بنك الأسئلة في مقرر الفيزياء الطبية2 (162–تحض3)

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Ch. 13 Mechanics of Nonviscose Fluids

1	According to Archimedes` principle; an object floated or submerged in a fluid experiences:					
	A	A downward force that equals the weight of the displaced fluid	B	An upward force that equals the volume of the displaced fluid.	C	An upward force that equals the weight of the displaced fluid.
2	According to Archimedes's principal the volume of the displaced fluid ……..the volume of the immersed object.					
	A	is smaller than	B	is larger than	C	is equal to
3	When an object is suspended in a fluid by a string, the tension in the string is reduced by....					
	A	the viscosity force	B	the volume of the displaced fluid	C	the weight of the displaced fluid
4	The density of ice is 920 Kgm^{-3} while that of sea water is 1025 Kgm^{-3}, what fraction of an iceberg is submerged?					
	A	0.89	B	0.98	C	8.9
5	A water pipe leading up to a hose has a radius of 2 cm. water leaves the hose at a rate of 4 litres/minute. Find the velocity of the water in the pipe?					
	A	0.005 m/s	B	0.05 m/s	C	0.5 m/s
6	If a stream of fluid has its cross-sectional area halved in a certain region, its average velocity is ……					
	A	halved	B	doubled	C	constant
7	The pressure at the same depth at two places in a fluid at rest is ……					
	A	different	B	the same	C	the atmospheric pressure
8	When a person, in an erect position, experiences an upward acceleration (a),thus the pressure in the brain P_{Brain} will be reduced as follow:					
	A	$P_{Brain} = P_{Heart} - \rho (g + a) (h_{Brain} + h_{Heart})$	B	$P_{Brain} = P_{Heart} + \rho (g + a) (h_{Brain} - h_{Heart})$	C	$P_{Brain} = P_{Heart} - \rho (g + a) (h_{Brain} - h_{Heart})$
9	In the reclining position, the small pressure drop between the heart and feet or brain is due to the…… forces.					
	A	gravitational	B	Viscous	C	Electrical
10	The manometer is a device used to measure the……					
	A	gas pressure and can be used also to measure liquid pressure.	B	gas humidity	C	gas density

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11	Select the correct equation that correlates between the pressures P_{Feet}, and P_{Heart} or P_{Brain} for adults in the standing position.					
	A	$P_F = P_H + \rho g (h_{Brain} + h_{Heart})$	B	$P_F = P_H + \rho g h_{Foot}$	C	$P_F = P_H + \rho g h_{Haert}$
12	The buoyant force on an object in a fluid is equal to the					
	A	viscosity force.	B	weight of the displaced fluid.	C	fluid velocity
13	The volumetric flow rate of a fluid is the same at both the entering and the leaving ends; it is a statement of					
	A	Archimedes principle	B	The work and energy concepts	C	the equation of continuity
14	The buoyant force depends on.....					
	A	cross-sectional area of the immersed body.	B	viscosity of the liquid.	C	density for the immersed body.
15	In static fluid, the pressure at a point on a depth d is determined by Atmospher pressure +.....					
	A	ρ+g+d	B	ρgd	C	ρ/(gd)
16	The pressure at the same depth at two places in a fluid at rest is					
	A	the same.	B	differed	C	equal to atmospheric pressure.
17	Human have adapted to the problems of moving blood upward a large distance against the force of					
	A	gravity	B	viscosity	C	electricity
18	The pressures in the lower and upper parts of the body are very different when the person is.....					
	A	swimming	B	standing	C	reclining
19	When a person is standing, the pressure drop between the heart and feet or brain is due to the..... forces.					
	A	gravitational	B	Viscous	C	Electrical
20	The sphygmomanometer is a device used to measure.....					
	A	the gas pressure	B	the blood pressure	C	the blood density
21	The sphygmomanometer is a device used to measure the blood pressure painless at.					
	A	Left upper arm	B	Left lower arm	C	foot
22	..... is inserted with a catheter into veins or arteries to measure the blood pressure.					
	A	Sphygmomanometer	B	Thermometer	C	Strain gauge

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23	What is the buoyant force on a block of gold with a volume of .025m^3 submerged in a tank of water (density 1.0 x 10^3 kg/m^3)? (g = 9.8 m/s^2)					
	A	245 N	B	765 N	C	435 N
24	Bernoulli's equation can be used under the following conditions:					
	A	The flow is streamline with variable density.	B	The fluid is compressible, viscous and velocity is changed from point to point.	C	The fluid is in steady state, incompressible and nonviscous.
25	According to Bernoulli's equation the condition (the fluid is incompressible) means that density.....					
	A	is constant	B	increased	C	decreased
26	According to Bernoulli's equation the condition (the fluid is non-viscous) means that					
	A	no mechanical energy lost	B	there is mechanical energy lost	C	friction force is high
27	According to Bernoulli's equation the condition (the flow is streamline) means that the flow is.....					
	A	not turbulent	B	turbulent	C	changed
28	According to Bernoulli's equation the condition (the flow is steady-state) means that the velocity.....					
	A	is constant	B	increased	C	decreased
29	Blood pressure readings for a resting healthy adult are about ..... torr.					
	A	80/120	B	120/80	C	200/50
30	Systolic (peak) pressure is the .....pressure during complete heart pumping cycle.					
	A	maximum	B	minimum	C	constant
31	Diastolic (peak) pressure is the .....pressure during complete heart pumping cycle.					
	A	maximum	B	minimum	C	constant
32	According to Bernoulli's equation, for a horizontal tube with construction, at the construction the velocity increases and the pressure…….					
	A	increases.	B	decreases.	C	remains constant.
33	A person suffering from "light headedness" can be revealed by					
	A	lowering his head.	B	standing up.	C	running.
34	Instead of describing fluids in terms of masses and forces, we use					
	A	length and area.	B	velocity and acceleration.	C	density and pressure.
35	When using the sphygmomanometer, why is the blood pressure usually measured in the left upper arm?					
	A	It is closed to the pressure in the heart.	B	It is very different from the pressure in the heart	C	It is closed to the pressure in the brain.

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Ch. 14 Viscose Fluid Flow

36	Flow resistance in blood depends on					
	A	length of the blood vessel, viscosity of the blood and fourth power of blood vessel diameter.	B	atmospheric pressure.	C	velocity of the blood
37	The flow resistance R_f is defined as the ratio of the pressure drop to the					
	A	length.	B	flow rate.	C	viscosity.
38	For spherical object of radius R moving with small velocity v through a fluid of viscosity η and density ρ_o, the viscous force F_d does not depend on.....					
	A	fluid density	B	fluid viscosity	C	object velocity
39	The centripetal acceleration is always ..... the gravitational acceleration.					
	A	equal	B	much less than	C	much greater than
40	The aorta of an average adult human has a radius of 1.3×10^{-2} m. If the flow rate of blood is 10^{-4} $m^3\ s^{-1}$, the flow resistance over 0.2 m distance is: ($\eta = 2.084 \times 10^{-3}$ Pa s)					
	A	56.8 kPa s m^{-3}	B	37.2 kPa s m^{-3}	C	66.8 kPa s m^{-3}
41	The aorta of an average adult human has a radius of 1.3×10^{-2} m. If the flow rate of blood is 10^{-4} $m^3\ s^{-1}$ and the flow resistance is 37.2 kPa s m^{-3} . Calculate the pressure drop over 0.2 m distance.					
	A	0.00568 kPa	B	0.00372 kPa	C	0.00668 kPa
42	The effective weight of an object in a centrifuge is always …… Its weight at rest.					
	A	greater than	B	less than	C	equal to
42	Find the terminal velocity in air of a spherical dust particle of radius 10^{-5} m and density of 2×10^3 kg m^{-3} at 20^o C. (Viscosity of air is 1.81×10^{-5} Pa s) and density of air is neglected.					
	A	5.3×10^{-2} m s^{-1}	B	2.41×10^{-2} m s^{-1}	C	7.4×10^{-2} m s^{-1}
43	In a mixture of two kinds of solutes, the smaller molecules will sediment ……the larger one					
	A	faster than	B	slower than	C	equal to
45	Find the drag force at terminal velocity 2.41×10^{-2} m s^{-1} for a spherical dust particle of radius 10^{-5} m. (Viscosity of air is 1.81×10^{-5} Pa s)					
	A	3.14×10^{-11} N	B	8.23×10^{-12} N	C	44.2×10^{12} N
46	What is the net resistance of the 4.73×10^7 capillaries in the mesenteric vascular of a dog, if the radius of a single capillary is 4×10^{-6} m and its length is 10^{-3} m.viscosity of the blood is 2.084×10^{-3} Pa s					
	A	2.073×10^{13} k Pa S m^{-3}	B	1.326×10^{13} k Pa S m^{-3}	C	4.38×10^5 k Pa S m^{-3}
47	When the speed of moving object in a fluid increases slightly the high speed drag force is directly proportional to its					
	A	velocity.	B	viscosity.	C	square velocity.

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48	In a mixture of two kinds of solutes, the larger molecules will sediment ……..the smaller one.					
	A	faster than	B	slower than	C	equal to
49	The effective weight of a rotating object (w^e) of mass m is given by ……					
	A	$w^e = mg$	B	$w^e=m^2(g-a_r)$	C	$w^e=m(g-a_r)$
50	Hemoglobin has a density of 1.35 x 10^3 Kgm^{-3} and a molecular mass 1.129 x 10^{-22} kg. The factor ϕR for hemoglobin in water is 9.46 x 10^{-8}m. If it is in a centrifuge with centripetal acceleration of 10^6 g and, then the sedimentation velocity is…… (where the density of water 10^3 Kgm^{-3}, viscosity η= 0.695 x 10^{-3}Pa s and g= 9.8ms^{-2}).					
	A	v_s = 3.74 x 10^{-5} ms^{-1}	B	v_s = 4.36x 10^{-6} ms^{-1}	C	v_s = 7.34 x 10^{-7} ms^{-1}
51	The flow resistance R_f is defined as: the ……..					
	A	weight of the displaced fluid.	B	volumetric flow rate of a fluid is constant.	C	ratio of the pressure drop to the flow rate.
52	The sedimentation velocity for a small spherical particle moves downward through a fluid in a centrifuge depends on: The……					
	A	high speed drag force.	B	effective weight of the sphere and the viscosity of the fluid.	C	gravity of earth.
53	Drag force of an object in a fluid is …… force.					
	A	an upward	B	a downward	C	an opposite direction of motion

Ch. 15 Cohesive Forces in Liquids

54	The surface tension γ is defined as the force per unit ……exerted by one surface.					
	A	area	B	length	C	volume
55	The specific form of Laplace's law depends on ……					
	A	the mass of the fluid.	B	the molecular structure.	C	the shape of the closed surface
56	The pressure inside a balloon …… the atmospheric pressure.					
	A	is equal to	B	is larger than	C	is smaller than
57	The specific form of Laplace's law does not depend on ……					
	A	the volume of fluid	B	the tension in the membrane film	C	the shape of the closed surface

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58	Laplace 's law for a spherical bubble takes the form:……..					
	A	Pi - Po = 4γ/r	B	Pi - Po = γ/2r	C	Pi - Po = γ/r
59	Laplace 's law for a cylindrical tube takes the form:……..					
	A	Pi - Po = 2γ/r	B	Pi - Po = γ/2r	C	Pi - Po = γ/r
60	Laplace 's law for a spherical membrane takes the form:……..					
	A	Pi - Po = 2γ/r	B	Pi - Po = γ/2r	C	Pi - Po = γ/r
61	A rubber balloon is inflated to a radius of 0.1 m. The pressure inside is 1.002×10^5Pa, and the pressure outside is 10^5 Pa, the tension in its wall is:					
	A	15 N/m	B	5 N/m	C	10 N/m
62	The unit of surface tension is ……..					
	A	N/sec	B	N/m^3	C	N/m
63	Laplace's law relates the pressure difference across a closed elastic membrane or liquid film to……..					
	A	the volume of fluid	B	the tension.	C	the shape of the closed surface
64	If the surface tension (γ) of a liquid = $7.28x10^{-2}$ Nm^{-1}, and the length of the wire is 0.1 m, the total weight will the liquid support in the apparatus of the U-shaped loop is ……..					
	A	$1.46 X 10^{-2}$ N	B	$3.76 X 10^{-2}$ N	C	$5.33 X 10^{-2}$ N
65	What is the wall tension γ for a spherical soap bubble of a radius 0.05m. The pressure inside is 1.002×10^5 Pa and the pressure outside 1×10^5 Pa ?					
	A	2.5 $N m^{-1}$	B	5 $N m^{-1}$	C	10 $N m^{-1}$
	Ch. 17 Direct Current					
66	For fully charged capacitor, the current across the capacitor is equal to……..					
	A	maximum	B	one	C	zero
67	After elapsing one time constant of charging process, the capacitor charge in the circuit can …….. percent of its initial value.					
	A	increase to about 36	B	drop to about 73	C	increase to about 63
68	What is the final charge on the capacitor in a circuit containing resistance, capacitor and battery, C = 3 μF, R =2 KΩ, and EMF = 6 V					
	A	1.2×10^{-5} C	B	1.8×10^{-5} C	C	3.6×10^{-5} C
69	Small resistance is used in artificial pacemaker's charging circuits to make the capacitor……..					
	A	slowly discharge	B	stopping charge	C	rapidly charge
70	During discharging of a capacitor the current reaches 37% of its initial value after ……. time constant (T).					
	A	two	B	one	C	four
71	Each cycle in the human heart begins with an …….. pace maker pulse from a group of nerve fibres.					
	A	mechanical	B	thermal	C	electrical

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72	Once the capacitor is fully charged, the current					
	A	increases	B	decreases	C	stopped
73	The .....in the circuit steadily diminish, reaching very small values after few time constant					
	A	resistance	B	charge and the current	C	capacitance
74	Each cycle in the human heart begins with an electrical .....pulse from a group of nerve fibers.					
	A	pace maker	B	ground fault interrupters	C	thermistor
75	In a circuit containing a resistance of 120 Ω, a capacitor C = 3μF, and an EMF (ξ)= 24 V. The initial current will be.....					
	A	0.2A	B	8A	C	40A
76	What is the time constant (*T*) of an artificial pacemaker has pulses triggered 75 times per minute?					
	A	0.013 s	B	0.8 s	C	1.25 s
77	..... is the rate at which the charge on a capacitor increase or decrease.					
	A	Time delay	B	Time Constant	C	Potential difference
78	At long time (t=∞), the capacitor will be fully charged and its potential difference must equal ξ, the charge q is then.....					
	A	q_f= RC	B	q_f= ξ C	C	q_f= I V
79	What is the final charge on the capacitor in a circuit containing resistance, capacitor and battery, C = 3 μF, R =2 KΩ, and EMF = 6 V?					
	A	1.2 x 10^{-5} C	B	3.6 x 10^{-5} C	C	1.8 x 10^{-5} C
80	In a circuit containing resistance of 2 KΩ, capacitor of 3 μF and battery EMF = 6 V. T= ?					
	A	0.018 s	B	0.006 s	C	0.036 s
81	The artificial pacemaker is .....containing capacitance and resistances.					
	A	battery powered circuit	B	coils and resistances circuit	C	coils and capacitances circuit
82	Small resistance is used in artificial pacemaker's charging circuits to make the capacitor.....					
	A	stopping charge	B	slowly charge	C	rapidly charge
83	Between 10 and 20 mA will paralyze some muscles and prevent person from releasing					
	A	fuse	B	circuit breaker	C	Conductor
84	About 18 mA ..... and causes breathing to stop.					
	A	produce heart ventricular fibrillation	B	produce tingling sensation	C	contracts chest muscles
85	..... mA current applied directly to the human heart is sufficient to produce ventricular fibrillation .					
	A	0.1	B	0.02	C	3

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86	In hospitals, the special hazards associated with patients connected directly to electrical circuits led to ..... their beds.					
	A	charge	B	ground	C	insulate
87	In electrical safety, to prevent electrical hazards, we must apply the following precautions:					
	A	circuit breakers and ground fault interrupters are not used.	B	using two-prong plugs	C	all constructions are well insulated and devices are grounded.
88	Calculate the lethal current passing through a person grapes a defective electric appliance at 220V with body resistance of 500 ohms. I =.....					
	A	2.27 mA	B	110 mA	C	440 mA
89	The resistance of dry skin of human body is..... in case of wet skin.					
	A	decreased by factor 100	B	increased by factor 100	C	increased by factor 1000
90	An electrophoresis is an efficient technique in which					
	A	separate proteins by electric field	B	separate proteins by magnetic field	C	separate proteins by centrifuge
91	A strain gauge exploits the dependence of the resistance of a wire on its geometry is used to measure.....of human body.					
	A	temperature changes	B	pressure within the digestive tarct	C	skin resistance
92	In an electrophoresis, large protein molecule that has mass of thousands atomic mass unit drifts ..... small ions as Na^+ or Cl^-.					
	A	similar to	B	much slower than	C	faster than
93	The average adult can detect a current as small as.....					
	A	20 mA	B	18 mA	C	1 mA
94	A device called .....is installed in the ground wire of three-wire circuits. If the current exceeds 5 mA, this device opens the circuit.					
	A	ground-fault-interrupter	B	fuse	C	thermistor
	Ch. 18 Nerve Conduction					
95	The short space between Schwan cells, in called					
	A	node of Ranvier	B	dendrite	C	synapses
96	The axon membrane has capacitance due to ..... accumulate on the two sides.					
	A	charges of opposite signs	B	leakage current	C	charges of same signs
97	Since charges of opposite signs accumulate on the two sides of the axon membrane, so the axon membrane has					
	A	nuclear filed	B	capacitance	C	diffusion process

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98	Calculate the resistance *R* of an axon of length *l= 0.01 m* and radius *r= 5 X10^{-6} m*. (*axoplasm resistivity* $\rho_a = 2\ ohm\ m$)					
	A	R= 2.5 ohms	B	R=2.5 X10^{-6} ohms	C	R=2.5 X10^{8} ohms
99	The resistance of a length of the axon to a current (i_{axon}) along the axon is proportional to……					
	A	axoplasm resistivity	B	membrane capacitance	C	membrane resistance
100	The permeability of a cell membrane is a measure of the ease in which a given ion can…… the membrane					
	A	strike	B	stick with	C	pass through
101	The capacitance of nerve cell can be reduced by					
	A	myelin sheath	B	Schwan cell	C	Node of ranvier
102	The space parameter λ indicates how far a current travels before most of it has leaked out through the membrane is given by ……					
	A	$\lambda = \sqrt{\frac{2\ \rho_a}{R_m\ r}}$	B	$\lambda = \sqrt{\frac{R_m\ r}{2\ \rho_a}}$	C	$\lambda = \sqrt{\frac{2\ \rho_a}{R_m}}$
103	The net flows of Na^+ into the cell and K^+ out of the cell due to diffusion and electric forces are passive flow because ……					
	A	of Na-K pump	B	no metabolic energy need for both flows.	C	both flows need metabolic energy.
104	The Nernst Equation has the form					
	A	$q(V_i - V_o) = K_B T\ ln \frac{C_o}{C_i}$	B	$q(V_i - V_o) = K_B T\ ln \frac{C_i}{C_o}$	C	$q(V_o - V_i) = K_B T\ ln \frac{C_o}{C_i}$
105	The shape and peak size of the action potential curve are …… the strength of the initial above threshold stimulus.					
	A	dependent on	B	independent on	C	proportional to
106	What is the equilibrium potential difference for K^+? Assume that the temperature is 37^{o}C (310K), K_B=1.38x10^{-23}JK^{-1}, q = e = 1.6x10^{-19} C, C_o = 4 and C_i = 155.					
	A	-98 mV	B	-88 mV	C	-78 mV
107	The electrical changes reaching the surface of the body is about 0.1 % of the full action potential changes, they can be amplified and recorded as medical applications of ……					
	A	moister and temperature measurements.	B	pressure measurements.	C	electroencephalograph and electrocardiograph.
108	Epilepsy and accidental brain damage are diagnosed by……					
	A	electroencephalograph	B	electromyograph	C	electroretinograph
109	An electrocardiograph records electrical activity associated with the ……					
	A	heart	B	brain	C	artery

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110	An intercontinental submarine cable with periodic amplifiers resembles……					
	A	dendrites	B	myelinated axon	C	unmyelinated axon
	Ch. 26 Particle properties of Light					
111	Einstein suggested that the amount of energy in each light quantum or photon depends only on the……					
	A	intensity of light	B	number of light photons	C	frequency of light
112	An electron will leave the metal surface if it absorbs a light photon of energy equal to or greater than…..					
	A	kinetic energy	B	work function	C	threshold velocity
113	The light photon has a frequency (f) above the threshold frequency. The maximum kinetic energy ($\frac{1}{2}$ mv^2) of the escaped electron from the metal surface will be :					
	A	$\frac{1}{2}$ mv^2 = hf - W	B	$\frac{1}{2}$ mv^2 = hf - $\frac{1}{2}$ W	C	$\frac{1}{2}$ mv^2 = $\frac{1}{2}$ hf - W
114	Light is incident on the surface of a metal for which the work function is 3 eV. If the frequency of the incident light is $8x10^{14}$ Hz, what is the maximum kinetic energy of the electron? (Where $h=4.135x10^{-15}$ eVs).					
	A	0.308 ev	B	1.103 ev	C	3.308 ev
115	The work function is defined as the …… required to pull electrons from inside to outside a certain metal producing photoelectrons.					
	A	maximum energy	B	minimum energy	C	intensity of light
116	Light is incident on the surface of a metal for which the work function is 3.11 eV. The minimum light frequency f_o can cause the emission of electrons, will be …… (where $h=4.135x10^{-15}$ eVs).					
	A	5.6×10^{14} Hz	B	7.5×10^{14} Hz	C	6.0×10^{14} Hz
117	Light incident on the metal plate causes electrons to be emitted. These can travel to the collector producing ……					
	A	X-ray	B	photoelectric current	C	gamma ray
118	When light ,of frequency higher than threshold frequency, strikes metallic surface it will eject……					
	A	x-ray	B	Neutrons	C	electrons
119	Above the threshold frequency, by increasing incident light intensity, the number of ejected electrons will					
	A	decreases	B	be the same	C	increases
120	Above the threshold frequency, by increasing incident light frequency, the number of ejected electrons will					
	A	decrease	B	be the same	C	increase
121	Above the threshold frequency, by increasing incident light frequency, the energy of ejected electrons will					
	A	decrease	B	be the same	C	increase

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122	Light incident on a metal plate can causes ..... to be emitted. These can travel to the collector producing photoelectric current.					
	A	electrons	B	protons	C	gamma ray
123	An electron will leave the metal surface under the condition that if it absorbs a light photon of energy ..... its work function					
	A	equal to or greater than	B	lower than	C	faster than
124	When electrons from a heated filament are accelerated through a large potential difference and allowed to strike a metallic target.....will be produced.					
	A	photoelectrons	B	x-ray	C	Gamma ray
125	The Bragg condition for x- ray diffraction of crystalline structures is :					
	A	d sinα = 2mλ	B	2d = mλ sinα	C	2d sinα = mλ
126	The interatomic spacing *(d)* of parallel planes of atoms in a crystal is 0.25 nm, and the angle α of the incident x-rays is 12^{o}. If the shortest wavelength in the x–ray beam is 0.05 nm, which wavelengths will be reflected strongly from the planes? (m=1)					
	A	0.0167 nm	B	0.0025 nm	C	0.1039 nm
127	.....has been applied with success to biological molecules, such as proteins and nucleic acids that can be put into crystalline form like DNA.					
	A	X-ray diffraction	B	Pacemaker	C	Strain gauge
128	X-rays are electromagnetic waves with typically a ..... nm wavelength, are well suited to study molecular structure.					
	A	0.1	B	5	C	500
129	The wavelength in the electron microscope .....optical microscope.					
	A	is the same as	B	is much smaller than	C	is much larger than
130	Scanning electron microscope can image .....morphology.					
	A	surface	B	bulk	C	crystal structure
131	Transmission electron microscope can image ..... within few micrometers.					
	A	bulk	B	surface	C	crystal structure
132	Electron microscope image is.....					
	A	black	B	coloured	C	gray scale
133	Scanning and transmission electron microscopes are using.....as a beam.					
	A	x-ray	B	electrons	C	neutrons
	Ch 30 – Ch 31 Nuclear Physics					
134	Electron has ..... charge					
	A	positive	B	negative	C	no
135	Proton has ..... charge					
	A	positive	B	negative	C	no
136	Neutron has ..... charge					
	A	positive	B	negative	C	no
137	Nuclear species with the same atomic number but different neutron numbers are called					
	A	Isotopes.	B	Isomers.	C	Isobars.

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138	Transmutation of the radioactive elements occurs in					
	A	α decays and γ decays.	B	α decays, β decays and γ decays.	C	α decays and β decays.
139	When a uranium nucleus emits an alpha particle, its atomic number is reduced by..... protons					
	A	one	B	two	C	three
140	^{60}Co beta decays into ^{60}Ni which is promptly emits two gamma rays, ^{60}Co is a.....					
	A	transmutation element	B	stable element	C	gamma decays element
141	The decay constant λ is related to the half life T by.....					
	A	$\lambda = \ln 2 \times T$	B	$\lambda = \ln 2 / T$	C	$\lambda = T / \ln 2$
142	The activity (A) of (n) moles for radioactive sample is related to its half-life (T) and the number of radioactive nuclei (N) by the relation ..... , where (N_A) is the Avogadro's number.					
	A	$0.639\ nT/N_A$	B	$0.693\ nN_A/T$	C	$0.639\ nN_A/T$
143	The exponential decay formula has the form					
	A	$N = N_o e^{-\lambda t}$	B	$N = N_o / e^{-\lambda t}$	C	$N = e^{-\lambda t} / N_o$
144	..... is the result of instability of the nucleus.					
	A	Continuity	B	Radioactivity	C	Resistivity
145	A radionuclide has a half-life of 10 hours. What percentage of radionuclide remains after 20 hours?					
	A	0.25	B	0.5	C	0.75
146	^{131}I half-life is 8.1 days. If a patient ingests a small quantity of ^{131}I. What fraction N/N_o after 60 days?					
	A	0.059	B	0.0059	C	0.59
147	What is the unit of source activity?					
	A	curie	B	Newton	C	Pascal
148	What is the SI unit of activity?					
	A	curie	B	becquerel	C	rad
149	What is the mass of a 1000-Ci cobalt source? (Co half life = 5.27 years), ($N_A = 6.02 \times 10^{23}$ mole^{-1}) and (1 mole of ^{60}Co= 60 g)					
	A	0.882 g	B	8 g	C	80 g
150	Exposure is defined as the amount of ionization produced in a unit mass of ..... at standard temperature and pressure (STP).					
	A	water	B	dry air	C	ice
151	Exposure is defined only for					
	A	Electrons	B	Neutrons	C	x-ray and gamma ray
152	Exposure depends on the properties of.....					
	A	material only	B	radiation beam only	C	both material and beam
153	What is the unit of source exposure?					
	A	roentgen	B	gray	C	rad
154	1 R = ... coulomb per kilogram					
	A	2.58×10^{-4}	B	58×10^{-4}	C	28×10^{-4}

بنك الأسئلة في مقرر الفيزياء الطبية2 (162–تحض3)

155	The **absorbed radiation dose** for any material **depends on** the properties of ……. A	material only	B	radiation beam only	C	material and beam
156	The unite of absorbed dose is…… A	roentgen	B	Sv	C	rad
157	The SI unite of absorbed dose is…… A	roentgen	B	gray	C	Sv
158	1 Gy = ……rad A	10	B	100	C	1000
159	1 rad = …… J/kg A	0.01	B	1	C	10
160	Living tissues exposed to 10000 rads completely destroyed. By how much this absorbed dose rise the temperature of the tissue? C_{water} = 4180 J kg^{-1} K^{-1} A	0.0239 K	B	239 K	C	20 K
161	Radiation is so lethal to living tissue because it imparts energy in relatively large amounts…… A	uniformly at all points.	B	uniformly to very small number of atoms.	C	to single atom at random locations.
162	A cancer is irradiated with 1000 rads. Find the exposure in roentgens? A	10 R	B	100 R	C	1000 R
163	A tumour is irradiated with 15 Gy. Find the exposure in roentgens? A	15 R	B	150 R	C	1500 R
164	The unite of biological effect is…… A	163	A	163	A	163
165	The SI unite of biological effect is…… A	164	A	164	A	164
166	The effects of radiation on biological systems depend on …… A	the type of radiation only.	B	the type of radiation and its energy.	C	the value of energy only.
167	Exposure to gamma ray = 2 roentgens produce a soft tissue absorbed dose of ……. gray (*Gy*). A	0.02	B	2	C	200
168	Exposure to x-ray = 500 roentgens produce a soft tissue absorbed dose of ……. rads. A	5	B	50	C	500
169	The quality factor (QF) of a particular radiation is defined by comparing its effect to…. A	200-k eV x-ray	B	1 M-eV x-ray	C	60 ke-V gamma ray
170	A cancer is irradiated with 1000 rads of ^{60}Co gamma rays with QF of 0.7. Find the biologically equivalent dose in rems? A	700 rems	B	70 rems	C	7 rems
171	A cancer is irradiated with 10 Gy of ^{60}Co gamma rays with QF of 0.7. Find the biologically equivalent dose in Sv? A	700 Sv	B	70 Sv	C	7 Sv