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ASSIGNMENT – 2 (ULTRASONIC TESTING)

1. The Ultrasonic Beam gradually spreads out as it propagates into the materials (T/F)
2. In _____(near/far/dead) zone the amplitude of an indication from a flaw is not related to the size of the flaw.
3. Larger the size of transducer, _____(longer/shorter) the near field
4. Which of the frequencies given here will have shorter Fresnel zone, 1MHz, 4MHz, 6MHz
5. In a higher velocity material if 'f' and 'D' remain same, Near field _____(shorter/longer/same)
6. In the Far Field the Ultrasonic Beam spreads at variable angle. (T/F)
7. Formula to calculate Beam Divergence = _____
8. When using same size transducer, lower the frequency _____(higher/lower) the beam spread
9. What is the problem with higher Beam Spread?
10. Of the transducer sizes here, if other parameters remain same, which transducer has lesser beam spread? Dia 10mm, Dia12.5mm, Dia20mm, Dia24mm
11. If the diameter of probe is same, higher frequency probes will have _____(higher/lesser/same) beam spread.
12. Higher frequency transducer will have _____(higher/lower) sensitivity and _____ (higher/lower) penetration into the material.
13. Usually Austenitic Stainless steels are generally tested using frequencies down to ____MHz.
14. An imaginary line drawn perpendicular to the interface is called _____
15. Angle of Incidence = Angle of _____(Refraction, Reflection, Normal)
16. Acoustic Impedance is the products of _____& _____of the material.
17. Formula to calculate Transmitted energy at the interface %TE= _____(assuming Z1 & Z2 are impedances of the two materials)
18. Longitudinal wave velocity in Steel _____m/s and Water _____m/s.
19. Snell's Law = _____
20. What does it mean by first critical angle? _____
21. After the second critical angle, only _____(longitudinal, shear, surface) wave is existing in the second medium
22. What did you understand about Dead Zone? _____
23. The reduction of energy of sound beam as it propagates through the material is called _____
24. Finer the grain size of the material more is the grass or hash on the screen. (T/F)
25. Formula for calculating dB= _____
26. If there is an increase of 6dB, the the signal amplitude on the display is increased by_____(50%, 100%, 60%, 200%)
27. Less Beam Spread means more sensitivity. (T/F)
28. What are two main reasons for ultrasonic sound beam attenuation in materials? _____
29. What is the purpose of couplant in Ultrasonic Testing? _____
30. Before First Critical angle _____(longitudinal, shear, surface, plate) wave/s are existing in the second medium.

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