



University of Technology
Department of Applied Sciences
First Examination 2016/2017



Subject: NDT
Branch: Applied Physics
Examiner: D.Sariya Al-algawi

Class: 4th year
Time: 3 hours
Date: 28 -6 -2017

Answer four of the questions

Q1- Give the Reason Of the following. (17.5 marks)

- 1- In general microscope optics are used due to -----
- 2- Copper, and gold, are diamagnetic because -----
- 3- The Ultrasound does travel at different speeds in different materials-----
- 4- Rolled aluminum plate, the grains are elongated in one direction and compressed in the others because -----
- 5- Ultrasonic waves are reflected at boundaries because -----
- 6- A couplant is a material generally necessary used for Ultrasonic Testing because ----
- 7- The bright spots on a line(zeroth order) not give the information about the structures in the specimen due to ---
- 8- The reflected shear wave is reflected at a smaller angle than the reflected longitudinal wave within a given material, this is also due to the fact-----
- 9- The prod tips should be inspected frequently due to -----
- 10- (3 keV) photon can only eject L-shell electrons due to---

Q2- Sketch the diagram for the expression. (17.5 mark)

- 1-Confocal microscopy . 2-parallel light pass through two ratings.
- 3- The A cut away of a typical contact transducer .4- Dual element transducers.
- 5-The comparison between conventional radiography and micro focus projection.

Q3- Explain the expressions with the diagrams. (17.5 mark)

- 1- Bremsstrahlung spectra. 2- Kind of the ultrasonic Wave Propagation.
- 3- Magnetic Field Produced by a Coil.

Q4- Discuss the two expressions with the diagrams and equations. (17.5 marks)

A-The photoelectric effect; X- ray fluorescence (8.5 marks)

B-The resolution limit. (9 marks).

Q5 Answer the two branches: :(17.5 marks)

A-Clculate the magnitude of the geometrical unsharpness(image blur) and imaging distance from Object required to obtain an image magnified 40 times , when used X-ray source with focal spot