**Artifacts Study Guide**

1. What is the meaning of image artifact?

|  |  |
| --- | --- |
| a. | Selection of gray scale map to eliminate weak reflectors |
| b. | Electronic noise |
| c. | Excessive log compression |
| d. | Misrepresentations of scanned tissue |

2. What is a cause of axial displacement of a specular reflector?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Focal zone banding | c. | Propagation speed error |
| b. | Attenuation | d. | Partial volume |

3. Where are reverberation artifacts most likely to occur?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Near the transducer face | c. | In liver parenchyma |
| b. | In the transmit focal zone | d. | At the limit of the scan range |

4. Where are enhancement artifacts most likely to occur?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Near the transducer face | c. | Distal to a cyst |
| b. | In the transmit focal zone | d. | Distal to a mass |

5. Where are shadowing artifacts most likely to occur?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Near the transducer face | c. | Distal to a cyst |
| b. | In the transmit focal zone | d. | Distal to a mass |

6. Where is a mirror image artifact most likely to occur?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Near the transducer face | c. | Near a strong reflector |
| b. | In the transmit focal zone | d. | At the limit of the scan range |

7. What is the source of a side lobe artifact?

|  |  |
| --- | --- |
| a. | Channel loss in receive beam former |
| b. | High pulse repetition frequency |
| c. | Low scan line density |
| d. | Strong reflector outside the main beam |

8. What is the cause of the range ambiguity artifact?

|  |  |
| --- | --- |
| a. | Channel loss in receive beam former |
| b. | High pulse repetition frequency |
| c. | Low scan line density |
| d. | Strong reflector outside the main beam |

9. How is the refraction artifact expressed in the image?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Loss in sensitivity | c. | Mirror image |
| b. | Misregistration | d. | Banding |

10. What is the reason for partial fill-in near the boundary of a cyst?

|  |  |
| --- | --- |
| a. | Acoustic velocity not constant along propagation path |
| b. | Beam width encompasses different tissues |
| c. | High pulse repetition frequency |
| d. | Loss of channels in receiver beam former |

11. What is the cause of the comet tail artifact?

|  |  |
| --- | --- |
| a. | Multiple internal reflections |
| b. | Beam width encompasses different tissues |
| c. | High pulse repetition frequency |
| d. | Changes in acoustic velocity along propagation path |

12. What type of artifact is the ghost image?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Comet tail | c. | Mirror image |
| b. | Refraction | d. | Range ambiguity |

13. How is the partial volume artifact expressed in the image?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Loss in sensitivity | c. | Mirror image |
| b. | Misregistration | d. | Fill-in near the border of a cyst |

14. How is comet tail artifact expressed in the image?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Mirror image | c. | Lateral displacement of the reflector |
| b. | Closely spaced bands | d. | Fill-in near the border of a cyst |

15. Which artifact does NOT cause misregistration of the reflector in the image?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Refraction | c. | Velocity error |
| b. | Range ambiguity | d. | Partial volume |

16. Which artifact is associated with multiple reflections from the same interface?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Velocity error | c. | Reverberation |
| b. | Enhancement | d. | Refraction |

17. What type of artifact is a small metallic object likely to create?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Mirror image | c. | Velocity error |
| b. | Comet tail | d. | Range ambiguity |

18. How can the scanner correct for refraction along the path of the sound beam?

|  |  |
| --- | --- |
| a. | Time delay |
| b. | Application of Snell’s law |
| c. | Rejection threshold |
| d. | No correction is possible |

19. Which artifact most likely would cause the reflector to be displaced laterally in the image?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Refraction | c. | Velocity error |
| b. | Range ambiguity | d. | Partial volume |