COLLEGE OF INTENSIVE CARE MEDICINE
OF AUSTRALIA AND NEW ZEALAND

REPORT OF THE
INTENSIVE CARE FIRST PART EXAMINATION

FEBRUARY / APRIL 2016

This report is prepared to provide candidates, tutors and their Supervisors of Training with information about the examination. Answers provided are not model answers but guides to what was expected. Candidates should discuss the report with their tutors so that they may prepare appropriately for the future examinations.

The exam included two, 2.5 hour written papers, each comprising of twelve short answer questions and twenty short fact questions. Candidates were required to perform at a satisfactory level in the written before being eligible to present for the oral part of the exam. The oral was comprised of eight, ten-minute Viva stations.

OVERALL STATISTICS

Total number of candidates presenting for the written examination:	42
Number of candidates scoring > 50% in the written:	26
Number of candidates scoring 45 – 50% in the written:	7
Number of candidates carrying a written score:	0
Total number invited to the Oral section based on written marks:	33
Total number of candidates successful at the CICM First Part:	30

42 candidates sat the written component of this examination and 33 were invited to the viva examination based on their performance in the written paper.

30 candidates were successful following the viva component of the examination.

SUCCESSFUL CANDIDATES

Dr David Antognini
Dr Sara Arcioni
Dr Travis Auty
Dr Christopher Barlow
Dr Abhishek Bose
Dr Charlotte Brace
Dr Stephen Burke
Dr Sananta Dash
Dr Ciaran Downey
Dr Sophie Fincher
Dr Elizabeth Kate Foster
Dr Anamika Gannju
Dr Tessa Garside
Dr Emily Harman
Dr Brigid Hole
Dr Dominic Toby Jeffcote
Dr Sam Kirchner
Dr Yeeshay Lee
Dr Rakesh Mallya
Dr Edward Pathmanathan
Dr Lisa-Marie Pereira
Dr Muhammad Habibullah Rana
Dr David Ransley
Dr Avinash Sharma
Dr Sing Chee Tan
Dr Binu Thampan
Dr Yi-lun Tsai
Dr Lucas Webb
Dr Charlotte Williams
Dr Naomi Yarwood

WRITTEN SECTION

EXAMINERS' COMMENTS

Candidates are reminded that all questions are worth equal marks and so time should be apportioned accordingly. On occasions some questions were not attempted and this denies the candidate an opportunity to gain valuable marks.

Questions from previous examinations may be repeated and candidates are encouraged to review prior papers and examination reports.

Some answers failed to appreciate key concepts and in particular often lacked the depth expected. Candidates are expected to have a detailed knowledge and depth of understanding of level I topics such as cardiovascular and respiratory physiology. As a guide, the level of detail expected goes beyond that often outlined in a general physiology textbook and candidates are strongly encouraged to read widely so as to gain high level understanding. Some candidates scored full marks in some questions illustrating it is possible. Candidates are reminded to ensure writing is legible. If the examiner cannot read the writing, the candidate cannot be awarded marks. Candidates should read the question carefully and answer the question asked.

SHORT ANSWER QUESTIONS (SAQs) – PAPERS 1 AND 2

1. Outline the determinants of oxygen delivery to the tissues.

61% of candidates passed this question.

An opening statement such as oxygen delivery = cardiac output x oxygen content then allowed a more detailed description of the determinants of both oxygen content and cardiac output. It was expected candidates could detail the formula for Oxygen Content = Sat O_2 % x 1.34 x Hb x 10 (depending on units) + PaO_2 x .003, or x .03 (units) and accurately describe each element. Determinant of cardiac output completed the answer, often starting with CO = HR x SV while discussing the importance of preload, afterload and contractility.

Many candidates spent little time on cardiac output which cost valuable marks. Some candidates provided a lot of detail on how oxygen is managed within the lung, the majority of which was not required as part of the answer. Some candidates answered the question describing the oxygen cascade only which was not sufficient to score well.

2. Describe the respiratory and cardiovascular effects of applying 10 cm of PEEP (positive end-expiratory pressure) to a healthy mechanically ventilated adult.

29% of candidates passed this question.

This topic has been asked previously. It was expected candidates could detail the impact of PEEP on a variety of respiratory parameters such as lung volume, dead space, arterial pO_2 and intrapleural pressure. The cardiovascular consequences are well described including the effect on cardiac output, blood pressure and oxygen delivery.

The physiological impact of lower levels PEEP in a young healthy person is different to that often seen in the critically ill and this was not appreciated by most candidates.

3. Compare the physiology of the apex of the lung with the base of the lung in the upright position.

33% of candidates passed this question.

The majority of candidates gave extensive detail on West's zones of the lungs and did not describe other parameters that vary from base to apex. Ventilation, resistance, compliance, alveolar and lung size all vary. Some candidates mixed up the changes at the apex versus the base.

4. Discuss the factors that influence filtration across the glomerular basement membrane.

38% of candidates passed this question.

It was expected this answer would involve discussion about membrane structure, the unique blood vessel structure (afferent and efferent arterioles allowing a high net pressure to be maintained) and Starlings forces all influencing ultrafiltation. Better answers included comment on mesangial cells contraction to decrease surface area (caused by angiotensin 2). Details regarding molecular weight cut offs (> 7000 Da are not filtered freely) gained additional credit.

5. Describe the composition, formation and functions of bile.

31% of candidates passed this question.

Bile is produced by hepatocytes, excretion via cannaliculus and biliary tree. It is stored and concentrated in the gallbladder. Bile contains water, bile acids and bile salts, bile pigments and electrolytes. Some detail was expected regarding each of these and comment on "Primary bile acids", conjugation with taurine and glycine and production of "bile salts". It was often not appreciated bacteria in gut produce "secondary" bile acids such as deoxycholate and lithocholic acid. Additional credit was given for discussing "Unconjugated bilirubin" being derived from "heme" component of haemoglobin (85%) is carried via albumin to liver for conjugation via UDP-gluconuryl transferase to "conjugated bilirubin" and that gut bacteria generate water soluble urobilinogen, enterohepatic recycling and excretion in urine.

The major role of bile is in lipid, cholesterol and lipid soluble vitamin absorption with a minor role in excretion of bile pigments. It was expected candidates would describe the emulsification of fat via bile salts and lipid micelle formation to facilitate absorption.

6. Outline the formation, structure and function of the platelet.

50% of candidates passed this question.

The structure of the question outlined exactly what was expected. Platelets are formed in the bone marrow from budding of megakaryocytes. Granulocyte colony stimulating factor and thrombopoeiten play a role in the process and they have a life span of about 10 days. It was expected candidates could describe or draw the structure detailing they have no nucleus, the presence of mitochondria and granules and provide some detail of the important external surface proteins (glycoproteins, ABO, human platelet antigens). Better answers also described the internal microtubule structure and related this to function (allows contraction and shape

change). The description of function required detail around the importance of platelet plug formation and the role of adhesion, aggregation and activation in this process.

7. Describe the cardiovascular changes of pregnancy including parturition.

62% of candidates passed this question.

Significant CVS changes can occur by eight weeks and then progressively over the term of the pregnancy. Structured answers helped candidates avoid missing important areas of the answer. It was expected candidates could detail the major changes such as a 40 – 50% increase in blood volume, a 30 – 50% increase in cardiac output, a slight decrease in blood pressure, the heart size and position changes, the impact of aortocaval compression and alterations in colloid osmotic pressure. Some mention of the changes during labour and delivery was expected noting uterine contraction squeezes blood to maternal circulation (auto transfusion), cardiac output increases (immediately after delivery up by about 60 – 80%) and blood pressure increases (both systolic and diastolic) during labour.

Hormones, particularly the effects of foetoplacental production or transformation of hormones, and their cardiovascular effects, especially on total body composition / filling pressures were under explained. The cardiovascular changes at parturition were not well explained.

8. Describe the characteristics of a drug that influence its excretion by the kidneys.

29% of candidates passed this question.

Drug characteristics that might influence the renal excretion processes include charge, size, solubility, and binding to specific structures or protein. Whether the drug is unchanged versus metabolised can influence these factors.

This question tests core knowledge of pharmacology principles and should be answered with equations, graphs or simple clear descriptions of physical and chemical principles. Extended examples and hedged statements about “influencing” without the direction, magnitude and necessary conditions for the influence did not score marks.

9. Describe the essential components of an ECG monitor (80% of marks). Outline the methods employed to reduce artefact (20% of marks).

50% of candidates passed this question.

The ECG device detects and amplifies the small electrical changes on the skin that are caused when the heart muscle depolarizes (0.5 – 2 mV). This is reflected as rises and falls in the voltage between two electrodes placed either side of the heart which is displayed either on a screen or on paper. Usually more than 2 electrodes are used and they can be combined into a number of pairs (For example: Left arm (LA), right arm (RA) and left leg (LL) electrodes form the three pairs LA+RA, LA+LL, and RA+LL). The output from each pair is known as a lead. Each lead is said to look at the heart from a different angle.

Electrodes are commonly made of silver or silver chloride components that are attached to the main unit of the machine. Most ECG machines use 12 electrodes. Better answers made mention of the two lead types: *unipolar and bipolar*.

Methods to reduce artefact include improving signal detection (conductive paste, skin preparation (dry, no hair, etc.)) and minimizing external electrostatic forces (common earthed environment, diathermy, etc.,) or patient environment (avoid shivering).

The amplifier has three essential functions: High input impedance so as to minimize signal loss and reject interference (50 – 60 Hz), differential amplification, (to amplify the potential difference detected by the skin electrodes), and high common mode rejection (e.g. > 50Hz) to aid eliminating muscle artefact or electrical interference from the power grid.).

Vector analysis is not a component of the ECG machine and so was not required to answer the question.

10. Outline the pharmacology of warfarin.

61% of candidates passed this question.

The "traditional" pharmacology answer structure was useful to avoid omitting key details. Warfarin is a synthetic coumarin derivative presented in tablet form for oral use . It is a racemic mixture. S-enantiomer is 2-5 times more potent than the R-enantiomer. It is used for anticoagulation and the usual dosing involves a loading dose (3 to 5 mg for 1 to 3 days) then maintenance dose titrated to INR. It was expected answers would then detail mechanism of action, absorption (commenting on bioavailability), distribution, elimination, excretion and adverse effects. Warfarin has contraindications in pregnancy being teratogenic in first trimester and increasing the risk of fetal haemorrhage in third trimester.

Better answers provided increased detail on mechanism of action including the initial procoagulant effect due to protein C and S inhibition and some details about monitoring effect with INR / PT.

Warfarin has several important drug interactions and detailing these gained additional marks. Additional credit was given for discussion of reversal options, which includes 1) Stop administration - days 2) Prothrombinex - hours 3) FFP - hours 4) Vitamin K depends on dose given.

11. Provide a detailed account of the side effects of Amiodarone.

26% of candidates passed this question.

The question asked for a detailed account and the expected marks were spread across a range of systemic side effects, not just the cardiovascular and pulmonary side effects. Many candidates provided irrelevant and lengthy descriptions of the mechanisms of action of amiodarone which was not asked for in the question and gained no additional marks. Most successful answers used an organ systems approach to include the many side effects of amiodarone.

Many candidates failed to mention skin side effects, neurological side effects, GI/hepatic side effects, pregnancy and breast feeding considerations, and interactions with other highly protein bound drugs. The predominant mechanism for hypotension with rapid IV administration of amiodarone was incorrectly given in a number of answers.

12. In relation to neuromuscular blocking drugs – Discuss the factors that influence the speed of ONSET of neuromuscular block.

38% of candidates passed this question.

The question specifically asked for factors that influenced the speed of onset of neuromuscular block. This information is different to the factors that influence neuromuscular blockade in

general which was what many candidates focussed on. It was expected candidates would address the main factors known to influence the speed of onset of neuromuscular block: - potency of the agent used (inverse relationship to speed of onset); rate of delivery of the agent to the NMJ (blood flow / muscle group); and mechanism of the neuromuscular block (non-depolarising vs depolarising).

13. Describe the cardiovascular effects of a sudden increase in afterload.

21% of candidates passed this question.

It was expected the answer would start with a definition of afterload and then proceeded to indicate what effects this increase in afterload would have on ventricular end-systolic pressure, ventricular end-diastolic pressure, left atrial pressure, cardiac output, myocardial oxygen demand and myocardial work, coronary blood flow and systemic blood pressure.

Most candidates who failed to pass this question submitted answers that were just too brief, only including a small subset of the material required. Very few candidates included any mention of myocardial oxygen demand or myocardial work or the impact upon the cardiac output. A number of candidates included a detailed description of the Sympathetic Nervous System and the Renin-Angiotensin system, material which was not asked for. There were quite a number of incorrect perceptions about what effect a sudden increase in afterload would have on the systemic blood pressure. Candidates who mentioned the baroreceptor response and the stretch receptor response where rewarded with additional credit.

14. Describe the factors that influence intracranial pressure.

69% of candidates passed this question.

A structure approached works well for “describe the factors …” questions. Better answers provided a definition of ICP, explained the Monro-Kellie doctrine and then detailed the factors which affect the volume of each of the components - cerebro spinal fluid (CSF), cerebral blood flow and brain parenchyma. Some candidates focused only on factors which cause intracranial hypertension and were thus unable to score full marks. Many candidates stated that CSF production was ICP dependant which is incorrect.

15. Describe the structure and function of the alveolus.

52% of candidates passed this question.

Better answers related structure to function. Many answers lacked key anatomical features (for example pores of Kohn, basement membrane, interconnecting walls / alveolar interdependence etc.). There was little understanding of the role and origin of the basement membrane of the alveolus. Some candidates went into detailed discussions of Work of Breathing, respiratory mechanics and the renin-angiotensin system which were not asked for.

Answers not reaching a pass mark generally suffered from lacking detail and suggested only a superficial understanding of the area.

16. Outline the anatomy of the subclavian vein relevant to central venous line insertion.

38% of candidates passed this question.

Answers to anatomy questions can be generally structured by considered the origin and ending of the structure, the surface landmarks and the relations (medial / lateral / anterior / posterior) and this would have worked well in this question. It was expected candidates could detail course (from origin to end) and relations of subclavian vein. This could then be used to highlight how these features may be relevant to central venous line insertion (proximity of subclavian artery or pleura creating the possibility of inadverant arterial puncture or pneumothorax. Many candidates failed to mention drainage of external jugular vein and thoracic duct and right lymphatic ducts into the subclavian veins. Candidates should ensure diagrams are accurate and well labelled and they use appropriate anatomical terminology rather than vague terms such as “in front”. Care should be taken ensuring accuracy (e.g. some mentioned dome of diaphragm instead of pleura or IVC instead of SVC).

17. Describe the physiology of the thyroid hormones.

40% of candidates passed this question.

Thyroid hormones consist of thyroxine (T4), tri-iodothyronine (T3) and reverse T3 (rT3). It was expected candidates would briefly describe each of these. T4 is a pro-hormone synthesized from tyrosine in follicular cells of the thyroid gland and represents 80% of body’s thyroid hormone production. It exists in free form, plasma protein bound (albumin and pre-albumin (TBPA) and tissue protein bound thyroid-binding globulin (TBG) and has a half-life around 7 days. Tri-iodothyronine (T3) is the most biologically active thyroid hormone (5 times T4), is produced directly from tyrosine (20%) or in the periphery by conversion of T4 (80%) with a half-life 1.5 days. Reverse T3 (rT3) is formed via peripheral conversion of T4 by de-iodination.
A classic negative feedback loop exists to control thyroid hormone secretion. Thyroid Stimulating Hormone (TSH) from the anterior pituitary is controlled by Thyrotropin Releasing Hormone (TRH) from the Hypothalamus via hypothalamic-hypophyseal portal system. Both of these factors are inhibited by elevated levels of T4 and T3.

The mechanism of action is by binding to nuclear receptors to effect protein synthesis. Thyroid hormone has a wide variety of physiological effects across many systems including respiratory, cardiovascular, metabolic and growth and sexual function.

The answer required candidates to detail both the synthesis and control of thyroid hormones as well discussing the action of thyroid hormones. Few candidates could differentiate the roles and actions of T3 and T4.

18. Describe the structure and function of the mitochondrion.

19% of candidates passed this question.

Most candidates had at least a basic understanding of mitochondral function although some detail was required for a pass and many did not provide this. A well labelled diagram was used by many candidates and scored marks. Repetition of the same information illustrated on a labelled diagram in subsequent text was not required and did not score additional marks.

It was expected answers would cover basic structure (double membrane structure with cristae and enzymes lining the membrane and within the matrix), details of the electron transport chain, the citric acid cycle and beta-oxidation of long chain fatty acids and mention the maternal origin of DNA. Better Answers provided some information on other functions such as production of reactive oxygen species, role in calcium homeostasis and apoptosis, urea cycle, haem synthesis and heat production

19. Describe the methods of temperature measurement.

36% of candidates passed this question.

A good answer included a definition of temperature and a classification of the methods of measuring temperature such as electrical, non-electrical and infrared. There followed a brief description of the physical principles of thermistors, thermocouples and resistance thermometers; mercury and alcohol thermometers, bimetallic strips; and of infrared methods. Candidates who did well reproduced the content of the chapter on temperature measurement in the recommended text book. Candidates who were not familiar with this material attempted to answer the question by falling back on clinical experience of measuring temperature in different sites or occasionally referring to concepts of thermoregulation. Neither approach gained credit.

Some candidates interpreted “methods” incorrectly as "site of measurement" so scored poorly.

20. Outline the role of the liver in drug pharmacokinetics.

62% of candidates passed this question.

Most candidates structured their answer to this question well – they were aware of first pass metabolism and the effect of protein synthesis upon volume of distribution of drugs. Knowledge concerning Phase I and Phase II reactions was frequently inadequate. Many candidates were aware that these processes as well as inactivating or activating drugs resulted in increased water solubility to aid excretion via bile or urine. Few candidates discussed the significance of the large blood flow to the liver or the implications of high and low extraction ratios especially in relation to liver blood flow.

21. Draw and describe a box and whisker plot. What is this used for?

62% of candidates passed this question.

This question has been asked previously and is covered well in previous examination reports and standard statistics texts. Candidates with knowledge of this topic did very well on this question. A few candidates described a Forest plot and scored poorly. Some candidates were able to draw the shape of the box and whiskers but expressed incorrect facts regarding what the line, the box and whiskers represented and thus lost marks.

22. Compare and contrast the mechanism of action (25% of marks), antimicrobial profile (25% of marks), pharmacokinetics (25% of marks) and adverse effects (25% of marks) of Flucloxacillin and Vancomycin.

83% of candidates passed this question.

The structure required to score well was provide by the questions asked. Marks were lost by not mentioning that flucloxacillin is a beta lactam that it does not cover MRSA and that vancomycin covers enterococcus. Better answers could identify that vancomycin is slower at killing sensitive staph than flucloxacillin. Adverse effects were specifically asked for in the question so omitting facts such as associated nausea/vomiting/diarrhoea/anaphylaxis etc. cost some candidates marks. If 25% of marks are allocated to side effects then it is expected more than one adverse effect would be mentioned. Some candidates had incorrect facts - Enterococcus is not a gram negative organism.

23. Classify anti-emetic agents by describing their mechanism of action and provide examples.

52% of candidates passed this question.

Successful candidates were those who discussed the multiple locations in the vomiting pathway where a drug acts, the receptors involved and discussed 5 or more classes.

Several approaches can be taken to this topic. Classification by drug group works well and then allows more detail to be provided about possible receptor activity.

For example:

Anithistamines: Promethazine H_1 ++++ M ++ D_2 ++ 5-HT_3
Anitcholinergics: Scopalamine H_1 + M ++++ D_2 + 5-HT_3
Benzamines: Metoclopromide H_1 + M -- D_2 +++ 5-HT_3 ++,
Neuroleptics: Droperidol H_1 + M - D_2 +++ 5-HT_3 +,
5-HT_3 Antagonists: Ondansetron H_1 - M - D_2 - 5-HT_3 ++++, Granisetron H_1 ++++ M ++ D_2 ++ 5-HT_3 ; Glucocorticoids: Dexamethasone H_1 - M - D_2 - 5-HT_3 -,
Propofol: GABBA
Cannabinoids: direct on vomiting center.

An alternative approach involves a discussion of the distribution of receptor sites: nucleus vestibularis H_1 M, area postrema (chemoreceptor trigger zone) 5-HT_3 D_2 M1 H_1, nucleus tractus solitarius 5-HT_3 D_2 M H_2 and then discuss which drugs act where. This material has also been previously covered in the viva examination and knowledge of both drug properties and receptor distribution is often required.

Few answers detailed relative activity at various receptors types – "+" scale illustrated above would be sufficient to convey an understanding to the examiners.

24. Describe the ideal sedative agent for an Intensive Care patient (50% of marks). How does midazolam compare to this (50% of marks)?

60% of candidates passed this question.

Candidates who had a structured approach (i.e. pharmaceutical, pharmacokinetic, pharmacodynamic) provided more content and scored higher. Candidates who also approached pharmacodynamic effects in an organ system based approach scored higher. Relating a pharmacokinetic property of midazolam (e.g. volume of distribution or half-life) to a un/desirable attribute e.g. offset of action and accumulation displayed a greater understanding of the question. For many candidates, the description of an ideal drug contained more detail and candidates were not able to adequately state how midazolam compares.

SHORT FACT QUESTIONS (SFQs) – PAPERS 1 AND 2

95% of candidates passed this section with an average mark of 71%.

Cloze Questions	98% pass rate
Rank Questions	91% pass rate
Match Questions	98% pass rate

ORAL SECTION

DAY 1

Viva 1

This viva tested knowledge of cardiovascular physiology. It discussed cardiac output, stroke volume, sarcomere length myocardial contractility, the role of calcium and then related pharmacology of drugs that increase cardiac contractility including catecholamines and digoxin.

Viva 2

This viva tested knowledge of Respiratory Physiology. It discussed compliance, Functional Residual Capacity (FRC), Pressure Volume Loops and the work of breathing. It went on to discuss abdominal pressure, splanchnic blood flow and pharmacology of terlipressin.

Viva 3

This viva discussed fluid flow and related physical principles around turbulent and laminar flow and then the invasive measurement of arterial blood pressure.

Viva 4

This viva tested knowledge of buffer systems in the body and the renal handling of acid. It went on to discuss drug ionization, pKa and dissociation and then the pharmacology of local anaesthetic agents

Viva 5

This viva covered cerebral physiology and related pharmacology including factors that influence cerebral blood flow and the related pharmacology of propofol and ketamine.

Viva 6

This viva tested knowledge of blood glucose homeostasis and the pharmacology of insulin.

Viva 7

This viva tested knowledge of antibacterial agents, including mechanisms of action and mechanisms of resistance and dosing rationale for aminoglycosides.

Viva 8

This viva tested knowledge of physiology and pharmacology changes of aging and in a more general discussion around opioid pharmacology.

DAY 2

Viva 1

This viva tested knowledge of cardiovascular physiology and pharmacology, the Frank Starling mechanism, venous return and stroke volume. It went on to discuss cardiac output measurement and the pharmacology of milrinone, West's zones of the lung and pulmonary vascular resistance.

Viva 2

This viva discussed arterial blood gases, dead space, the measurement of carbon dioxide and capnography.

Viva 3

This viva tested knowledge of respiratory physiology and pharmacology. It discussed the functions of the upper respiratory tract, humidity, anatomy of the larynx, principles of pulse oximetry and the pharmacology of some of the drugs used to treat asthma.

Viva 4

This viva tested knowledge of renal physiology and the pharmacology of diuretics. It discussed the functions of the kidney, GFR and factors that influence plasma creatinine.

Viva 5

This viva tested knowledge of electrophysiology and neuromuscular blocking drugs. It discussed ion concentrations across cell membranes, Action potentials, pharmacology of atracurium and assessing neuromuscular blockade.

Viva 6

This viva tested knowledge of physiology around metabolic rate and went on to discuss metabolism particularly of carbohydrates and the influence of insulin.

Viva 7

This viva tested knowledge of the coagulation system, including fibrinolysis, tests of coagulation and the pharmacology of heparin.

Viva 8

This was a general pharmacology viva about drug receptor interactions, receptor classification and concepts of affinity and rate constants. The viva explored knowledge of dose response curves and the concepts of potency and efficacy. The viva went on discuss plasma concentration curves, exponential functions and drug kinetics and compartment distributions.

SUMMARY OF THE EXAMINATION

The CICM First Part Examination explores the knowledge of the basic sciences that form the basis to Intensive Care practice. A detailed syllabus has been developed and clearly sets out the Level of Understanding expected for each listed topic and drug. It is important that Candidates follow the Syllabus in its entirety. All questions are sourced from the syllabus and the recommended texts are a guide to study. Some sections will require more extensive research and the use of other textbooks.

Candidates are expected to attain a level of knowledge that goes beyond just the listing of pure facts but to also be able to explain, describe, collate and synthesize that knowledge across different scenarios as they apply to intensive care practice. Sufficient depth of understanding and a structured approach to topics continues to remain an area of weakness for many candidates.

This is a challenging exam. Candidates must allow sufficient time to prepare (typically approximately 12 months to study). Candidates are strongly encouraged to discuss their level of preparedness, and to trial written and oral questions, with their Supervisor of Training and other CICM Fellows, prior to undertaking the CICM First Part Examination. The examination reports are available a guide to areas that are covered but do not provide model answers and should be read as such.

A/Prof Peter Kruger
Chair
CICM First Part Examination Committee

Dr David Austin
Deputy Chair
CICM First Part Examination Committee

June 2016