**TBL-8 Your name: Kedar Krishnan Team #: 17**  [Possible points: 10 +1 bonus =11]

Choose FOUR items from Box-A that are needed for a protein to move from the first compartment to the

second compartment.

Choose ONE protein from Box-B that is actually targeted in this manner.

(Items may be used 0-3 times each)

**Box-A**

**(1) Cytoplasm Nucleoplasm**

(a) NLS

(b) Importin

(c) Nuclear Pore complex

(d) Ran GTP gradient

Example from Box-B: RNA Polymerase

Adaptor Protein

Cytosolic chaperone

Clathrin

COP-I

COP-II

Di-Lysine (Lys-Lys-X) signal

Exportin

Importin

KDEL (Lys-Asp-Glu-Leu) signal

Lamin

Microtubule

NES

NLS

Nuclear pore complex

Presequence

Proteasome

Rab

Ran-GTP ‘gradient’

Ribosome

Signal sequence

SKL (Ser-Lys-Leu) signal

Signal Recognition Particle

Tether protein

TIM

TOM

Translocon

T-Snare

Ubiquitin

V-Snare

**(2) Cytoplasm ER Lumen**

(a) Translocon

(b) Signal Recognition Particle

(c) Ribosome

(d) Signal Sequence

Example from Box-B: BIP

**(3) Endoplasmic Reticulum ER transport vesicle**

(a) COP-II

(b) Adaptor Protein

(c) Rab

(d) V-Snare

Example from Box-B: Insulin

**Box-B**

IgG (antibody) heavy chain

BiP (functions in ER lumen)

DNA polymerase

Insulin

Lamin

Misfolded IgG heavy chain

RNA polymerase

T-Snare

V-Snare

(4) Consider a hydrolytic enzyme destined to function in the lysosome.

If this protein **had a mutation** **on its surface that affected**

**only one thing**: recognition by the Golgi proteins that add

mannose-6-phosphate, (a) Where would it go, and (b) Why? [bonus pt]

(a) Secreted outside the cell

(b) Since the enzyme isn’t recognized by the Golgi proteins, it follows the normal path and is secreted outside the cell.