Umm Al-Qura University
Faculty of Applied Sciences
Physics Department

جامعة أم القرى
كلية العلوم التطبيقية
قسم الفيزياء

مقرر: فيزياء التأثيرات الاشعاعية **كود المقرر**: ٢ -٤٠٣٣٨٤ **برنامج**: الفيزياء الطبية **فرع**: الطلبة **أستاذ المادة**: د/ رمضان علي حسن

الاختبار: النهائي **الفصل الدراسي**: ٣٩١ **الفترة**: ٤ **الزمن**: ساعتان **التاريخ**: ١٦ / ٤ / ١٤٤٠ قاعة:

اسم الطالب/ **الرقم الجامعي/** **شعبة/ (١)** **الدرجة الكلية/ 50 درجة**

Please answer **five** questions only: الرجاء الاجابة عن **خمسة** اسئلة فقط مما يلى

Question One ***[10 Marks]***

A) Defined; Isotopes - Bremsstrahlung.

B) Discuss the radiation dose limits according ICRP 60.

Question Two ***[10 Marks]***

A) Explain how we can calculate Effective Dose & Equivalent Dose

B) Compare between Stochastic & non-stochastic radiation effects. (in table please)

Question Three ***[10 Marks]***

A) Discuss the X ray generation

B) Calculate the SI equivalents of the following: 200 mrad, 5 rad, 0·2 mrem.

Question Four ***[10 Marks]***

A) Explain the Indirect radiation Action.

B) Explain how to control the external radiation hazard.

Question Five (*Answer true or false*) ***[10 Marks]***

1- LET unit is keV / μm.
2- Rontgen is measure only in air.
3- Photoelectric effect mostly occurs with lower Z material.
4- Compton scattering occurs at a quantum energy higher than 0.5 MeV.
5- Somatic cells, in which case the point mutation is passed on to the daughter cell.

Question Six ***(****Please choose the correct answer****)*** ***[10 Marks]***

1. Which of the following pairs represents isobars?

   a) ${}^{17}_{8}O$ & ${}^{18}_{8}O$ b) ${}^{40}_{19}K$ & ${}^{40}_{20}Ca$ c) ${}^{15}_{7}N$ & ${}^{16}_{8}O$ d) ${}^{235}_{92}U$ & ${}^{238}_{92}U$

2. ----------have same chemical properties;

   a) Isobars b) Isotopes c) Isotones d) None of these

3. If the dose from standard X ray is 2 Gy and the dose from test radiation produced the same biological effect is 0.5 Gy, then RBE equal;

   a) 8 b) 6 c) 4 d) 2

4. The ----------it is amount of radiation dose in which 50 % of the biological system will be die within one day; a) $LD_{50/30}$. b) $LET_{50/30}$ c) RBE d) none of them
5. Which of the following What are the routes of radioactive sources entry to the body;

   (a) Inhalation (b) Entry through the skin (c) Eye exposure. (d) a & b

(يتبع الأسئلة)