1. I fall down and hit my head and lose consciousness at exactly noon. I damage my hippocampus. What will the pattern of my memories of the day likely be?

A) I will remember events from 11:00 better than the events from 11:59.
B) I will remember events from 11:59 better than the events from 11:00.
C) I will remember events from 11:00 equally as well as events from 11:59.
D) I will remember nothing from the entire day.
E) I will only remember my name.

2. What is the main reason I cannot get radioactive glucose sent overnight from a facility on the other side of the USA? Assume no governmental regulation of radioactive material.

A) Because fMRIs are very expensive.
B) Because PET scans create gamma rays.
C) Because EEG machines will not detect radioactive materials.
D) Because radioactive glucose decays quickly.
E) Because radioactive shipments require extensive shielding.

3. If there is no bias in an observer in a signal detection theory experiment, and the hit rate is 55%, then what is the false alarm rate?

A) 50%
B) 45%
C) Cannot determine with this information.
D) 55%
E) 5%

4. If the hit rate is 55% and the false alarm rate is 33%, then we can conclude that the d' is _____ and the threshold is _____

A) Negative, above the unbiased threshold.
B) Negative, below the unbiased threshold.
C) Unknown, unknown.
D) Positive, above the unbiased threshold.
E) Positive, below the unbiased threshold.

5. I am using fMRI to study activation of the Hippocampal Formation and explicit memory. I am using a subtraction study where the experimental condition is remembering word lists. In the control (baseline) condition, I tell the subjects to do nothing. What is a problem with this as a control condition?

A) The Hippocampal Formation is not involved in explicit memory formation.
B) There is no problem -- subjects can easily empty their mind in an experiment.

C) None of the other answers.
D) Subjects are likely to activate their memories when given the instruction to do nothing.
E) The Hippocampal Formation is too deep in the brain to image with fMRI.

6. If you are a heterosexual woman who is in the fertile part of your reproductive cycle, then _____.

A) You will be greatly attracted to males with asymmetrical faces and bodies, but only if your partner is symmetrical.
B) You will be greatly attracted to males with asymmetrical faces and bodies, but only if your partner is asymmetrical.
C) None of the other answers.
D) You will be greatly attracted to males with symmetrical faces and bodies, but your attraction will be less if your partner is symmetrical.
E) You will be greatly attracted to males with symmetrical faces and bodies in all cases.

7. Which statement about visual agnosia is true?

A) Patients with associative agnosia can copy objects.
B) Patients with apperceptive agnosia can recognize objects.
C) Patients with apperceptive agnosia can copy objects.
D) Patients with associative agnosia can recognize objects.
E) None of the other answers.

8. Which of the following is a domain general function that might support language learning?

A) Formant transitions
B) Statistical learning
C) Categorical perception
D) Abstract thought
E) Innate language module

9. What cognitive function could be located in the brain using a parametric fMRI study?

A) Peanut butter and jelly (this is not the answer -- just to lighten the mood a little bit).
B) Episodic Memory
C) Working Memory
D) Object Recognition
E) Attention

10. Which animal has the largest cephalization index of ALL animals? (Hint: think carefully about which species are animals).
A) None of the other answers.

B) Whales
C) Elephants
D) Dolphins
E) Chimps

11. The mirror-box treatment is used to _____.

A) None of the other answers.
B) Reduce phantom pain.
C) Reduce the size of phantom limbs.
D) Increase flexibility of phantom limbs.
E) Reorganize the cortex of losing a limb.

12. The results of the experiments on the English, Russian and Setswana speakers were that _____ and this was support for the _____ of the linguistic relativity hypothesis.

A) Different speakers had different names for colors, strong version.
B) Different speakers had similar names for colors but they grouped colors in different ways, weak version.
C) Different speakers had similar names for colors but they grouped colors in different ways, strong version.
D) None of the other answers.
E) Different speakers had different names for colors but they grouped colors in similar ways, weak version.

13. If the signal is a visible hand in a well lit room, then what would d' be in this task?

A) Well above 3
B) About 2
C) Cannot determine with this information.
D) Close to 0
E) Near the unbiased threshold

14. In which task does performance improve dramatically when cheater detection is involved?

A) Wason Selection Task
B) Wisconsin card sort task
C) Signal detection task
D) Visual search task
E) Working memory task

15. Which cells serve the function of inhibition in the network that detects edges?

A) Bipolar cells
B) Cones
C) Rods
D) Ganglion cells
E) Horizontal cells

16. Which of the following is not a characteristic of language?

A) Arbitrary
B) Structured
C) Generative
D) Dynamic
E) Artificial

17. How does categorical perception help us comprehend speech?

A) None of the other answers.
B) It sharpens the boundaries between words.
C) It sharpens the boundaries between linguistic categories.
D) It sharpens the boundaries between sentences.
E) It sharpens the boundaries between morphemes.

18. How would our color perception change if the cones were very narrowly tuned?

A) We could only see a small part of the electromagnetic spectrum.
B) All colors would appear to be the same.
C) We would be completely blind.
D) We would be red-green color blind.
E) We would be blue-green color blind.

19. Why would an observer have a threshold well below the unbiased threshold in a signal detection task?

A) If misses are much more expensive than false alarms.
B) Two of the other answers.
C) If false alarms occur when the observer incorrectly responds 'signal'.
D) If hits are worth a lot less than correct rejections.
E) If there are a lot more noise trials than signal trials.

20. What are the two components of signal detection that determine hits and false alarms and which of these two components (if any) can be changed (within a single SDT experiment)?

21. What are the computational limitations of a 2-layer neural network (e.g. Perceptron) – name 2 problems it cannot do and 2 problems it can do? How can we improve a perceptron so that it can solve many more kinds of problems?

22. Imagine that I (the professor) have developed a way to download all of the knowledge and abilities of my mind into a new supercomputer called ALAN. ALAN has ALL of my capabilities (including learning), it can think exactly as I do, etc. Would ALAN be able to pass the Turing Test? Why or why not?

23. In addition to the problem of an idiot judge, what are two criticisms of the Turing test? Extra answers will reduce your score.

24. Name 4 properties of neural networks mentioned in lecture which make them useful. Only the first 4 will be graded.

25. Write a valid FOUR word English sentence where every word is the same. Be careful -- only FOUR words. Not five words.

26. Write a sentence that illustrates the 'generative' characteristic of human language.

27. According to lecture, what are two reasons that left hemisphere damage is usually more emotionally negative than right hemisphere damage?

28. Briefly explain the results of the 'sweaty t-shirt experiment' that shows how our genes influence our mate preferences.

29. Describe the basic architecture of a neural network. In other words, what are the components and how do they function?

30. How does a WADA test work and what does it reveal?

31. In speech comprehension, the relative frequencies of the first two _____ determine vowels.

32. What is the basic structure of our color perception system? In specific, what are the different types of color-detecting cells and how do they work together to help us perceive color?

33. In class, we talked about on-center/off-surround cells. But there are also off-center/on-surround cells. Describe the shape of a Difference of Gaussians (DOG) function for an off-center/on-surround receptive field.

34. Under what circumstances will a person perceive the sound "FA" even though the actual sound is "BA"?

35. Write a valid FIVE word English sentence that you would ask as a judge in a Turing Test. Write a valid EIGHT word English sentence that you would respond to that question if you were a human showing that you were not a computer. Any sentence that does not have the exact number of words will get 0 points.