Review for Unit Test #2: Behavioural Emergencies

1. Label the following diagram of a neuron:



- 2. Label the parts of the synapse. Describe the series of events that takes place when an electrical impulse travels down the axon.
 - an electrical impulse travels down the axon of the pre-synaptic neuron
 - the electrical impulse changes the membrane of the vesicles and causes them to move to the end of the terminal button
 neurotransmitter
 - the vesicles release their neurotransmitters into the synapse
 - the neurotransmitters migrate across the synapse and bind to receptors on the post-synaptic neuron
 - when enough neurotransmitter is bound to the receptors, it stimulates the post-synaptic neuron to fire and an electrical impulse travels down the dendrite toward the nerve cell body
- 3. If a person is behaving in an unusual or unacceptable manner, what are four signs or symptoms that may indicate that there is a medical problem?
 - the change in the person is sudden and unexpected
 - there may be an unusual odour on their breath if they are diabetic
 - their pupils may be dilated, constricted or unequal in size if they have had a stroke or a concussion
 - their face may be uneven or one side may seem droopy if they have had a stroke
 - they may be drooling or have excessive salivation
 - they may have lost bowel or bladder control if they have had a stroke or epilepsy
 - they may be unable to speak or slur their words if they have had a stroke
 - they may have a very high fever which may be causing seizures



4. Explain how hyperglycemia is different from hypoglycemia. Which one is more dangerous in the short term? Why?

Hyperglycemia means that blood sugar levels are too high from either having too much sugar or not enough insulin

- hyperglycemia causes the person to be very thirsty, their skin may be red and flushed and they are usually **NOT** confused or drowsy
- hyperglycemia is not too dangerous in the short term, but high levels of sugar in the blood can cause damage to the eyes (retinas), kidneys, coronary arteries and brain in the long term
- treatment: give them insulin

Hypoglycemia means that blood sugar levels are too low from having either not enough sugar or too much insulin

- hyperglycemia causes the person to be very weak, drowsy, confused and pass out
- they have very similar symptoms to being drunk and may be aggressive or slur their speech
- they may go into "diabetic shock" so their skin is grey, cold and clammy
- they may start to have seizures
- hypoglycemia is VERY dangerous in the short term. Because the brain is not getting any sugar, the person may go unconscious. If they are not treated, they will slip into a diabetic coma and die.
- treatment: give them sugar (glucose solution between the cheek and gums)
- 5. List five different events or conditions that may cause a seizure.
 - high fever (called febrile seizures, usually in children)
 - meningitis (inflammation of the membranes around the brain)
 - concussion (trauma to the head)
 - stroke (bleeding or ischemia in the brain)
 - extreme hypertension (high blood pressure)
 - brain tumour or cancer
 - hypoxia (low blood oxygen)
 - hypoglycemia (low blood sugar)
 - alcohol or drug intoxication
 - epilepsy (excessive electrical activity in the brain)
- 6. You are an off-duty firefighter. You see a crowd of people in a public park so you walk over to see what is happening. They are watching a young man who is having a tonic-clonic seizure. List five things that you should do. List three things that you (or anyone else) should NOT do.
 - tell people to move away- assign people to crowd control if needed
 - ask how long the person has been seizing. If it has been for more than 5 minutes, call 911
 - loosen any tight clothing and eye glasses
 - monitor to make sure they are still breathing
 - remove anything sharp, hot or dangerous that they may hit
 - put something soft like a jacket under their head
 - cover their lower body with a jacket (to protect their dignity if they lose bladder or bowel control)
 - wait while the seizure passes, do not restrain
 - when done, roll into recovery position. Monitor and reassure them

If a second seizure begins before the person is recovered from the first seizure, or if the seizure lasts for more than 5 minutes, call 911!

You should NOT: videotape the person having a seizure or allow anyone else to, restrain the person in any way while they are seizing (do not hold their head or any part of their body), do NOT put anything in their mouth and do not leave them alone

- 7. What neurotransmitter is decreased in the brains of people with Parkinson's disease? dopamine
- 8. List four different ways that a drug can work to increase the level of a neurotransmitter such as serotonin or dopamine in the synapses in the brain.
 - a drug may cause a person's neurons to make more neurotransmitter
 - a drug may cause a person's neurons to release more neurotransmitter
 - a drug may cause a person's neurons to make more receptors for the neurotransmitter
 - a drug may cause a person's neurons to make less enzyme to break down the neurotransmitter
 - a drug may cause a person's neurons to not reabsorb neurotransmitter from the synapse
- 9. What are four common symptoms of major depression?
 - profound sadness that lasts longer than two weeks
 - sleeping more or less than normal
 - eating more or less than normal
 - lack of interest in sex, socializing or other activities that were previously enjoyed
 - feelings of fatigue and tiredness, even after sleeping all night
 - feelings of worthlessness and apathy (not caring about anything)
 - poor hygiene (personal cleanliness)
 - thoughts of suicide
- 10. What are four common symptoms of schizophrenia?
 - auditory hallucinations (hearing voices)
 - visual hallucinations (seeing things)
 - delusions and psychosis (out of touch with reality)
 - social withdrawal (do not want to be with people)
 - may have confused speech ("word salad" their words are mixed up and meaningless)
 - may be paranoid (feel that they are being followed or hunted)
- 11. What are four common behaviours of people with bipolar disorder when they are feeling manic?
 - reckless behaviour may be sexually promiscuous and go on a spending spree
 - very high energy don't feel the need to sleep or eat
 - speak very quickly and can't be interrupted (a "push of speech")
 - may become psychotic (lose touch with reality)
 - may feel invincible (that they can't be hurt)
 - their minds are racing uncontrollably so they can't settle down or follow a conversation
- 12. Explain why obsessive-compulsive disorder (OCD) is classified as an anxiety disorder.
 - people with OCD have obsessions and compulsions these are thoughts and behaviours that they don't want but can't control
 - common obsessions and compulsions include: excessive hand-washing, checking to make sure doors and windows are locked, rituals for getting dressed or eating meals, making lists or counting repetitively
 - these obsessions and compulsions take over their lives sufferers have trouble getting ready for school or work, or carrying out normal daily tasks
 - people with OCD know that their thoughts and behaviours are abnormal, but they can't control them
 - the idea of not performing their ritual or behaviour causes sufferers incredible stress and this is why OCD is an anxiety disorder

	Type I Diabetes		Type II Diabetes
•	also known as juvenile diabetes because it usually begins in childhood	•	also known as adult onset diabetes because it usually begins in adulthood
•	is often triggered by an infection (a cold or 'flu) and when the immune system fights this infection, it also attacks and destroys the cells in the pancreas that make insulin the person can no longer make any insulin at all, so they must take insulin shots or wear an insulin pump	•	is often associated by obesity and lack of exercise the pancreas makes insulin, but it does not make enough insulin or the body does not respond to it properly (this is called insulin resistance) the person can make insulin, so they take pills so their pancreas makes and releases more insulin
•	Type I diabetes usually comes on very suddenly and severely	•	Type II diabetes usually comes on slowly and gradually over many years
•	if the person eats too much sugar or does not take enough insulin, they will become hyperglycemic (their blood will have too much sugar)	•	if the person eats too much sugar or does not take enough pills, they will become hyperglycemic (their blood will have too much sugar)
•	if the person does not eat enough food or they take too much insulin, they will become hypoglycemic (their blood will have too little sugar)	•	if the person does not eat enough food or they take too many pills, they will become hypoglycemic (their blood will have too little sugar)
•	Type I diabetes can NOT be cured; the person must take insulin for the rest of their life	•	Type II can be reversed by losing weight and exercising

13. How is Type I diabetes different from Type II diabetes?

14. Your friend was diagnosed with major depression and was prescribed Prozac. She has been taking the Prozac for three months and feels much better. Because she now feels better, she wants to stop taking her medication. What should you tell her?

Your friend feels better because the medication is working and she now has enough serotonin in her synapses. If she stops taking the Prozac, she will go back to having less serotonin again so her depression will return. You should tell her to stay on the Prozac and to talk to her doctor before she quits taking her medication.

	Sympathetic Nervous System	Parasympathetic Nervous System
Major neurotransmitter	epinephrine	acetylcholine
Phrase to describe it's action	"fight or flight"	"rest and digest"
Effect on heart rate and why	increases heart rate to increase oxygen supply to brain and muscles	decreases heart rate because demand for oxygen is lower
Effect on blood pressure	increases blood pressure to increase blood and oxygen supply to brain and muscles	decreases blood pressure because demand for oxygen is lower
Effect on blood flow to brain	increases blood flow to brain to increase alertness	decreases blood flow to brain
Effect on blood flow to muscles	increases blood flow to muscle to provide more oxygen for exertion	decreases blood flow to muscle because less oxygen is needed
Effect on pupils and why	pupils dilate to let in more light so the person can see better to escape from danger	pupils constrict because extra light is no longer needed
Effect on bronchioles and why	bronchioles dilate and open to increase air exchange so more oxygen is available in the lungs for gas exchange	bronchioles constrict and decrease the amount of air exchanged with each breath because less oxygen is required
Effect on intestines	intestines slow down so they don't use as much oxygen and so the person does not need to go to the bathroom during an emergency	intestines increase in motility so food can be digested and wastes can be passed

15. Complete the following chart to compare the sympathetic and parasympathetic nervous systems: