KUMARAGURU
college of technology
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Register Number: ……..

B.E DEGREE EXAMINATIONS: APRIL 2015

(Regulation 2009)

Eighth semester

AERONAUTICAL ENGINEERING

AER149: Non-Destructive Testing

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. NDT means ….destructive method
   a) Normal b) Natural
   c) Non d) Negative
2. Stress levels during NDT are
   a) Very low b) Up to proportionality limit
   c) Up to yield stress d) Up to ultimate stress
3. The range of frequencies of X- rays is $3(10)^x$,x is
   a) 10-13 b) 13-16
   c) 17-21 d) 21-24
4. X-rays normaly indicate
   a) Thickness of structure b) High stress points
   c) High strain locations d) Defects
5. Frequency of ultrasonics is greater than…Hz
   a) 10000 b) 12000
   c) 16000 d) 20000
6. Ultrasonic waves are… waves
   a) sound b) Mechanical
   c) Electromagnetic d) Magnetic

7. Tendency of liquids to penetrate into small cracks is due to … action

a) Capillary b) Adhesive

c) Cohesive d) Viscous

8. In an eddy current test with a coil the. ….of the coil changes with the defect.

a) Current b) Voltage

c) Impedence d) Resistance

9. The wave length of thermal radiation is of the order of…. mm

a) 0.1 to 100 b) 1 to 1000

c) 10 to10000 d) Less than 0.1

10. Holograms are the result of ….of light waves

a) Reflection b) Refraction

c) Interference d) Scatter

PART B (10 x 2 = 20 Marks)

11. What is reliability in NDE?
12. List the factors influencing reliability of NDE.
13. State the differences between X-rays and gamma rays
14. What is micro Radiography?
15. State the principles of ultrasonic tests
16. What is acoustic impedance?
17. List the procedure for liquid penetration test
18. What is the principle of eddy current tests
19. What is an hologram?
20. What are acoustic emission waves?

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain the technology of NDE (6)

(ii) Explain the defects that can be present in composites (8)

(OR)

	b)	(i)	Explain the reliability of non destructive test results	(8)
		(ii)	Explain with sketches the opening, sliding and tearing modes of cracking	(6)
22.	a)	(i)	Explain microradiography	(4)
		(ii)	Explain the methods of producing X-rays and their applications in NDT	(10)
			(OR)	
	b)	(i)	Explain the principle and application of gamma rays in NDT	(10)
		(ii)	List the defects in welding	(4)
23	a)	(i)	Briefly explain the different ways of waves propagate	(4)
		(ii)	Explain the factors influencing magnetic particles test	(10)
			(OR)	
	b)	(i)	Explain the ultrasonic test used to determine the thickness of structure	(7)
		(ii)	Explain the procedure used to test composites	(7)
24	a)	(i)	Describe liquid penetration test in NDT	(8)
		(ii)	State the safety precautions to be followed during liquid penetration tests	(6)
			(OR)	
	b)		Explain detail the magnetic particles tests in NDT and its applications	
25	a)	(i)	Explain the terms ‘Acoustic emmision’, ‘Optical interferometry’, and their uses in NDT	(9)
		(ii)	Explain the principles of thermal inspection method	(5)
			(OR)	
	b)	(i)	Explain the conditions under which acoustic waves are emitted	(6)
		(ii)	Explain the advantages and disadvantages of thermal inspection method of NDT	(8)

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