AY121 Course Assessment Questions—Lab 3 related

YOUR NAME:

1. The Sidereal day is

    (a) longer than the Solar day by about 4 minutes of time
    (b) longer than the Solar day by about 2 minutes of time
    (c) shorter than the Solar day by about 4 minutes of time **correct**
    (d) shorter than the Solar day by about 2 minutes of time

2. A single-precision floating-point number (mark all correct answers)

    (a) represents to about 1 part in a million accuracy **correct**
    (b) is 32 bits long **correct**
    (c) is 2 bytes long
    (d) can represent numbers in the range $\sim 10^{-38}$ to $\sim 10^{+38}$ **correct**
    (e) is 64 bits long
    (f) is 8 bytes long
    (g) represents to about 1 part in a few $\times 10^{16}$ accuracy
    (h) can represent numbers in the range $\sim 10^{-307}$ to $\sim 10^{+307}$

3. A single-precision signed integer number (mark all correct answers)

    (a) is the usual type of integer number in today's software **correct**
    (b) is 16 bits long **correct**
    (c) is 2 bytes long **correct**
    (d) is 32 bits long
    (e) is 4 bytes long
    (f) cannot represent numbers larger than 32767 **correct**
    (g) cannot represent numbers larger than 32768 **correct**
    (h) cannot represent numbers smaller than –32767
    (i) cannot represent numbers smaller than –32768 **correct**

4. An interferometer consists of

   (a) Two telescopes pointing at the same source whose outputs are multiplied together **correct**

   (b) Two telescopes pointing at the same source whose outputs are added together

   (c) An arbitrary number of telescopes pointing at the same source whose outputs are multiplied together

   (d) An arbitrary number of telescopes pointing at the same source whose outputs are added together

5. Very Long Baseline Interferometry at a wavelength of 1 cm can provide an angular resolution of about

   (a) 100 arc seconds

   (b) 100 milliarcseconds

   (c) 100 microarcseconds **correct**

   (d) 100 nanoarcseconds

6. An interferometer can be understood as (mark all that apply)

   (a) A giant complex sine wave in the sky **correct**

   (b) A giant mixer in the sky **correct**

   (c) A giant power splitter in the sky

   (d) A giant telescope in the sky

7. Interferometry is a technique for

   (a) Obtaining high angular resolution **correct**

   (b) Obtaining high frequency resolution

   (c) Obtaining high sensitivity

   (d) Mapping point sources

8. The 'interferometer fringe' (mark all that apply)

   (a) consists of the sinusoidal output of an interferometer looking at a small source **correct**

   (b) consists of the signal in the tails of the Gaussian distribution of the voltage output of an interferometer looking at a small source

   (c) Important to measure because its amplitude is significantly affected by the angular size of the source being observed **correct**

   (d) Important to measure because its frequency is significantly affected by the declination of the source being observed **correct**

   (e) Important to measure because its frequency is significantly affected by the right ascension of the source being observed

   (f) Important to measure because its frequency is significantly affected by the size and intensity distribution of the source being observed

   (g) Important to measure because its phase is significantly affected by the size and intensity distribution of the source being observed **correct**

9. The Fourier transform of the fringe

   (a) provides a power spectrum with a frequency range that depends on the position of the source and the observing frequency **correct**

   (b) provides a power spectrum with a frequency range that depends on the position of the source and not on the observing frequency

   (c) provides a power spectrum with a frequency range that depends on observation frequency and not on the position of the source

   (d) provides a power spectrum with a frequency range that depends on neither the observation frequency nor the position of the source

10. The moon is observable at at radio frequencies because

   (a) it shines by reflected sunlight, just like at optical frequencies

   (b) it shines by thermal emission, just like the sun **correct**

   (c) it reflects TV signals generated on the Earth

   (d) it reflects the Cosmic Background Radiation.