Physiology Interview Questions And Answers Guide.

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Physiology Job Interview Preparation Guide.

Question # 1

Explain Does the length of the line change firing rates for simple and complex cells or does firing only change with orientation of the cells?

Answer:-

The cell would fire more for a line that fills its receptive field than for a shorter line. But unlike end stopped cells, it will not fire less for a very long line that extends beyond the receptive field.

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Question # 2

Please explain what would an inhalation, ingestion exposure as well as to the eyes of Butane, Diethylene glycol monobutyl ether, Monoethanolamine (MEA), & Sodium Hydroxide do to the human body?

Answer:-

Sodium hydroxide is a very caustic substance - severe burns on skin contact, can cause severe eye irritation and burning - can severely damage surface of eye causing blindness (permanent), severe burring on ingestion and inhalation.
Butane is a gas - it is very toxic if inhaled - acts like an anesthetic - can stop person breathing very quickly.
Diethyleneglycol monobutyl ether is less acutely toxic but does have long-term toxicity on various organs.

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Question # 3

Explain How is the concentration of drugs in human plasma defined?

Answer:-

Some drugs bind extensively to plasma proteins (Warfarin binds 99%) whereas others have virtually no binding.
Extraction depends on the type of drug - there are different standard techniques for acidic, basic, and neutral drugs - and, indeed, some drugs need specific extraction techniques.
It is important for you doing bioequivalence studies to know exactly the proportion of drug extracted but such controls are again specific for each drug and use specific marker compounds.

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Question # 4

Explain IN XeF4, the bond angle between F-Xe-F is _____.?

Answer:-

Answer is 90 degrees

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Question # 5

Explain How do you know which ganglion cells activities increase or decrease at the edge? On the web one ganglion cell increasing activity at the edge and one decreases, but how can you tell?

Answer:-

The receptive fields of two on center ganglion cells are shown. In the previous diagram we saw that if all the receptive field were in the light or the dark there is little change in activity. This is because only the only part in the light is part of the inhibitory surround. The one on the top increases its activity. This is because only the only part not in the light is part of the inhibitory surround. Thus there is less inhibition of this cell.

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Question # 6

Explain How is the calculation derived for a drug to be bioequivalent with other? On which base the limit is fixed as 80-120% for a drug to be bioequivalent. What is meant by 90% confidential interval?

Answer:-

To be "bioequivalent" two preparations or drugs need to give the same biological effect.

The usual "experimental error" put on this is 20% - thus, 80-120% is considered "bioequivalent.?
90 percentage confidence interval means that statistically it is 90% certain that the results are equivalent.

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Question # 7

Explain What are the units of bond length?

Answer:-

The intermolecular distance between the bonded atoms in a molecule is called bond length and the units are Angstrom units (A0)

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Question # 8

Explain What is the order of C-H bond length in C2H6 and C2H4 and C2H2?

Answer:-

c2h6>c2h4 >c2h2

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Question # 9

Explain if a patient was admitted to the hospital with chronic obstructive pulmonary disease. His PO2 was 55 and PCO2 was 65. A new resident orders 54% oxygen via the venturi mask. One hour later, after the oxygen was placed, the nurse finds the patient with no respiration or pulse. She calls for a Code Blue and begins CPR. Explain why the patient stopped breathing.?

Answer:-

Oxygen should have been given and has been rightly done. The cause of cessation of breathing could be due to a myocardial infection, respiratory arrest, cardiac arrest and many other causes. Nothing can be said about it without investigative reports.

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Question # 10

Please tell me about some drugs that can cross the blood brain barrier?

Answer:-

Any drug that is designed to be given orally, i.m. s.c. or i.v. and acts on the brain MUST cross the blood-brain barrier.
E.g. Opiates, anxiolytics, SSRI's, anti-psychotics
Drug needs to be lipid (fat) soluble to cross the BBB.

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Question # 11

Explain When we do liquid extraction, what is the effect of adding 10%acid or any base and how do we know which has to be added and up to which concentration or micro liter level can we add such buffers? If any gel formation occurs at the time of extraction, how will it affect the analysis? Shall we continue the extraction with the same or should we drop that method?

Answer:-

The idea of adding acid/base is to change the lipid (and therefore organic solvent) solubility of the components you want to extract.
For example, a fatty acid is more soluble in water as a salt (and, thus, in basic conditions) whereas it is largely insoluble in water in its uncharged state (in acid conditions). So adding acid to the solution of fatty acid salt in water will render it water-insoluble and, thus, move it from the water to the organic solvent.
This is a standard extraction technique for organic acids and bases. Also, note that exact concentrations of acid/base need to be calibrated for each extraction.
Gel formation is difficult to deal with, as you cannot be sure of the extraction (difficult to mix and separate). We would suggest changing the method unless you can show a decent extraction or the description of the method says to expect a gel formation.

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Question # 12

What is bond angle?

Answer:-

The angle between the lines joining the nuclei of the bonded atom with a central atom is called bond angle.

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