IECEP-Manila Form 1 S.2011 TEST QUESTIONS

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| PROFILE OF CONTRIBUTOR | |
| Name of School | Adamson University |
| Address | 900 San Marcelino Street, Ermita, Manila |
| Signature over Printed Name , Position | Engr. Rex Jason H. Agustin  ECE Faculty |
| Area of Specialization | Biomedical Technology |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  A mammography service examined 327 patients during the third calendar quarter of 1996. 719 films were exposed during this period, eight of which were repeats. What is the repeat rate? |
| Choices:  a. 45.5% b. code 2.45% c. 1.1% d. 54.52% |
| ANSWER:  c. 1.1% |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference: Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 314 |
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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  A type of luminescence where the visible light is emitted only during the stimulation of the phosphor. |
| Choices:  a. fluorescence b. phosphorescence c. after glow d. any of the above |
| ANSWER:   1. fluorescence |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 192 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  If a heart measures 12.5 cm from side to side at its widest point, and its image on chest radiograph measures 14.7 cm, what is the magnification factor? |
| Choices:  a. 0.85 b. 1.18 c. 0.15 d. 2.2 |
| ANSWER:   1. 1.18 |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 239 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Radiation doses in the range of approximately200 to 1000 rad produce the |
| Choices:  a. Gastrointestinal (GI) syndrome  b. Central Nervous System (CNS) syndrome  c. Hematologic syndrome  d. Prodomal syndrome |
| ANSWER:   1. Hematologic syndrome |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 465 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Ratio of incident to transmitted radiation through a grid ratio of patient dose with and without grid |
| Choices:  a. Bucky factor b. Damadian factor c. Grid ratio d. Roentgen equivalent |
| ANSWER:   1. Bucky factor |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 558 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  A radiographic single-phase unit installed in a private office has a maximum capacity of 100 milliseconds of 120kVp and 500mA. What is the power rating? |
| Choices:  a. 42 kW b. 60 kW c. 600W d. 24kW |
| ANSWER:   1. 42 kW |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 105 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Who completes the development of first computed tomographic (CT) scanner (EMI, Ltd.) in 1973? |
| Choices:  a. Mistretta b. Forssmann c. Kuhl d. Hounsfield |
| ANSWER:   1. Hounsfield |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 544 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  It is the study of the response of an image receptor to x-rays |
| Choices:  a. sensitometry b. xeroradiography c. xeroradiometry d. spectrometry |
| ANSWER:   1. sensitometry |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 561 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Ratio of radiographic contrast with a grid to that without a grid |
| Choices:  a. grid ratio b. contrast improvement factor  c. Collidge factor d. Bucky factor |
| ANSWER:   1. contrast improvement factor |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 558 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Analysis of persons irradiated therapeutically with superficial x-rays has shown that the skin erythema dose required to affect 50% of persons so irradiated is about |
| Choices:  a. 200 rad b. 400 rad c. 600 rad d. 800 rad |
| ANSWER:   1. 600 rad |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference Radiologic Science for Technologists  Physics, Biology, and Protection, 6th Edition  Stewart C. Bushong, page 468 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  ECG recording requires a bandwidth of 0.05 to \_\_\_\_ Hz |
| Choices:  a. 1000 b. 540 c. 100 d. 40 |
| ANSWER:  c. 100 |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 228 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Find the potential generated if blood flowing in a vessel with radius 0.9 cm cuts a magnetic field of 250 G. Assume a volume flow rate of 175 cubic cm per second. |
| Choices:  a. 206 uV b. 309 uV c. 903 uV d. 260 uV |
| ANSWER:  b. 309 uV |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 282 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Period during which heart contracts. |
| Choices:  a. Diastole b. Systole c. block mode d. Synapse |
| ANSWER:  b. Systole |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 678 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Apparatus for measuring blood pressure |
| Choices:  a. defibrillator b. electrocardiogram  c. plethysmograph d. sphygmomanometer |
| ANSWER:  d. sphygmomanometer |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 678 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Given the energy level of 6.624x10^-18 J imparted to an electron stream by an X-ray device, calculate the frequency in MHz. |
| Choices:  a. 10^6 MHz b. 45.29 MHz c. 10^10 MHz d. 300 MHz |
| ANSWER:  c. 10^10 MHz |
| SOLUTION ( IF PROBLEM -SOLVING)  10^10 MHz |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 608 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  It was first noted by Heinrich Hertz in 1887 and won Albert Einstein the Nobel Prize in 1905. It refers to the emission of electrons from a clean metallic surface (phototube) when electromagnetic radiation (light waves or X-rays) falls onto that surface. |
| Choices:  a. Photoelectric effect b. Compton effect  c. Bremsstrahlung d. Mie effect |
| ANSWER:  a. Photoelectric effect |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 608 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Unit of radiation exposure or amount of X-ray radiation that will produce 2.08x10^9 ion pairs per cubic centimetre of air at standard temperature and pressure (STP). |
| Choices:  a. Curie b. Roentgen  c. Radiation absorbed dose (rad) d. Gray |
| ANSWER:  b. Roentgen |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 610 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  An optical electronic device that measures the color concentration of a substance in solution. |
| Choices:  a. colorimeter b. flame photometer  c. spectrophotometer d. chromatograph |
| ANSWER:  a. colorimeter |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 449 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Recording of heart sounds |
| Choices:  a. ultracardiography b. cardioacoustics  c. electrocardiogram d. phonocardiography |
| ANSWER:  d. phonocardiography |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 283 |

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| Please indicate the subject:  () General Engineering and Applied Science  (x) Electronics System & Technologies |
| QUESTION:  Recorder for measuring galvanic skin resistance |
| Choices:  a. electrodermograph b. electromyograph  c. electrocorporealograph d. electrogalvanograph |
| ANSWER:  a. electrodermograph |
| SOLUTION ( IF PROBLEM -SOLVING) |
| Reference : Introduction to Biomedical Equipment Technology, 3rd edition  Joseph Carr and John Brown, p. 676 |

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