Psychology 101 Study Guide, Exam #2

Chapter 2: The Biological Mind

I. Imaging techniques of the brain
   a. CT: anatomical
   b. MRI: anatomical
   c. fMRI: functional
   d. SPECT and PET: functional
   e. EEG: functional

II. Anatomical/Structural Scans
   a. Structural Scans: CT
      i. CT = Computed Tomography and CAT = Computed Axial Tomography
      ii. Stroke
   b. Structural Scans: MRI
      i. T1-weighted and T2-weighted
   c. Experience-dependent neural plasticity
   d. Functional Scans: fMRI
   e. Functional Scans: PET
   f. Functional Scans: SPECT
   g. EEG: functional
      i. Epilepsy
      ii. Sleep

III. Asymmetries in the brain
   a. Contralateral representation of sensory & motor functions
   b. Left hemisphere
      i. language
      ii. Broca's area: left frontal
      iii. b. Wernicke's area: left temporal
   c. Right hemisphere
      i. spatial and pattern processing
      ii. cognitive maps
      iii. block design
      iv. face recognition
   d. Corpus callosum
      i. split brain patients

Textbook (Chapter 2):

- Focus on Table 2.1 and final portion of 2-4c on Right-brain Left-brain and Lateralization
IV. States of Consciousness
   a. What is consciousness?
      i. Selective attention
      ii. Voluntary control
      iii. Self-awareness
   b. The seat of consciousness in the brain
      i. Descartes' notion of the Pineal
      ii. Split-brain research
   c. Hemisphere preferences in split-brain
      i. Colors
      ii. Clothing
      iii. Faces
   d. What does split-brain research reveal about consciousness?
   e. Altered States of consciousness
      i. Unified sense of consciousness over time?
         1. Identity
         2. Memory
         3. Uninterrupted stream of consciousness
      ii. Dissociative Identity Disorder (DID)
         1. Perspectives on the Genesis of DID
            a. Post-traumatic Model
            b. Socio-cognitive Model
            c. DSM-5 Diagnostic Criteria
            d. The DID Study
               i. Procedure
               ii. “Was it on list B?”
               iii. Participants
               iv. Results
         2. Cognitive mechanisms in socially constructed DID
            a. Memory-constructive & reconstructive
               i. Encoding
               ii. Storage
               iii. Retrieval
               iv. Evaluation
            b. Mental representation

V. State & mood dependent memory
   a. State dependent
b. Mood dependent

VI. Hypnosis
   a. Relaxed state
   b. Focused awareness
      i. Aspects of hypnosis
         1. Posthypnotic suggestion
         2. Posthypnotic amnesia
   c. Fallacies of hypnosis
   d. Hypnosis characteristics
      i. Cessation of planfullness
      ii. More selective attention
      iii. Rich fantasy
      iv. Reality testing
      v. Suggestibility
      vi. Post-hypnotic amnesia

VII. Sleep and Dreams
   a. Types and stages of sleep
      i. EEG activity
         1. Beta activity
         2. Alpha activity
         3. Delta activity
      ii. Stages of sleep
         1. Stage 1
         2. Stage 2
         3. Stage 3
         4. Stage 4
         5. REM
      iii. Sleep stages
         1. Stage 1: Alpha
         2. Stage 2: Theta waves
         3. Stage 2: Sleep Spindles
         4. Stage 3-4: delta waves
         5. REM: beta waves
   b. Why do we dream?
      i. Wish fulfillment
      ii. Information processing
      iii. Physiological function
   c. When deprived of sleep
      i. REM rebound
   d. Individual differences in dreams
i. Defense mechanism
ii. State-dependent phenomenon

e. Lucid dreaming

Chapter 3: The Perceiving Mind

VIII. Sensation and Perception
a. Sensation
b. Perception
c. Top down vs. bottom up processing
d. Brain as scientist prisoner
   i. Brain senses only neural energy
   ii. Physical energy-transduction
e. Vision
   i. Eye receptors respond to light energy
   ii. Structure of the eye:
      1. Cornea
      2. Iris
      3. Lens
         a. Fixation reflex
         b. Near-sightedness & far-sightedness
         c. Accommodation
   4. Retina
      a. Layers of retina
         i. Light passes through:
            1. Vitreous humor
            2. Ganglion cells and bipolar cells
            3. To photoreceptors
      b. Receptor cells
         i. Rods
         ii. Cones
            1. Three types (unless colorblind)
            2. Blue, green, red
         iii. Blind spot
      c. Fovea
   5. Optic nerve
   iii. Vision-how it works
      1. Light energy causes chemical reaction
      2. Rods and cones send graded potentials
         a. To: bipolar cells and ganglion cells
         b. Ganglion cells carry action potential to CNS
      3. Axons from ganglion cells leave the eye via optic nerve
         a. Thalamus
         b. Primary visual cortex in occipital lobe
iv. Why different layers?
   1. Data reduction
   2. Feature detection

IX. Combining information in the brain
   a. The visual pathways
      i. Main pathway: ganglion cells optic nerve optic chiasm thalamus striate cx
      ii. Other pathways
   b. Receptive fields
   c. Multiple representations of images
   d. Depth Perception
      i. Size cues
      ii. Obstruction of some objects by others
      iii. Binocular disparity
   e. The human organism is designed to detect differences and change:
      i. brightness contrast
      ii. lateral inhibition
      iii. Contrast; microsaccades

X. Audition
   a. Characteristics of sound
      i. frequency determines pitch
      ii. Amplitude determines loudness
         1. Sound measured in decibels (dB’s)
         2. Logarithmic scale
   b. The ear
      i. Outer ear
      ii. Auditory canal
      iii. Eardrum
      iv. Bones of middle ear
         1. hammer
         2. anvil
         3. stirrup
      v. Oval window
      vi. Cochlea
         1. Two membranes
            a. Basilar vibrates
            b. Preferential vibration for frequencies
         2. Three fluid filled sections
         3. Hair cells
      vii. Semicircular (vestibular) canals
   c. So, how do we hear?
      i. Duplex theory of pitch perception
         1. Place
2. Vibration in synchrony with waveform
   ii. Sound localization
      1. Arrival time differences for lower tones
      2. Intensity differences for higher frequencies

Key Terms from the Textbook (Chapter 3):

- absolute threshold,
- audition,
- auditory nerve,
- basilar membrane,
- binocular cue,
- bottom-up processing,
- cochlea,
- cone,
- cornea,
- depth perception,
- difference threshold,
- feature detector,
- fovea,
- gate theory,
- gustation,
- iris,
- lens,
- monocular cue,
- olfaction,
- olfactory bulb,
- olfactory nerve,
- opponent process theory,
- optic nerve,
- optic tracts,
- organ of Corti,
- papillae,
- perception,
- psychophysics,
- pupil,
- retina,
- retinal disparity,
- rod,
- sensation,
- sensory adaptation,
- signal detection,
- somatosensation,
- taste bud,
- top-down processing,
- transduction,
- trichromacy theory,
- vestibular system,
- vision,