

HSS 307: Human Physiology

Quiz 2

Name _____

Please circle the correct response(s). There may be 0-4 correct responses for each item.

1. The blood-brain barrier:
 - a. Divides the central from the peripheral nervous system (FIG. 9.4 AND P.221-23; BBB DIVIDES CAPILLARY BLOOD FROM INTERSTITIAL FLUID OF THE BRAIN)
 - b. Creates a barrier between an intracellular and an extracellular fluid (P.223; BBB CREATES BARRIER BETWEEN BLOOD (ECF) AND THE INTERSTITIAL FLUID OF THE BRAIN (ALSO AN ECF))
 - c. Allows glucose to cross so that its concentration is roughly the same on both sides (TABLE 9.1 SHOWS THAT GLUCOSE CONCENTRATIONS ARE NEVER EQUAL BETWEEN THE TWO)
 - d. Allows amino acids to cross via transcytosis (P.221 AND 223; AMINO ACIDS MOVE VIA FACILITATED DIFFUSION; TRANSCYTOSIS DOES NOT OCCUR IN THE CNS)

2. The crossed-extensor reflex:
 - a. Would be classified as cranial (P.236 AND 238; LEVEL OF INTEGRATION OCCURS AT THE SPINAL CORD)
 - b. Would be classified as somatic (P.236 AND 238; SIGNALS ARE SENT TO SKELETAL MUSCLE)
 - c. Requires action potentials traveling down the motor neurons to the quadriceps and hamstrings (FIG.9.20 AND P. 238; FOR CROSSED-EXTENSOR (NOT WITHDRAWAL), AP'S FOR QUADS BUT INHIBITION FOR HAMSTRINGS – WHICH MEANS HYPERPOLARIZATION AND NO AP'S)
 - d. Has no monosynaptic reflex pathways (FIG.9.20; ALL POLYSYNAPTIC)

3. Slow-wave sleep:
 - a. Generally requires less energy than REM sleep (TABLE 9.4 AND P.243; REM HAS HIGHER HEART, BLOOD PRESSURE, AND RESPIRATION RATES)
 - b. Is characterized by a greater level of homeostasis than REM sleep (P.243; REM IS CHARACTERIZED BY LOSS OF BODY TEMPERATURE CONTROLS – CLEARLY ONE OF THE ELEMENTS OF HOMEOSTASIS)
 - c. Shows EEG patterns of greater synchronization, greater amplitude and more wavelengths per second than REM sleep (FIG.9.25; GREATER SYNCHRO, AMPLITUDE BUT LOWER FREQUENCY THAN REM SLEEP)
 - d. Would induce fewer action potentials in motor neurons than REM sleep (P.243 AND TABLE 9.4; MUSCLE TONE MEANS MORE MUSCULAR INNERVATION WHICH MUST BE DUE TO ACTION POTENTIALS IN THE MOTOR NEURONS)