Unit 3 - Week 2

Course outline

How to access the portal?

Week 1

Week 2

- Magnetic Circuit-III
- Transformers -Introduction
- Transformers -Amp-Turn Balance, Ideal and practical transformers
- Quiz : Assignment 2
- Feedback Form

Week 3

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Solutions for Assignments

Assignment 2

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-08-21, 23:59 IST.

For Questions 1 and 2

A mild steel ring has a mean diameter of 160 mm and a cross sectional area of 300 mm^2. The relative permeability of mild steel is 1120.

1) Calculate the MMF (in AT) to produce a flux of 400 μWb

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 475,477

1 point

2) Calculate the corresponding value of the reluctance (in AT/Wb)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1160000,1200000

1 point

For Questions 3 and 4

A mild steel ring has a mean circumference of 500 mm and uniform cross-sectional area of 300 mm^2. The relative permeability of the mild steel to remain constant at 1200.

3) Calculate the MMF (in AT) to produce a flux of 500 μWb

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 551.5,553.5

1 point

4) An air gap, 1.0 mm in length is now cut in the ring, determine the flux produced (in μWb) if the MMF remains constant

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 146.5,147.8

1 point

For Questions 5 and 6

A steel ring has a mean diameter of 15 cm, a cross sectional area of 20 cm^2 and a radial air gap of 0.5 mm cut in it. The ring is uniformly wound with 1500 turns of insulated wire and a magnetizing current of 1 A produces a flux of 1 mWb in the air gap. Neglect the effect of magnetic leakage and fringing.

5) Calculate the reluctance of the magnetic circuit (AT/Wb)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1499900,1500100

1 point

6) Calculate the relative permeability of the steel

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 143.7,144.4

1 point

For Questions 7,8 and 9

A hysteresis loop is plotted against a horizontal axis which scales 1000 A/m = 1 cm and a vertical axis which scales 0.2 T = 1 cm. The area of the loop is 9 cm^2 and the overall height is 14 cm.

7) Calculate the hysteresis loss in Joules per cubic meter per cycle

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1799,1801

1 point

8) Calculate the maximum flux density (in T)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1.38 ,1.41

1 point

9) Calculate the hysteresis loss in watts per kilogram, assuming the density of the material to be 7800 kg/m^3 at an input frequency of 50 Hz.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 11.3,11.7

1 point

For Questions 10 and 11

A long straight conductor situated in air is carrying a current of 500 A, the return conductor being far removed.

10) Calculate the field strength in A/m at a radius of 80 mm

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 994,996

1 point

11) Calculate the flux density (in mT) at a radius of 80 mm.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 1.24,1.26

1 point

For Questions 12 and 13

In a certain magnetic circuit having a length of 500 mm and a cross sectional area of 300 mm^2, an MMF of 200 AT produces a flux of 400 μWb.

12) Calculate the reluctance of the magnetic circuit in AT/Wb.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 499995,500005

1 point

13) Calculate the relative permeability of the core.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 2648,2654

1 point

14) **Each of two air gaps of a moving coil instrument is 2.5 mm long and has a cross sectional area of 600 mm^2. If the flux density is 0.08 T, calculate the total energy stored in the magnetic field of the air gap in milli Joules. (round off your answer upto 1 decimal)**

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 7.5,7.7

1 point

15) **The flux density in air at a point 40 mm from the centre of a long straight conductor A is 0.03 T. If the return conductor is a considerable distance away, calculate the current.**

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 5998,6002

1 point