Q1. weaker binding.

Q2. weaker complex will release more L.

Q3. Kd for X = 2 X has higher affinity.
Kd for Y = 6

Q4. When curve shifts to left binding affinity goes up
When curve shifts to right binding affinity goes down.

Q5. Carbon monoxide/oxygen binding value decrease due to protein stabilizing O_2 with hydrogen bonding from histidine residues, which CO cannot form.

Q6. The allosteric binding curve is on the right. the Hemoglobin oxygen binding curve is on the right. the curve on the right is called a sigmoidal curve.

Q7. False

Q8. A, C, D, E

Q9. C. oxygen binding.

Q10. It allows for better affinity of fetal Hb to O_2 which more easily transports oxygen to the fetus, as BPG will bind to less fetal Hb instead of oxygen.

Q11. a. increase in affinity
b. decrease of affinity.
c. decrease of affinity.

Q12. Protein 2 has the highest affinity, then 3, then 1.

a) $K_{d3} = 1\,nM$

b) 1 has weakest affinity

Q13 $\theta = \frac{[L]}{[L]+K_d}$

$$0.2 = \frac{[L]}{[L]+5\times10^{-5}}$$

$$0.2([L]+5\times10^{-5}) = [L]$$

$$0.2[L] + 1\times10^{-5} = [L]$$

$$1\times10^{-5} = 0.8[L]$$

$$1.25\times10^{-5}\,M = [L]$$

Q14. The curve would resemble a myoglobin curve, which would result in less efficient oxygen transfer, as Hb would not be able to transfer O_2 to the tissues as effectively

Q15. A shows positive cooperativity

B shows negative cooperativity.

Q16 The MWC model and the KNF model explain cooperativity. MWC implies that molecules can only be completely in either the T or R state at one time. KNF implies proteins can contain subunits in both T and R states at one time.