PHYS 1301 Final

The following questions will have 4 multi-choice responses. You will have up to 180 minutes.

1. Which of the following would indicate *systematic* error in an experiment?
2. The speed of light in vacuum
3. Which of the following is *possible* according to Special Relativity?
4. A ball is released inside and from rest relative to an elevator on the ground. What happens?
5. General Relativity attributes the apparent force of gravity to the
6. According to General Relativity, which of the following began at the Big Bang?
7. Which kind of photon has the least energy?
8. The patterns observed when two light waves combine are called
9. What is the probability of rolling two dice and getting a total of 9?
10. The probability of observing a particular event in quantum mechanics is given by
11. Whose equation describes the general movement of quantum probability waves?
12. What are the smallest features that a Scanning Tunneling Microscope can see?
13. Which of the following pair of quantities can Heisenberg's uncertainty principle refer to?
14. Why does an interference pattern disappear if the photons' path is observed?
15. Electron microscopes can be used to see more detail than with visible light because
16. According to the Copenhagen Interpretation, before one looks in the box, Schrodinger's cat is
17. The Copenhagen Interpretation of Quantum mechanics questions objective reality because
18. Which interpretation of the Quantum measurement problem is deterministic?
19. The name given to the central part of an atom is
20. Which atom is the simplest?
21. Where are the electrons in the atom that govern the chemistry of an element?
22. Atoms are stable because
23. What do spectral lines signify?
24. Which scientists first performed an artificial nuclear reaction?
25. Which particles are typically found in an atomic nucleus?
26. Which of these is *not* an application of radioactivity?
27. Which form of radioactivity typically has the shortest range?
28. Which type of nuclear reaction involves smaller nuclei combining to make bigger nuclei?
29. Fermion particles of the same type are such that
30. Bose-Einstein condensation of liquid Helium suddenly leads to
31. Which of the following is necessary for laser operation?
32. Which of the following is not a direct application of Quantum Mechanics to technology?
33. What does the acronym LASER stand for?
34. Which of the following is *not* a consequence of combining relativity and quantum mechanics?
35. In Feynman diagrams, positive energy anti-particles going forwards in time are understood as
36. The basic vertex in any QED space-time Feynman diagram involves
37. Which of the following is *not* a force-carrier particle?
38. Quark confinement is a property of which force of nature?
39. The amount of naturally-occurring antimatter observed in the universe is
40. Which of these is evidence for Dark Matter?