Extra Bonuses

1. This city's former mayor, Thomas Menino, died in October 2014. For ten point each:
[10] Name this New England city, home to America's first subway system. It was also the site of an event in which Crispus Attucks was killed by British soldiers.
ANSWER: **Boston**, Massachusetts
[10] Boston also saw a 1919 event that led to the death of 21 people when a storage tank containing this substance burst in the North End. In the wake of that event, Boston Harbor was turned brown for months afterwards.
ANSWER: **molasses**
[10] Another early 20th century event in Boston was the trial of these two men, after whom a popular brand of Soviet pencils was named. These Italian immigrants were convicted and executed for killing two men while robbing a shoe factory.
ANSWER: Nicola **Sacco** and Bartolomeo **Vanzetti** [prompt on partial]

2. One monument in this city consists of four Ionic columns and was designed by Josep Puig (POOCH) i Cadafalch. For ten points each:
[10] Name this city which contains a building topped with a four-armed cross symbolizing the lance of St. George, as well as a building built for chocolate magnate Antoni Amatller (AH-mat-yay).
ANSWER: **Barcelona**, Spain
[10] The aforementioned Casa Batlló was designed by this Catalan architect, who died after being struck by a streetcar. His most famous work is scheduled to be completed by 2028; that church is the Sagrada Familia.
ANSWER: Antoni **Gaudí** i Cornet
[10] Barcelona is also home to a single-roomed pavilion designed for the 1929 Universal Exhibition by this man. This man also collaborated Philip Johnson on the Seagram Building and is famous for the saying "less is more."
ANSWER: Ludwig **Mies** van der Rohe

3. Compounds of this element are formed from 3-center-2-electron bonds, in which atoms of this element are bridged by hydrogens. For 10 points each:
[10] Name this element that typically does not obey the octet rule. It has atomic number five.
ANSWER: **boron**
[10] Well-known crystalline forms of boron include alpha-rhombohedral, beta-rhombohedral, and beta-tetragonal. This term is used to describe the different structural forms of an element, like graphite and diamond for carbon.
ANSWER: **allotrope**s
[10] Phosphorous also forms a number of allotropes. This allotrope has a structure composed of interlinked tetraphosphorous tetrahedra where one bond in the each tetrahedron is replaced with one interlinking bond.
ANSWER: **red** phosphorous

4. This structure is composed of a phospholipid bilayer. For 10 points each:
[10] Name this structure that surrounds the cell, separating the cytoplasm from the outside of the cell.
ANSWER: **cell membrane** [accept **plasma membrane**; do not accept "cell wall"]
[10] Singer and Nicholson proposed this model of cell membranes in 1972. In this model, cell membranes are modeled as a two-dimensional liquid where transmembrane proteins and phospholipids have freedom of movement.
ANSWER: **fluid mosaic** model
[10] Along with scramblases, these proteins are responsible for the translocation of phospholipids from one leaflet of the membrane to another. They catalyze the diffusion of amphipathic phospholipids across the membrane.
ANSWER: **flippase**s

5. This piece features a four-note descending whole-tone scale used to depict a Sultan. For 10 points each:

[10] Name this symphonic poem which contains movements such as *Sinbad's Ship* and *The Kalendar Prince*.
ANSWER: ***Scheherazade***
[10] Scheherazade was composed by this Russian composer, a member of the Big Five.
ANSWER: Nikolai **Rimsky-Korsakov**
[10] Rimsky-Korsakov composed this piece with melodies based off Eastern Orthodox canticles. It is also noted for its infrequently seen 5/2 and 3/1 time signatures.
ANSWER: ***Russian Easter*** *Festival* ***Overture***