Program: BE Biomedical Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VIII

Course Code: **BMC801** and Course Name: **Nuclear Medicine**

Time: 1 hour Max. Marks: 50

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0810_R12_BM_VIII_BMC801_QP4

Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Excited state of a nuclide is called as _____
Option A:	isotones
Option B:	isobars
Option C:	isotopes
Option D:	isomers
Q2.	Unstable nuclides are called ____
Option A:	seminuclide
Option B:	autonuclide
Option C:	heavy nuclide
Option D:	radionuclide
Q3.	During alpha decay the atomic number of the resulting nuclide (daughter nuclide) will be_____
Option A:	reduced by 4
Option B:	reduced by 2
Option C:	increased by 1
Option D:	reduced by 1
Q4.	When the electron absorbs an amount of energy that are just sufficient to move it into a higher unoccupied shell, the process is known as _____
Option A:	excitation
Option B:	calibration
Option C:	radiation
Option D:	ionization
Q5.	Energy emitted from the nucleus as a high-energy photon is known as _____
Option A:	X- ray
Option B:	Beta emission
Option C:	Gamma ray
Option D:	Alpha emission

Q6.	____ is the reactor produced radionuclide
Option A:	Fluorine-18
Option B:	Molybdenum-99
Option C:	Oxygen-15
Option D:	Nitrogen-13
Q7.	Effective half life of ideal radiopharmaceutical
Option A:	20*test duration
Option B:	1.5*test duration
Option C:	10*test duration
Option D:	30*test duration
Q8.	Compare to following four , Who are more susceptible to injurious radiation effects?
Option A:	Children
Option B:	Adult
Option C:	Fetus
Option D:	senior citizen
Q9.	Acute effects generally appears within following days of exposure to radiations
Option A:	90 days
Option B:	120 days
Option C:	150 days
Option D:	60 days
Q10.	1µCi*hr cumulated activity in MIRD is equivalent to
Option A:	1.332 × 10^2 MBq *sec
Option B:	1.332 × 10^3 MBq *sec
Option C:	1.332 × 10^5 MBq *sec
Option D:	1.332 × 10^4 MBq *sec
Q11.	In GM counter gas molecules undergo additional excitation reaction due to radiation and liberate extra energy in the form of
Option A:	UV Rays
Option B:	X-Rays
Option C:	Gamma Rays
Option D:	Electrons
Q12.	IN RIA To separate Free Antigens from Antigen-Antibody complex, which of this techniques can not be used
Option A:	Electroporation
Option B:	Electrophoresis
Option C:	Chromatography
Option D:	Ultracentrifugation
Q13.	Which element is used to magnetically shield the PM Tube

Option A:	Nichrome
Option B:	Alloy of iron, nickel and copper
Option C:	Niobium-Titanium alloy
Option D:	Copper
Q14.	Which is this is a semiconductor detector
Option A:	NaI(TI) Detector
Option B:	BGO Detector
Option C:	CsI(TI) Detector
Option D:	Si Detector
Q15.	In liquid scintillation counting system, primary solute is essentially
Option A:	Dissolved solvent
Option B:	Scintillator material
Option C:	Waveshifter
Option D:	Solute to achieve efficient energy transfer
Q16.	In an pinhole collimator, if we decrease the distance between object and the collimator aperture, image size
Option A:	Decreases
Option B:	Increases
Option C:	Remains same
Option D:	No image is available
Q17.	Thickness of detectors used in gamma camera is
Option A:	6-12 mm
Option B:	6-12 cm
Option C:	20 cm
Option D:	50 cm
Q18.	_____ are used to increase collection efficiency of the light signal at face of PM Tubes.
Option A:	Collimators
Option B:	NaI(TI) Crystal
Option C:	Light Guides
Option D:	Positioning component
Q19.	Which component is responsible for selecting a radioactive event based on its energy
Option A:	NaI (TI) detector
Option B:	Amplifier
Option C:	Pulse Height Analyzer
Option D:	Analog Ratemeter
Q20.	For a dual head gamma camera two simultaneous image can be acquired at an angle of

Option A:	90°
Option B:	120°
Option C:	180°
Option D:	270°
Q21.	As compared to PET, SPECT isotopes have _____ half life.
Option A:	Longer
Option B:	Shorter
Option C:	Equivalent
Option D:	Unstable
Q22.	Half life of O-15 isotope use in PET is
Option A:	51 sec
Option B:	122 sec
Option C:	244 sec
Option D:	488 sec
Q23.	When both photons from an annihilation event are detected by detectors in coincidence is called as
Option A:	Random coincidence
Option B:	Scatter coincidence
Option C:	True coincidence
Option D:	False coincidence
Q24.	In SPECT, Projections are acquired at defined points during the rotation, typically every
Option A:	3–6 degrees
Option B:	10–12 degrees
Option C:	16–18 degrees
Option D:	20–22degrees
Q25.	For Bone pain palliation ____ is used commonly.
Option A:	strontium-89
Option B:	Tc-99m
Option C:	Yttrium-90
Option D:	I - 131

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0810_R12_BM_VIII_BMC801_AK4

Question	**Correct Option** **(Enter either 'A' or 'B' or 'C' or 'D')**
Q1.	D
Q2.	A
Q3.	B
Q4	A
Q5	C
Q6	B
Q7	B
Q8.	C
Q9.	D
Q10.	A
Q11.	A
Q12.	A
Q13.	B
Q14.	D
Q15.	B

Q16.	B
Q17.	A
Q18.	C
Q19.	C
Q20.	C
Q21.	A
Q22.	B
Q23.	C
Q24.	A
Q25.	A