BIOL-1 Practice Test 02 — Answer Key

Modules 5-17: Membranes through Evolution

Part A: Multiple Choice Answers

Q	Answer	Explanation
1	C	Cell membrane = phospholipid bilayer
2	D	Active transport requires ATP
3	B	Hypotonic = water moves INTO cell
4	B	Enzymes lower activation energy
5	B	ATP is the energy currency of cells
6	B	Light reactions occur in thylakoid membranes
7	C	Calvin cycle produces glucose
8	B	Glycolysis nets 2 ATP
9	B	Krebs cycle occurs in mitochondrial matrix
10	A	Respiration produces CO2 and H2O
11	B	DNA replication occurs during S phase
12	C	Sister chromatids separate in anaphase
13	D	Meiosis produces 4 haploid cells
14	A	Crossing over occurs in prophase I
15	B	Mitosis is for growth and repair
16	B	Aa × Aa = 3:1 phenotypic ratio
17	B	DNA replication is semiconservative
18	C	Helicase unwinds DNA
19	B	AUG codes for methionine (start)

Q	Answer	Explanation
20	B	Translation occurs at ribosomes
21	B	PCR amplifies DNA
22	B	Gel electrophoresis separates by size
23	B	Homologous structures = common ancestry
24	B	Natural selection requires heritable variation
25	D	Evolution takes many generations

Part B: Fill in the Blank Answers

Q	Answer
26	fluid
27	osmosis
28	chloroplast
29	ATP
30	interphase
31	meiosis
32	genotypes/phenotypes
33	transcription
34	protein
35	mutation

Part C: Short Answer Key

36. Photosynthesis vs. Cellular Respiration:

- Photosynthesis: $CO_2 + H_2O + \text{light} \rightarrow \text{glucose} + O_2$ (builds glucose)
- Cellular Respiration: $\text{glucose} + O_2 \rightarrow CO_2 + H_2O + ATP$ (breaks down glucose)

37. Mitosis vs. Meiosis:

- Mitosis: 2 identical diploid cells; for growth and repair
- Meiosis: 4 unique haploid cells; for sexual reproduction

38. Central Dogma:

- DNA → RNA → Protein
- Information flows from DNA (replication) to RNA (transcription) to protein (translation)

39. Evidence for Evolution (any one):

- Fossil record, homologous structures, embryological similarities, molecular/DNA evidence, direct observation (bacteria, finches)

40. Natural Selection:

- Individuals with favorable traits survive and reproduce more; these traits become more common in the population over generations, leading to adaptation

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End of Answer Key