

Quiz: Week 1 Lecture 4
Principles of Electronic Nanobiosensors
Muhammad A. Alam, nanoHUB-U Fall 2013

Answer the **five questions** below by choosing the **one, best answer**.

- 1) The fractal dimension of a surface characterizes its
 - a) Surface to volume ratio.
 - b) Different ways a surface may fracture along crystallographic planes.
 - c) Geometric property of the surface itself.
 - d) Geometrical and physical properties of the surface.

- 2) Using the box-counting method, the fractal dimension of a point is
 - a) 0
 - b) 1
 - c) 2
 - d) 3

- 3) If you iteratively divide a 2D surface in 5 stripes and keep 3 stripes and throw away the remaining two, then the fractal dimension of the surface is
 - a) $3/5$
 - b) $\log(3)/\log(5)$
 - c) $\ln(3)/\ln(5)$
 - d) $1 + \log(3)/\log(5)$

- 4) If you iteratively divide a surface into 9 square boxes, then keep 8, while throwing away the remaining one, what is the fractal dimension of the resulting surface?
 - a) $8/9$
 - b) $\log(8)/\log(9)$
 - c) $\ln(8)/\ln(3)$
 - d) $1 + \log(8)/\log(9)$

(continued on next page)
Quiz: Week 1 Lecture 4 (continued)

- 5) To convert an irregular fractal surface to an equivalent regular fractal surface, one must ensure that
- a) The fractal dimensions are identical.
 - b) The orientation of the surface elements is preserved.
 - c) Only a specific type of regularized surface is chosen.
 - d) All of the above requirements are satisfied.

End of quiz. This quiz contains 5 questions.