

2005 LSU-PHYSICS IQ TEST

More than one answer might be correct, or none . . . Circle the correct answer(s).

Name:

(1) Which LSU Physics professor interested in relativity and astrophysics is from Argentina?

- A. Juhan Frank
- B. Jorge Pullin
- C. Gabriela Gonzalez
- D. Manuel Tiglio
- E. Luis Lehner

(2) What is the energy of the highest energy cosmic ray seen by Auger in Argentina?

- A. ~1 Curly
- B. Equal to the kinetic energy of a Roger Clemens fastball.
- C. $10^{20.5}$ ergs
- D. 0.3 ZeV
- E. Equal to the energy in a Mike Tyson punch.

(3) Who is the Chair of our Department?

- A. Bill Metcalf
- B. Dana Browne
- C. Jim Matthews
- D. Beverly Rodriguez
- E. Roger McNeil

(4) What is the dark matter in our Universe likely made of?

- A. Neutrinos
- B. WIMPs
- C. Nothing; slight modifications to General Relativity can account for all evidence
- D. Avocados, for all we know
- E. Since the avocados likely have high velocities; guacamole

(5) $i^i = \dots ?$

- A. Undefined
- B. 1
- C. $e^{-\pi/2}$
- D. $i\pi$
- E. $-i\pi$

- (6) Professors in our Department have spouses doing research on which of the following?
- A. Mössbauer spectroscopy of Martian minerals.
 - B. Shapes of parrot bills in Australia.
 - C. Theory of attosecond (10^{-18} s!) ultraviolet light pulses as 'snapshot' of reactions.
 - D. Studies of black hole/blackhole inspiral collisions.
 - E. Lithium abundances in minerals.
- (7) What is the best estimate of the mass of the electron neutrino?
- A. Roughly 0.003 eV, from Super Kamiokande solar neutrino results.
 - B. As mixing angles are not known, and only Δm^2 is measured, we have no good limit.
 - C. 0.7-4.5 eV, depending on the analyst, based on neutrinos from SN 1987A.
 - D. <3 eV, based on laboratory tritium decays.
 - E. Equivalent to energy of five push-ups by a malarial mosquito.
- (8) What should our Department do to help the LSU football team?
- A. Design aerodynamic helmets (like for Lance Armstrong) to increase speed of receivers.
 - B. Develop program booklet for all 92,000 Death Valley fans to have large aluminized programs which can be used to flash (like Archimedes against the Roman fleet) the opposing quarterback on bright sunlit days.
 - C. Install beamline from CAMD to Tiger Stadium with aiming capabilities, so that we can make the opposing quarterback see 'cosmic ray' flashes in his eyes at inopportune times.
 - D. Study the exact star positions throughout the game to suggest the most opportune times to throw long bombs.
 - E. Following the lead of the University of Texas, we should ensure proper humility and realism on the football team by demanding that at least one Physics professor is paid a larger salary than the football coach.
- (9) Who should you go see for putting in a travel reimbursement request for a trip to the upcoming APS meeting in Baltimore?
- A. Rochelle Grayer
 - B. Robert Dufrene
 - C. Gay Sutton
 - D. Arnell Dangerfield
 - E. Scott Smith
- (10) Who in our Department is officially retired, even though they still hang around?
- A. Jim Matthews
 - B. Ed Zganjar
 - C. John Wefel
 - D. Arlo Landolt
 - E. Armando Aranas