A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 54B03

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fourth Semester

Biomedical Engineering

15UBM403- MEDICAL PHYSICS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The wavelength of UV is? CO1- U

   (a) 100-400nm (b) 300-400nm (c) 400-500nm (d) 500-600nm

2. Energy E is expressed as CO2- U

   (a) E = hf (b) $E = mc^2$ (c) E = vf (d) Both A & B

3. The dose limit in a single planned special exposure is an effective dose of CO2- U

   (a) 10 millisieverts (b) 100 millisieverts (c) 1000 millisieverts (d) None of the abov

4. A milli-rem is _____ CO2- U

   (a) One-Hundreth of rem (b) One one Thousand of a rem

   (c) One one – Hundreth of a rem (d) One -Thousand of a rem

5. Which type of radioactive decay produces light, fast moving particles? CO3- U

   (a) Alpha (b) Beta (c) Gamma (d) None of the above

6. Compounds containing some amount of radioisotope is called as CO3- U

   (a) Tracer (b) Radioactive compound

   (c) Non-Radioactive (d) Linear active compound

7. Energy given to nucleus to dismantle it increases _____ CO4- U

(a) The kinetic energy of individual nucleons

(b) Mechanical energy of individual nucleons

(c) Potential energy of individual nucleons

(d) Chemical energy of individual nucleons

8. The more stable isotopes of carbon are CO4- U

(a) ^{8}C and ^{11}C (b) ^{8}C and ^{12}C (c) ^{12}C and ^{13}C (d) ^{12}C and ^{14}C

9. Sieverts are used to measure__ CO5- U

(a) Emitted radiation (b) Absorbed dosage

(c) Biological risk (d) Radiation type

10. _____ is a syndrome reduce to decreased blood flow in the coronary arteries. CO5- U

(a) Radiation syndrom (b) Acute coronary syndrome

(c) Hoemotoponia (d) Radiation Pancytopenia

PART – B (5 x 2= 10Marks)

11. State Snell's Law CO1- R

12. What are called Attenuation of Gamma rays? CO2- R

13. List out some of the electromedical equipment safety standards in non-ionizing radiation. CO3- U

14. List out some of the nuclear radiation in radioisotopes CO4- R

15. Define radiation carcinogenesis CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Give a brief note on colour vision CO1- U (16)

Or

(b) Explain in detail the theories of hearing and the defects of hearing with suitable diagrams CO1- U (16)

17. (a) Explain about the dose measurements used in radiography. CO2- App (16)

Or

(b) Discuss on radiation sickness and tissue sensitivities with suitable examples. CO2- U (16)

18.	(a)	Give a brief note on radiation sickness and tissue sensitivities	CO3- U	(16)
		Or		
	(b)	Discuss (i) Electro medical equipment safety standards (ii) Energetics of Nuclear reactions	CO3- U	(16)
19.	(a)	(i) Write detail note on EIT.	CO4- U	(8)
		(ii) Write short notes on atomic structure of radioisotoper in medical field.	CO4- U	(8)
		Or		
	(b)	Discuss in detail about Principles of measurement in radioisoptope	CO4 U	(16)
20.	(a)	Explain in detail about heritable radiation effects using radiation protection	CO5- U	(16)
		Or		
	(b)	Give an account of radiation accidents and environmental radiation exposure	CO5- U	(16)