**THE FACULTY OF CLINICAL ONCOLOGY**

**TO:  TRAINING PROGRAMME DIRECTORS
REGIONAL POST-GRADUATE EDUCATION ADVISERS**

**COLLEGE TUTORS**

**EXAMINATION CANDIDATES**

### FIRST EXAMINATION FOR THE FELLOWSHIP IN CLINICAL ONCOLOGY
### AUTUMN 2018

The Examining Board has prepared the following report on the AUTUMN 2018 sitting of the First Examination for the Fellowship in Clinical Oncology. It is the intention of the Specialty Training Board that the information contained in this report should benefit candidates at future sittings of the examinations and help those who train them. This information should be made available as widely as possible.

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Medical Director, Education and Training

### FIRST EXAMINATION FOR THE FELLOWSHIP IN CLINICAL ONCOLOGY
### EXAMINERS' REPORT – AUTUMN 2018

The pass rates achieved at the AUTUMN 2018 sitting of the First Examination for the Fellowship in Clinical Oncology are summarised below.

|  | All Candidates | | UK-trained Candidates | | UK First Attempt Candidates | |
|---|---|---|---|---|---|---|
| **Overall*** | 57/139 | 41% | 33/73 | 45% | 18/48 | 37.5% |
| **Cancer Biology & Radiobiology** | 74/114 | 64.91% | 40/61 | 65.57% | 36/51 | 70.58% |
| **Clinical Pharmacology** | 56/116 | 48.27% | 37/60 | 61.66% | 30/50 | 60% |
| **Medical Statistics** | 85/124 | 68.54% | 46/62 | 74.19% | 37/47 | 78.72% |
| **Physics** | 56/119 | 47.05% | 34/61 | 55.73% | 26/46 | 56.52% |

This examiners' report does not provide an in depth breakdown of performance on individual questions but is intended to guide trainers and candidates by highlighting particular areas of concern.  Candidates are reminded that it is recommended that all modules are attempted at the first sitting, to maximise chances of success over the total of four permitted attempts.

**Cancer Biology**

Overall the examination pass rate and difficulty compared well with those of previous sittings. Cell cycle related questions were answered well, reflecting good understanding of the basic concepts. Questions on the topics of carcinogenesis, growth receptors and oncogenes were answered less well. The examiners would recommend that the students pay attention to all parts of the curriculum when preparing for the examination. Examinees are advised to prepare using the recommended texts and publications on the RCR websites and authentic knowledge bases.

**Radiobiology**

Overall candidates performed well, demonstrating a good understanding of radiobiology in most areas. Improvements in understanding are required in the following areas:

- Chromosomal aberrations and mutational events produced by ionizing radiation.
- The effect of dose rate on survival curves.
- Biological effectiveness of neutrons.
- Radiation tolerance of various organs and their α/β ratios.
- Potentially lethal DNA damage.
- Mechanisms of normal tissue complication.

**Clinical Pharmacology**

Overall candidates performed well. Candidates were generally up to date with new developments such as immunotherapy, as well as with commonly prescribed cytotoxic drugs. Areas where candidates performed less well were with supportive and palliative care medication, drug interactions, and drug mechanism of action.

**Medical Statistics**

Questions on descriptive statistics and hypothesis testing were well answered by candidates. For questions relating to the choice of statistical tests candidates should be more familiar of when, and when not, to use tests for paired data. Candidates should know when to use odds ratios to measure the strength of an association. Candidates should know the difference between actuarial and Kaplan Meier methods for survival data and know which method to use to adjust for covariates in survival analysis. Questions on sensitivity and specificity of screening and diagnostics test were well answered. Candidates should know the reason why intention to treat analysis is employed in clinical trials and be able to identify the procedure for reporting suspected unexpected serious adverse reactions during trials.

**Physics**

Questions on underlying physical principles (e.g. interaction of radiation with matter) were answered well. There was a noticeable increase in the proportion of correctly answered calculation-based questions.

There were several areas where further attention is required by candidates:

- Understanding the difference between photon beam energy and individual photon energy (in terms of MV and MeV)
- Understanding of the physics of PDD curves and how different treatment parameters affect this
- Physics of and calculations relating to kV treatment
- Physical principles and application of advanced techniques, including:
    - Flattening-Filter Free (FFF) mode
    - VMAT
    - Tomotherapy
    - Protons
- The physical principles and application of radiopharmaceuticals

Candidates are encouraged to spend time in the department to observe applied radiotherapy techniques, such as on-treatment imaging, in vivo dosimetry, QA, immobilisation, etc. as practical questions on these topics were answered less well.

It should be noted that new radiation protection regulations (specifically IRR17 and IRMER17) are now in force and will be reflected in future questions.

Candidates are encouraged to share this report with their trainers.