Range
FiO_2	0.9	
pH	7.52*	7.35 – 7.45
pO_2	200 mmHg (26.3 kPa)	
pCO_2	31.0 mmHg (4.1 kPa) *	35.0 – 45.0 (4.6 – 6.0)
SaO_2	100%	
Hb	118 g/L*	135 – 170
FO_2Hb	90.6%*	94.0 – 97.0
FMetHb	7.8%*	0.0 – 1.5
FCOHb	2.1%*	0.0 – 1.5

He has a baseline and repeat full blood count (at 24 hours), shown below:

Parameter	Patient Value		Adult Normal Range
	On admission	**At 24 hours**	
Hb	122 g/L	77 g/L*	120 – 160
MCV	91	92	80 – 100
Platelets	262	214	150 – 350
WCC	15.5 x 10^9/L*	18.9 x 10^9/L*	4.0 – 11.0
Reticulocytes	-	192 x 10^9/L*	20 – 100
Mega/myelocytes	0.19 x 10^9/L*	0.7 x 10^9/L*	0.00 – 0.06
Nucleated RBC	1.1	6.4	
Film		Blister (helmet) cells ++, bite cells ++, polychromasia Occasional Howell-Jolly bodies	

a) List <u>three</u> potential causes of the discrepancy between SpO_2 and SaO_2 in this patient. (15% marks)

b) List the likely diagnosis and underlying aetiology suggested by his investigations. (30% marks)

c) List the additional tests you would order. List the results you would expect from these tests. (25% marks)

d) List <u>three</u> potential causes for the elevated MetHb. (15% marks)

e) List <u>three</u> potential causes for the elevated COHb. (15% marks)

This question evaluated a specific area and an understanding of the haematological principles in haemolytic anaemia, particularly in the context of a trial drug being used was needed. Candidates are reminded to read the question very carefully, and answers that reflected the stem scored better marks.

Maximum Score	7.75
Percentage scoring >5/10	34.4%

Question 27

A patient with newly diagnosed Guillain-Barré Syndrome (confirmed with LP and nerve conduction studies) has been referred to the ICU team for monitoring. They have requested admission to ICU for monitoring in case of deterioration.

a) **Outline the factors you would consider in the decision on whether to admit this patient to the ICU.**

(70% marks)

b) **List the non-respiratory complications of severe Guillain-Barré Syndrome. (30% marks)**

Many candidates gave larger answers for part (b), when most marks were awarded for part (a), however there was a good grasp on most candidates' part of the key issues re decision to admit a patient with acute flaccid paralysis. Many candidates did not gain more marks as they omitted key issues such as ward v ICU capabilities.

Maximum Score	8.25
Percentage scoring >5/10	60.9%

Question 28

a) List the advantages, contraindications, and potential complications, for the use of peritoneal dialysis (PD) for treatment of acute kidney injury (AKI) in the critically ill patient. (80% marks)

b) Outline the essential components of an acute PD prescription. (20% marks)

This question was not answered well, and this demonstrates the need to answer the context of the question. The question specifically stated "in critical illness" but very few answers reflected this. Many candidates answered questions with a framing spontaneous bacterial peritonitis from the context of hepatic failure, not from the context seen of PD. Many candidates lacked knowledge of the specific fluids that may be used or what might be in them for PD, and their prescriptions were aligned with IHD / CRRT.

Many candidates wrote about disadvantages rather than contraindications, and few candidates discussed the implications of peritoneal dialysis on respiratory mechanics.

Maximum Score	6.25
Percentage scoring >5/10	25.0%

Question 29

You are called to review a 55-year-old female following difficult prolonged surgery for emergency clipping of a ruptured left middle cerebral artery (MCA) aneurysm. She had returned to the ICU three hours earlier, intubated, ventilated and with an external ventricular drain (EVD) in situ.

She has developed frank blood in the EVD, and her ICP has increased to 57 cmH_2O.

Outline your approach to her initial management.

Most candidates recognised the emergency and described the approach. Those candidates who did not score well either demonstrated a lack of understanding of the urgency of the situation and the need for neurosurgical input immediately, and/or insufficient detail-especially about the specific ICP control measures-targets and agents/doses-and the BP/CPP balance. Many candidates failed to contextualise haemodynamic management and its target required considering the bleed, for this patient, and some candidates presented options of management without indicating their choice or rationale

Maximum Score	8.50
Percentage scoring >5/10	60.9%

Question 30

A 25-year-old female is brought into the Emergency Department with acute severe asthma. She is intubated and ventilated and transferred to the ICU.

a) **Discuss your assessment and management to prevent the potential of the patient developing dynamic hyperinflation.** **(60% marks)**

The patient becomes hypotensive.

b) **Excluding worsening dynamic hyperinflation, list <u>four</u> likely differential diagnoses.** **(10% marks)**

c) **Outline <u>one</u> diagnostic investigation and <u>one</u> management strategy for each differential diagnosis.**

(30% marks)

Many candidates focused on asthma management rather than specific approaches to assess and prevent DHI.

Poor marks in part (a) were due to not mentioning specific details of how to perform Plateau pressure or iPEEP manoeuvres. Only a few candidates mentioned the pitfalls of intrinsic PEEP in determination of DHI. The second part of this question was answered better. However, many candidates lost marks because of imprecision/inadequate detail. The role of TTE in helping diagnose fluid responsiveness was not specified or the context of raised intrathoracic pressure influencing the classic TTE finding of fluid responsiveness was not outlined. Some candidates did not mention pneumothorax or more specifically tension pneumothorax as a cause of hypotension.

Maximum Score	8.80
Percentage scoring >5/10	75.0%

SECOND PART ORAL EXAMINATION

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 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**, which is a trainee who is ready to enter the transition year of the CICM training program, 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. 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 80%, compared with 72% for the written paper and 53% for the hot cases. Three out of the eight vivas had a pass rate of 50% or lower, the procedure 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 hospital with abdominal pain, diarrhoea, and lower leg swelling, with a background of CABG and IHD. He has developed an AKI requiring CRRT. Can you please examine her, list her current clinical issues, and provide a likely differential diagnosis for their AKI.*

- *This patient was admitted to hospital with chest pain and was admitted to the ICU post coronary angiography and angioplasty with insertion of coronary stents. Can you please examine his and assess his suitability for extubation, outlining the clinical reasoning that supports your decision making.*

- *This patient was transferred from a peripheral hospital with hypoxia and hypotension with presumed community acquired pneumonia. Can you please examine her, outlining his current clinical issues supported by the history and your clinical findings, and outline how you would approach their weaning from ventilation.*

- *This patient was admitted to the ICU having developed a retroperitoneal haematoma after an elective cerebral angiogram. Can you please examine him, and based on the history and your clinical findings, outline why is failing to wean from mechanical ventilation.*

- *This patient presented to hospital with fever, vomiting, night-sweats, and myalgia, on background of low-grade non-Hodgkins lymphoma and hepatitis C. Can you please examine them with a view to a) identify their current clinical issues, supported by your clinical findings, and b) outline your plan for further investigation and management of these clinical issues.*

The clinical ‘hot cases’ were assessed at the following venues:

New Zealand
- Auckland City Hospital

Hong Kong
- North District Hospital (HK)

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

QLD, Australia
- Gold Coast University Hospital
- Princess Alexandra Hospital
- Royal Brisbane and Women’s Hospital

VIC, Australia
- Cabrini Hospital
- Royal Melbourne Hospital
- The Alfred Hospital

SA, Australia
- Flinders Medical Centre
- Royal Adelaide Hospital

WA, Australia
- Fiona Stanley Hospital
- Sir Charles Gairdner Hospital

VIVA STEMS

DAY 1

Viva 1

The Emergency Department (ED) registrar has referred a 55-year-old female with community acquired pneumonia on a background of rheumatoid arthritis for vasopressor support. She has received 500 mls of 0.9% Normal Saline so far.

On examination her vital signs are:

- HR 124 beats/min
- BP 82/40 mmHg
- SpO_2 95% on HFNP – FiO_2 0.4 Flow 40 L/min
- RR 20 breaths/min
- Temp 39°C

She is able to speak in sentences, and chest X-ray shows right lower zone consolidation. Her nasal swab is negative for SARS-Cov2.

The ED is busy, and you have been requested to take over management of this patient.

Discuss your assessment and initial management of this patient.

Maximum Score	9.00
Percentage Passed	79%

This viva dealt with assessment and ongoing management of septic shock due to community acquired pneumonia, including a discussion regarding evidence

Viva 2

A 60-year-old female present to the Emergency Department (ED) of your hospital with a history of drowsiness, headache, and seizures. She was well the day before presentation.

On examination she has:

- GCS of 11 (E2 V3 M6)
- RR 22 breaths/minute
- SpO_2 94% on room air
- HR 96 beats/minute
- BP 170/80 mmHg
- Temperature 38.0°C

What are the differential diagnoses for this presentation?

Maximum Score	6.60
Percentage Passed	58%

This viva dealt with assessment and ongoing management of SAH with ventriculitis and vasospasm, including a discussion regarding evidence

Viva 3

A 72-year-old male presents to the Emergency Department (ED) with two episodes of coffee ground vomiting and one episode of melaena. His cardiovascular status is:

- BP 78/60 mmHg
- HR 60 beats/min

He has a background medical history of ischaemic heart disease, and abdominal aortic surgery.

His medications are Aspirin, Metoprolol, Telmisartan, Simvastatin.

What are the likely causes of the GI bleed, and what key critical care focussed history and examination findings will you require to guide your management?

Maximum Score	7.20
Percentage Passed	46%

This viva dealt with assessment and ongoing management of AKI post haemorrhagic shock from UGI bleed

Viva 4

You are the Intensive Care Unit (ICU) consultant on-call and are called at 6am by your junior registrar.

A 40-year-old female with a history of depression was admitted to the Emergency Department (ED) with confusion and diarrhoea.

Her vital signs are:

- Temperature of 39.5°C
- HR 130 beats/minute with atrial fibrillation
- BP 90/50 mmHg

Her JVP was noted to be elevated. Her conscious level deteriorated to a GCS of 10, resulting in a referral to ICU.

List your broad differential diagnoses of concern, and how you might instruct your junior registrar to differentiate between them based on history and examination.

Maximum Score	7.70
Percentage Passed	71%

This viva dealt with differentials for fever and arrythmia, leading to diagnosis and ongoing assessment and management of a thyroid storm

Viva 5

A 55-year-old male is admitted to the Intensive Care Unit (ICU) following a mitral valve replacement (MVR) and coronary artery bypass graft (CABG).

Two hours after admission he develops worsening hypotension, and the dose of noradrenaline he is receiving has trebled.

List the likely causes and outline your management strategies.

Maximum Score	6.60
Percentage Passed	54%

This viva dealt with differentials for shock post CAG and MVR, leading to ongoing assessment and management of valvular and ventricular dysfunction

Viva 6 – Radiology Station

Maximum Score	6.00
Percentage Passed	42%

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

Viva 7 – Procedure Station

A 46-year-old male was admitted with multi-trauma. He is day 6 ICU.

He is intubated and ventilated.

- FiO2 0.6
- SIMV 450 ml x 16
- PEEP 10
- SpO2 94%

His BP is 105/64 mmHg with a MAP of 75 mmHg. He is receiving a Noradrenaline infusion at 8 mcg/min.

He has an EVD in-situ and yesterday developed a ventilator associated pneumonia.

The morning handover reported that the night shift was difficult with multiple episodes of hypoxia due to sputum plugging. These each required aggressive suctioning and the use of the on-call physiotherapist.

What are the advantages and disadvantages of bronchoscopy in this patient?

Maximum Score	8.30
Percentage Passed	67%

This viva dealt with knowledge and application of bronchoscopy

Viva 8 – Communication Station

You have taken over the care of David, a 20-year-old male, who has been in your Intensive Care Unit (ICU) for 17 days.

His background is significant for:

- Previous orchidectomy 3 years ago for testicular cancer
- Severe Autism in supported living

David was initially admitted post-op after an elective neck lymph node biopsy for suspected cancer recurrence. He had a severe aspiration event peri-induction, requiring ongoing intubation and ventilation. His admission has been complicated by a massive pulmonary embolism resulting in cardiogenic shock, for which he was thrombolysed on day 7.

He remains ventilator dependent, FiO_2 0.4, PEEP 10, with poor lung compliance, requiring heavy sedation and paralysis for ETT tolerance. Echocardiography shows significant right heart failure, and he has a persistent noradrenaline requirement, with a stable acute kidney injury that has not required dialysis.

Histology results from his biopsy are due in the next 48 hours and are expected to demonstrate recurrence of his malignancy.

A nurse recently mentioned tracheostomy to his parent, and they would now like to talk to you about this, and his ongoing care.

You are now about to have a Zoom conversation with David's parent, Alex.

Maximum Score	9.00
Percentage Passed	58%

This viva consisted of a discussion with the family of a patient who had uncertainty regarding his current clinical status and required further information regarding his future clinical management

DAY 2

Viva 1

A 37-year-old morbidly obese male presented to your tertiary centre after motor vehicle accident, T-boned at 80 km/hour. He was extracted by the ambulance crew over a 45-minute period and was wearing a seat belt.

His initial observations are:
- BP 80/40 mmHg
- HR 121 beats/minute, normal sinus rhythm
- RR 21 breaths/minute
- Saturation 91% on 6 L/minute via a face mask
- GCS 15

His haemoglobin on the initial full blood count is 81 g/dl.

What are the potential mechanisms of shock in this patient?

Maximum Score	8.60
Percentage Passed	100%

This viva dealt with assessment and ongoing management of haemorrhagic shock due to pelvic trauma post MVA, and subsequent ICU management

Viva 2

A 24-year-old male with a history of epilepsy present to the Emergency Department (ED) at your hospital with generalized tonic-clonic seizures. The patient was intubated, and vomitus was noted in the airway. He was placed on volume control synchronized intermittent mandatory ventilation (SIMV) with an FiO_2 of 0.6. He had a CT brain scan en-route to the Intensive Care Unit (ICU) which was normal.

On admission to ICU, the patient is sedated with Propofol. His vital signs are as follows:
- Temperature 36.8°C
- HR 124 beats/minute
- BP 130/60 mmHg
- SaO_2 91%

Outline your approach to the assessment and management of this patient.

Maximum Score	7.60
Percentage Passed	83%

This viva dealt with assessment and ongoing management of ARDS due to aspiration pneumonitis post seizure, including a discussion regarding evidence

Viva 3

You attend a Medical Emergency Team (MET) call for hypotension (80/55 mmHg) in the coronary care unit. The patient is a 69-year-old male who is 3 hours post a difficult angioplasty, for a large acute infero-posterior myocardial infarction.

How would you assess this patient, and what is your differential diagnosis?

Maximum Score	7.10
Percentage Passed	65%

This viva dealt with assessment and ongoing management of cardiac tamponade and subsequent cardiogenic shock post ACS, including a discussion regarding evidence

Viva 4

A 28-year-old female is referred to the Intensive Care Unit (ICU) from the Emergency Department (ED). She was found unconscious and reported to have had a GCS of 3/15 at the scene, with reactive pupils.

In the ED, her GCS remained 3/15, and she was intubated and ventilated. Her vital signs are:

- HR 125 beats/minute
- BP 100/65 mmHg
- Oxygen saturations 90% on FiO_2 0.3
- Temperature 38.5°C

What are the likely differential diagnoses?

Maximum Score	7.90
Percentage Passed	100%

This viva dealt with differentials for hyperpyrexia syndromes post toxic ingestion, leading to diagnosis and ongoing assessment and management of severe serotonin syndrome

Viva 5

You receive a phone call from a GP who is working in the Emergency Department (ED) of a hospital in a small country town, which is 3 hours by road from the nearest tertiary referral centre.

He would like to discuss the management of a 2-year-old child who has presented with an acute onset of stridor.

What is your differential diagnosis for this child's stridor?

Maximum Score	7.80
Percentage Passed	43%

This viva dealt with differentials for stridor in a 2-year-old child, leading to ongoing assessment, management, and transfer for a child with croup

Viva 6 – Radiology Station

Maximum Score	6.00
Percentage Passed	17%

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

Viva 7 – Procedure Station

A senior registrar who you have not met before is keen to perform a tracheostomy. They ask if you would supervise them for a planned insertion of a tracheostomy on the Intensive Care Unit (ICU).

What are the College guidelines for supervision of vocational trainees?

Maximum Score	9.60
Percentage Passed	96%

This viva dealt with the appropriate management and supervision of trainees during their ICU training, and in this context around the potential insertion of a tracheostomy.

Viva 8 – Communication Station

Peter is a 76-year-old male who is now day 26 in your Intensive Care Unit (ICU). Peter has a background of chronic obstructive pulmonary disease, obesity, and hypertension and was admitted to ICU with pancreatitis and shock. He is now recovering from multi-organ failure and is due for a tracheostomy to aid further weaning.

Overnight, Peter had a new central venous line inserted by one of the ICU Registrars, as his old line looked infected. During the procedure, the guidewire was flushed into the new central line. This was identified on the post-insertion chest X-ray, and you are awaiting a review from the surgical team regarding the management plan.

Due to COVID restrictions, visitors are limited, and Peter's next-of-kin, Jamie, is currently not permitted to attend the hospital in person. Jamie has called every day to receive phone updates as to Peter's condition.

A meeting via Zoom has been arranged to discuss the events with Jamie.

Maximum Score	9.00
Percentage Passed	48%

This viva consisted of a discussion with the family of a patient around the principles and practice of open disclosure, of a complication that has happened to their family member whilst in the ICU.

DAY 3

Viva 1

You are called to the Emergency Department (ED) to review a 56-year-old female who presented with crampy abdominal pain, radiating to the back for the past few hours. She has had similar, but less severe episodes of pain in the past few weeks. She feels more unwell this time.

Examination reveals:

- Temperature is 38.9oC
- HR 116 beats/minute
- BP 78/54 mmHg
- RR 26 breaths/minute
- SpO2 95% on room air
- Mild tenderness in the right hypochondrium and epigastric regions

The patient has already received 1.5 L normal saline in the ED.

What differential diagnosis are you considering?

Maximum Score	8.00
Percentage Passed	74%

This viva dealt with assessment and ongoing management of septic shock due to biliary sepsis, including a discussion regarding evidence

Viva 2

A 58-year-old male with type 2 diabetes mellitus and hypertension present to your Emergency Department (ED), with a history of 45 minutes acute onset weakness, of his left upper and lower limbs.

His ED observations are:
- HR 98 beats/minute
- BP 200/120 mmHg
- SpO_2 97% on room-air

Neurological examination reveals a drowsy gentleman with left hemi neglect, dysarthria, left facial nerve palsy, and power of 1/5 in left upper limb and 3/5 in left lower limb. Non-contrast CT scan of the brain is shown on the right.

You have been asked to be involved in his care because of his drowsiness.

What is your immediate management of the patient based on this CT image?

(Image removed from report.)

Maximum Score	7.30
Percentage Passed	65%

This viva dealt with assessment and ongoing management of MCA CVA with raised ICP and hypertension, including a discussion regarding evidence

Viva 3

You have been asked to assess a 71-year-old female in the Emergency Department (ED), who was a front seat passenger in a motor vehicle accident.

Her GCS at the scene was 12 (E4 V4 M4), and her haemodynamics were stable.

She has been complaining of left shoulder and left-sided chest pain and has received analgesia.

You arrive in ED during the primary survey. The patient is tachycardic and tachypnoeic, with cool peripheries, and has a BP of 100/70 mmHg. Oxygen is flowing at 6 L/min via a face mask, and intravenous crystalloid is running. She has a rigid neck collar in place.

Describe your initial assessment and management of this patient.

Maximum Score	7.50
Percentage Passed	57%

This viva dealt with assessment and ongoing management of chest injury post MVA, with ongoing significant analgesia requirements

Viva 4

A previously well 45-year-old male has been brought to your Intensive Care unit (ICU) intubated, after a total knee replacement under general anaesthetic.

He has had hypertension throughout the procedure, and on attempted waking, his blood pressure has increased to 230/130 mmHg. His heart rate is 120 beats/minute, his temperature is 38.2°C, and he is sweaty.

His past medical history is:
- Hypertension
    - Usually managed by his GP

    - Amlodipine 10 mg daily
- Panic attacks
- Osteoarthritis

Please provide ten differential diagnoses for this patient's hypertension and outline five potential complications of malignant hypertension.

Maximum Score	7.90
Percentage Passed	74%

This viva dealt with differentials for fever and arrythmia, leading to diagnosis and ongoing management of a pheochromocytoma

Viva 5

You are called to the medical ward to see a 66-year-old farmer admitted from the Emergency Department (ED), who is in cardio-respiratory distress.

He has a two-month history of progressive slowing of activities of daily life with tremulousness and was admitted with a history of aspiration 24 hours ago.

On current examination he has the following vital signs:

- BP 100/60 mmHg
- HR 125 beats/minute, normal sinus rhythm
- RR of 38 breaths/minute
- Axillary temperature of 38.9ºC
- SpO_2 of 92% on 15 litres of oxygen via non-rebreather mask.

He has tested negative for SARS-COV_2.

On examination, you also notice repetitive, brief, irregular, somewhat rapid, involuntary movements, that involve his face, mouth, trunk, and limbs.

What are your differential diagnoses for his current cardiorespiratory status, and the movement disorder?

Discuss your immediate priorities.

Maximum Score	7.00
Percentage Passed	22%

This viva dealt with differentials for acute significant movement disorders, leading to ongoing assessment and management of tetanus

Viva 6 – Radiology Station

Maximum Score	6.90
Percentage Passed	57%

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

Viva 7 – Procedure Station

A 64-year-old male admitted to the Intensive Care Unit (ICU) after an inferior MI. The patient had coronary angiogram and PCI to right coronary artery and had a temporary transvenous pacing wire inserted.

You are called by your registrar as the patient had a cardiac arrest in the ICU, which was successfully treated with defibrillation.

Please explain this telemetry strip, and the cause of cardiac arrest.

(Image removed from report.)

Maximum Score	9.40
Percentage Passed	61%

This viva dealt with knowledge and application of cardiac pacing

Viva 8 – Communication Station

David is a 28-year-old male who was admitted to your Intensive Care Unit (ICU) 3 days ago after an attempted hanging. He was found asystolic and had a total of 22 minutes of CPR before ROSC was achieved.

The CT brain on admission showed early signs of a hypoxic brain injury. He hasn't received any sedation for 24 hours and his best neurological response is a withdrawal to central pain in his upper limbs. His cranial nerves are intact, and his hemodynamics are stable with minimal ventilatory requirements.

David and his partner Alex have two children, aged 1 and 3. Alex is interstate on a business trip, unable to return due to border closures and has been continually ringing for updates. The nursing staff are concerned that Alex hasn't slept in three days due to worrying about David and the children, who are staying with a friend until Alex's return home tomorrow.

The current consensus medical opinion is that that it is too early to prognosticate and further observation is required.

Alex wants to speak with the doctor to discuss stopping all treatments tomorrow to allow David to become an organ donor.

You are about to speak with Alex on Zoom.

Maximum Score	8.50
Percentage Passed	48%

This viva consisted of a discussion with the family of a patient where there is uncertainty around prognosis, and recognition and discussion of the values and wishes of the family members