Nervous System Notes Outline

1.	What are the 3 main <u>f</u>	<i>unctions</i> of the i	nervous system	?	
	8	function – sen	sing		
	8	function – con	necting sensory _		to movement
		function – mov	/ing		
2.	What are the 2 major	<u>divisions</u> of the	nervous system	?	
		Nervous Syste	m		
		Nervous Syste	m		
		and			
3.	Describe the anatomy	of the Central N	lervous System	(CNS).	
		and			
	■Nerves	regene	erate		
4.	Describe the anatomy	of the Periphera	al Nervous Syste	em (PNS).	
	All of the nerves not	in the			
	■(peri =)			
	■Nerve cells	reg	generate		
5.	What are the 2 main <u>a</u>	<u>livisions</u> of the F	PNS?		
	B	division- receiv	/e	from	m receptors
	B	division – initia	ates	of muscl	es and organs
6.	What are the 2 system	<u>ns</u> within the <u>mo</u>	<u>otor division</u> of t	he PNS?	
	Image:				
	B	Nervous Syste	m – controls smo	oth muscle (organs),
	cardiac muscle, and g	Ilands;			
7.	What are the 2 <i>divisio</i>	<u>ns</u> of the Auton	omic Nervous Sy	stem?	
	B	division			
	8	division			
8.	What is the difference	between the Sy	mpathetic and	Parasympa	thetic
	divisions?				
	Sympathetic –		Parasympathet	ic –	
	B	<pre> activity</pre>	■		activity,
	■" or		– "	and	′′
	digestive and urinary	y functions	—		digestion,
	■blood flow	to muscles	∎blood flo)W	to organs,
	■heart rate		∎blood pr	essure and	heart rate
	blood pressure		return to		/
	■pupils	/	■pupils _		/
	■	sweating,	■		breathing
	breathing	·	rate.		
Q	Draw a neuron label t	the following na	rts and give the	ir functions	

■ Cell body, nucleus, axon, myelin, schwann cell, nodes of Ranvier dendrites, synaptic knob, impulse,

9. D	raw a neuron, label the follow	ing parts and give their	functions (<i>Cont.</i>):
	Cell body – contains		
	■Nucleus – contains all of the		
	■Axon – long nerve	that carries the	from the cell
	to the		
	■Myelin – fatty	around axon that in	proves the
	speed of impl	ulses	
	Schwann cell – cells that wra	ap around and	coat it with
	■Nodes of Ranvier –	between myelin where	e occur
	Dendrites – branches from the	e cell body that	info from other cells
	Synaptic knob – end of axon	that releases	
	■Impulse – one way	signal from cell	to synaptic
10.	How fast does an impulse tra	avel in a myelinated axo	n? In an
u	nmyelinated axon?		
	meters/sec in a	myelinated axon	
	meters/sec in a	n unmyelinated axon	
11.	How long are axons?		
	■Some are less than a millimete	er (in brain)	
	others like ones in the legs car	n be over a meter long	
12.	What are neuroglial cells?		
	Cells of the nervous system th	at are	
	Help with framewo	ork, production,	and clean up (phagocytosis)
	Microglial cells,	, Astrocytes, Ependymal	cells, Cells
13.	Name 3 structurally differen	t neurons.	
	1 – one inj	out (dendrite), one output	(axon); eyes, nose, ears
	2 – one ou	tput with 2 branches (fuse	d dendrites and axon);
	most neurons	of	
	3 – many i	inputs (dendrites), one out	put (axon); most in
14.	What are the 3 types of func	tionally different neuror	is?
	1 Neurons	- receive sensory informat	tion
	2 – only fo	ound in, links bet	ween neurons
	3 Neurons	- stimulate muscles or gla	nds
15.	What is an action potential?	_	
	■ and	that sends an electrica	al impulse down an axon
	Action potentials cause	release at the	synaptic that
	signals another neuron to		
16.	Why are electrolytes importa	ant in your diet?	
	■ , , , and	are ions involve	ed in an action potential
17.	Describe the major events of	f an action potential.	
	a. Neuron membrane at	potential (-70 m	v);
	i. Na+ ions		<i>,,</i>
	b. stimulus	s received (-55 mv);	
	i. Lowest level of	needed to cau	se a neuron to fire
	c. Na+ channels in membrane	and Na+ ions r	ush
	d. Membrane is		
	e. K+ channels in membrane	and K+ ions rus	'n
	f. Membrane is		
	g. Wave of	travel down the axon \rightarrow cal	lled a
	g. marc or		

18. Draw an axon when it is polarized (resting) and when it is depolarized (firing). Label Na+ <u>http://www.blackwellpublishing.com/matthews/actionp.html</u>

19.	Are action potent	ials "all-or-none"	responses?	
■_ (,	:		
■(Unce the	is reached	the axon	
20.	Do neurons touch		lad the	
21	What happons wh	a (a)	ieu lileyap).
ZI. ■	The synance releases		which signals the payt call t	o fire
22	How many types	of nourotronomitt	, which signals the next cell t	
			<u> </u>	ist / ann
22. ai	ve their <i>location</i> a	nd <i>major action</i>	ters are found in the body? I	List / and
∠∠. gi ∎/	ve their <u>location</u> a About tyr	nd <u>major action</u> .	ters are found in the body? I	LIST / and
∠∠. gi ∎/ 1.	ve their <u>location</u> a About typ	nd <u>major action</u> . Des – CNS, PNS – mus	cle contraction at	iunction
∠∠. gi ∎/ 1. 2.	About types	nd <u>major action</u> . Des CNS, PNS - mus - CNS, PNS -	cle contraction at, feeling	junction
∠∠. gi ∎/ 1. 2. 3.	About types types the second s	nd <u>major action</u> . Des CNS, PNS - mus CNS, PNS - CNS, PNS -	cle contraction at, feeling responses, addictio	junction
∠∠. gi ∎/ 1. 2. 3. 4.	About types types the second s	nd <u>major action</u> . Des CNS, PNS - mus CNS, PNS CNS, PNS - CNS, -	cle contraction at, feeling responses, addictio sense	junction
22. gi ∎/ 1. 2. 3. 4.	ve their <u>location</u> a About typ regulation,	nd <u>major action</u> . Des CNS, PNS – mus CNS, PNS – CNS, PNS – CNS –	cle contraction at, feeling , feeling responses, addictio sense,	junction
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22. gi 1. 2. 3. 4. 5. 6. 7. 23.	Ve their <u>location</u> and About types the interview of the interview	nd <u>major action</u> . pes CNS, PNS – mus CNS, PNS – CNS – CNS – CNS – body's na CNS CNS CNS CNS, PNS –	cle contraction at, feeling , feeling responses, addictio , sense, tural tural and memory, and _ tters?	junction
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22. gi ∎/ 1. 2. 3. 4. 5. 6. 7. 23.	<pre>ve their location a About typ regulation, How do drugs affe Some Nicotine binds to Some Cocaine increases</pre>	nd <u>major action</u> . Des CNS, PNS - mus CNS, PNS CNS CNS - body's na CNS - body's na CNS CNS CNS, PNS CNS, PNS CNS, PNS Dinds to endorphi <u>neurotransm</u>	cle contraction at, feeling	junction
22. gi 1. 2. 3. 4. 5. 6. 7. 23. ∎\$	<pre>ve their <u>location</u> a About typ regulation, How do drugs affe Some Nicotine binds to Some Cocaine increases Ecstasy increases</pre>	nd <u>major action</u> . Des CNS, PNS – mus CNS, PNS – CNS – CNS – body's na CNS – body's na CNS CNS CNS CNS to endorphi 	cle contraction at, feeling	junction
22. gi 1. 2. 3. 4. 5. 6. 7. 23.	<pre>ve their location a About typ regulation, How do drugs affe Some Nicotine binds to Some Cocaine increases Ecstasy increases Some</pre>	nd <u>major action</u> . Des CNS, PNS - mus CNS, PNS CNS CNS - body's na CNS - body's na CN	cle contraction at, feeling	junction
22. gi 1. 2. 3. 4. 5. 6. 7. 23.	<pre>ve their location a About typ regulation, How do drugs affe Some Nicotine binds to Some Cocaine increases Ecstasy increases Some Alcohol binds to</pre>	nd <u>major action</u> . Des CNS, PNS – mus CNS, PNS – CNS – CNS – body's na CNS – body's na CNS CNS, PNS – ect neurotransmit <u>neurotransm</u> binds to endorphi <u>neurotransm</u>	cle contraction at, feeling	junction
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22. gi 1. 2. 3. 4. 5. 6. 7. 23. 23.	<pre>ve their location a About</pre>	nd <u>major action</u> . Des CNS, PNS mus CNS, PNS CNS CNS CNS body's na CNS body's na CNS CNS, PNS ect neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite neurotransmite CNS	cle contraction at, feeling	junction
22. gi 1. 2. 3. 4. 5. 6. 7. 23. 23. 23.	ve their location About	nd <u>major action</u> . Des CNS, PNS - mus CNS, PNS CNS - MS CNS - body's na CNS - body's na CNS - body's na CNS - MS CNS, PNS CNS, PNS CNS CNS, PNS CNS	cle contraction at	junction n,

25. Draw and l of afferent	abel the cross s neurons and ef	section of the spinal co fferent neurons?	ord. What is the function
■Afferent neuro	ns -	neurons that carry	/ stimuli to the spinal cord
and brain for ar	nalysis		
■Efferent neuro	ns -	neurons that carry	impulse back to muscle for
a response		,	·
■ <i>D.A.V.E.</i> =		,	
■ <i>M.E.S.A.</i> =			
26. Explain wh	at happens in a neuron rec	eives info (tack) and sen	ds it to
	in spinal co	ord connects	neuron to motor neuror
•	neuron sen	ids signal to muscle to	!
27. How do pa	in killers work?		
■Usually block		by preventing	release or binding
■Ex. Codene			
28. Are there p	eople born wit	hout the ability to feel	pain?
■ ■CIPA - congen	ital	to	with anhidrosis
■Genetic diseas	se that affects		
■Sufferers feel	no	or extreme	
29. What is a r	eurotoxin?		
■A	that affe	cts the	
■Fither causes	neurons to fire	0r	them from firing.
■Fx. tetanus. p	ufferfish	0.	
30. List the 12 c	ranial nerves.	How can you rememb	er them?
1.	(I)	7.	(VII)
2.	(II)	8.	(VIII)
3.	(III)	9.	(IX)
4	(IV)	10	(X)
5	(10) (\/)	11	(XI)
6	(V)	12	(XI)
0	(VI)	12.	(XII)
31. How much	does the brain	weigh?	
	IDS.		
32. What are t	ne meninges of	the brain? what is mo	eningitis?
■ I nere are	meninge	s that cover the brain	
1	oute	er hard layer	
2	mide	dle "spider web like" laye	r
3	close	est to the brain	
Meninges "		" the brain	
Meningitis is a	n	of the meninges th	at can beand
it often occurs o	on		
especially			
33. What fluid	acts as a shock	absorber and cushior	ns the brain and spinal
cord?			-
■		(CSF)	
34. What are t	he ventricles of	the brain? What is hv	drocephalus?
■	(CSF) fille	d of	the brain
	• •		

■CSF is not	in the	space and builds up in
Brain damage will	occur if a	is not inserted to drain fluid to stomach

35. Draw, label and give the function of the four lobes of the brain

36. Why do <u>ALL</u> teenagers make stupid mistakes?

- Why do <u>ALL</u> teenagers make stupid mistakes?
 Because the ______ cortex, involved in ______and decision making doesn't fully mature until about ______ years old. ■Teenagers rely primarily on their ______, a more primitive part of the brain, for ______making rather than their ______cortex.
- 37. What are the main characteristics of Alzheimer's?
 - ■Kills ______people each year
 - Ieading cause of death in the U.S.
 - Symptoms include...
 - ____loss
 ___loss
 Disorientation of _____and _____
- Difficulties with _____, ___, ____, ___, ____, ___, ____, ___, ___, ____, __, __, ___, _, What is the function of the following parts of the brain: 38.



1	=	perception, emotion, t	thought, planning,	reasoning, etc.
2	misnheres of cerebra	l cortev		right and left
3		monitors info from th	e autonomic N S a	and controls
	tuitary gland regulate	es sleen and annetite		
4	taitai y giana, regulata – t	ransmits electrical sid	anals from the ever	s to the brain
5		secretes hormones th	at control growth	pregnancy and
	ildhirth metabolism	sex organ function	nd water regulation	n
6	– [–]	R laver protective cov	ering of the brain	
7		sensory relay station		
8		hard bony protection	for the brain	
9		niological clock circad	lian rhythms	
10		tree of life" found on	the cerebellum	
11		coordinates moveme	nt by connecting se	woral narts of the
	ain motor learning		ine by connecting se	
12	- _	oundle of nerve fibers	that carry messag	es to and from the
12. <u> </u>	in		that carry messag	
13	- (controls breathing be	artheat and other	autonomic
10. <u> </u>	nctions also controls	vomit couch sneeze	swallow suckle r	oflovos
1/		also controls breathin	a heart rate main	CNS/DNS rolay
	nter may be involved	t in dreaming	g, ficare race, filam	cho/rhoredy
30 W	hat is a sulcus? Wh	at is a gyrus?		
-	aro th		in the brain	
	are the		_ III LIE DIAIII	on the brain
40 W	hat do Michael 1 Fo	v and Muhammad	Ali have in comm	on the brain
■Both	have	Disease		
■Dise:	ase is caused by	Discuse and		factors
	neur	and _ ons die off		
■	near		ntoms such as	
	01			
-				
	hat are the prime	motor contox and	ha primany come	toconcorr
41. W	nat are the primary		the primary soma	tosensory
CO	rtex? what structur	re separates them?		
•	moto	r cortex – senas	mov	ement commands
from t	ne	_ to the	(corticospir	hal tract)
■	corte	 receives tactile 	informa	tion from the skin
■Both	have a body map cal	led a	("little man")	
■The _			、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、 、	
42. W		S(eparates them	
	hat is hemisphere d	lominance?	eparates them	
■In	hat is hemisphere d % of popu	lominance?	eparates them	
■In ■	hat is hemisphere d % of popu hemisphere is d	lominance? lation lominant for reading,	writing, speaking,	analytical
■In ■	hat is hemisphere d % of popu hemisphere is c hemisphere dor	lominance? lation lominant for reading, ninant for	eparates them writing, speaking, experience (art	analytical), musical

43. What is epilepsy? What are some treatments? ■The abnormal, random firing of groups of neurons

■Can cause...

■		■	
•		■+	
Treatments include			
•		-	
44. What is autism? What	at is an Autistic Savan		
Δ wide	of disorders		
=Symptoms include			
■Symptoms include			
∎Impaired			
■Lack of			
■ D	ehaviors		
■About 10% of those w	ith autism are		
They have an extraor	linary ability in	, calculations,	, or music
■Ex			
45. What is Capgras syn	drome?		
■Sufferers are convinced	that their	have been replace	ced by
or		I	,
Occurs because of a neu	ral disconnection betwee	n	recognition
centers and	centers in the bra	in	recognicion
	om and	cortox are disconn	voctod
■ Syst	familiar but that		ecteu
		IE	ening that
normally occurs when you	see them is gone		
■EX/	mo	VIES	
46. Do some people tast	e colors or see smells?	?	
■is a	disorder where	neurons g	et crossed,
so patients' hearing, seein	g, smelling, tasting, touc	ching senses are	wired
47. What does "brain pla	asticity" mean?		
■The brain has the ability	to a	and adapt to new	
■Neurons actually	(form new connection	ons and break off old o	nes) to new
,			
Ex Learning new	skills	skills	
48 What is phantom lim		51(115	
■Dainful or non-nainful	comin	a from an	limb
		g nom an	
■Occurs in 70-80% of	······································		、
■Caused by	cortex reorganiza	tion (brain)
Neurons in the area devo	oted to sensing the limb f	form new connections	while
maintaining some of the o	Id ones causing cross		
Ex. Touching an area on	the may cause	e sensation in the amp	outated
49. What is a conditione	d stimulus?	-	
■Previously	stimulus that is re	peatedly	with
an , <u>sti</u>	imulus and after time elic	cits a	response.
Ex dog →	naired with	and after time hell elicit	ts salivation
50 What is an EEG?			
■Measures			

51. Why do we	need to sleep? What	at are the five stages of slee	ep?
■To	from the day	's activity	_ (repair muscles)
and	(learning an	d memory)	
■ <u>Stage</u>	 light sleep, 	easily, sudden m	uscle jolts
■ <u>Stage</u>	– muscle	stop, % of sleep	time
■ <u>Stage</u>	 transition to 	sleep	
■ <u>Stage</u>	 deep sleep, v 	if awakened here, _	
night terrors,	0C0	cur here	
■ REM – Rapid _		, visual dreams,	looks the same
as waking,	% of sleep time		
52. How long is	s a complete sleep o	ycle in the average human	? How long do
we need to	sleep?		-
	mins		
Depends on			
53. Why do we	dream?		
Most scientists	think REM sleep help	s and	
■Dreams may b	he due to the	's attem	pt to make sense
, of	signals it recei	ves from the and	
54. Which two	mental disorders do	es Hollywood always get n	nixed up?
	and	, , , ,	disorder (MPD)
■may be	, have	,	thinking
,	,	unresponsive	5
	·	disorder (Dissociative ide	entity disorder)
■Two or more	2	that take over the persons	, ,
■More likelv t	han any other disorde	er to end in	
■Sometimes	set on by extreme	or physical	
55. What is a c	erebral aneurysm?	Lack of oxygen to a tissue i	s called? Death
of that tiss	ue from the lack of	oxygen is called?	
	or out o	of part of the wall of a vein or a	artery in the brain
■Causes sudder) severe	pare of the trail of a vent of a	
	vision loss loss	///	
■Emergency tre	atment to prevent or	stop any	
	and	may occur and caus	e loss of function