Unit 4 - Week 2

Course outline

How does an NPTEL online course work?

Week 0

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Week 2

- Lecture 6 : Electro Magnet and Constant Current Power Supply (Contd.)
- Lecture 7 : Electro Magnet and Constant Current Power Supply (Contd.)
- Lecture 8 : Gaussmeter/Teslameter
- Lecture 9 : Gaussmeter/Teslameter (Contd.)
- Lecture 10 : Lock in Amplifier
- Quiz : Assignment 2
- Week 2 Feedback Form

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Assignment 2

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

Due on 2020-02-12, 23:59 IST.

1) Choose the correct option *1 point*

(a) If current flows in anticlockwise direction in a coil, then south pole is produced.

(b) If current flows in clockwise direction in a coil, then south pole is produced.

(c) If current flows in anticlockwise direction in a coil, then north pole is produced.

(d) Options (b) and (c) both are correct

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

2) Which of the following is not used in Hall effect sensor. *1 point*

(a) Gallium Arsenide

(b) Indium Arsenide

(c) Indium phosphide

(d) Copper constantan

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

3) The core material of an electromagnet should have *1 point*

(a) Maximum flux density with comparatively small magnetizing field and small area of hysteresis loop.

(b) Maximum flux density with comparatively high magnetizing field and small area of hysteresis loop.

(c) Maximum flux density with comparatively small magnetizing field and big area of hysteresis loop.

(d) All of above options are wrong.

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

4) The area of hysteresis loop is a measured of *1 point*

(a) Magnetic flux

(b) Energy loss per cycle of magnetization

(c) Coercivity

(d) Retentivity

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

5) The energy stored in a coil is doubled when current is increased by *1 point*

(a) 100%

(b) 75%

(c) 41.4%

(d) 25%

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)

6) Which of the following is correct? [B=flux density, M = magnetization, H =magnetic field intensity] *1 point*

(a) $B = \mu_o H+M$

(b) $B = \mu_o M+H$

(c) $B = \mu_o[H+M]$

(d) $B = M/ \mu_o$

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(c)

7) An iron rod of volume 10^{-4} m3 and relative permeability 1000 is placed inside a long solenoid with 5 turns per cm. If a current of 0.5 A is passed through the solenoid, find the magnetic moment of the rod. *1 point*

(a) 25 amp/m^2

(b) 24975 amp/m^2

(c) 250 amp/m^2

(d) 12500 amp/m^2

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

8) A Hall effect sensor may operate as an electronic switch. *1 point*

(a) Such a switch costs less than a mechanical switch and is much more reliable.

(b) It can be operated at higher frequencies than a mechanical switch.

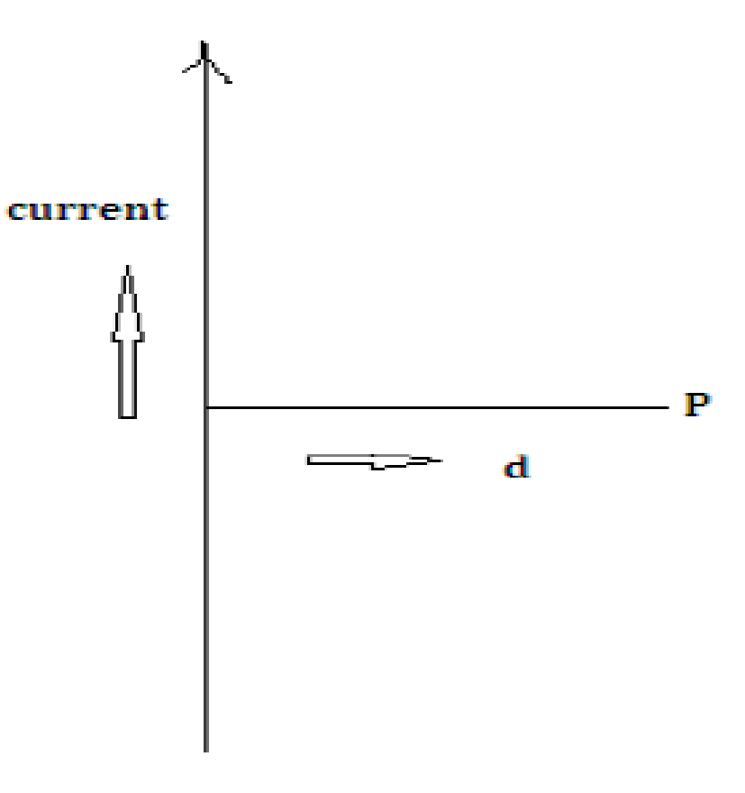
(c) It does not suffer from contact bounce because a solid state switch with hysteresis is used rather than a mechanical contact.

(d) All of options- (a), (b) and (c) are correct

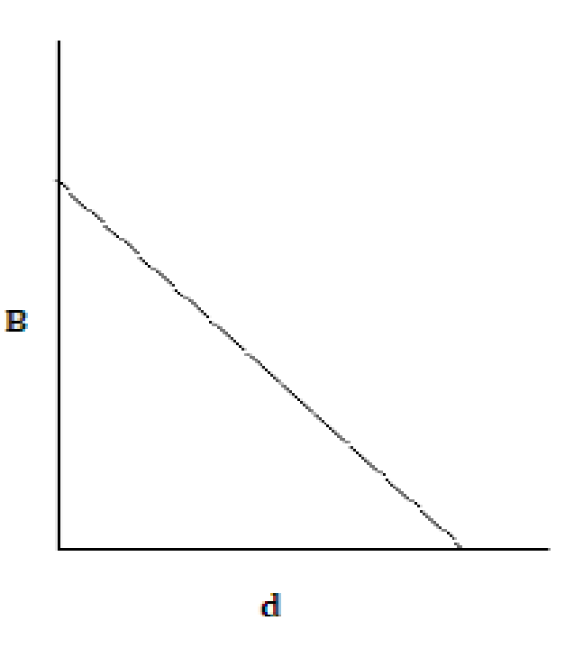
○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

9) The nature of variation of magnetic field induction (B) with perpendicular distance (d) for a long straight conductor, carrying current is according to *1 point*

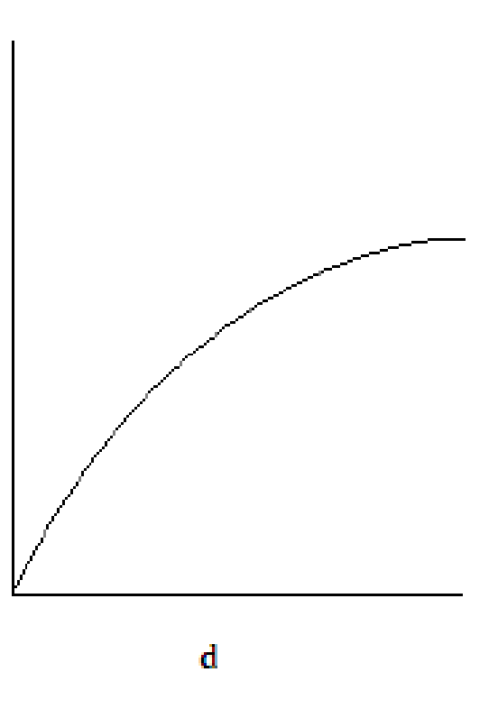


(a)

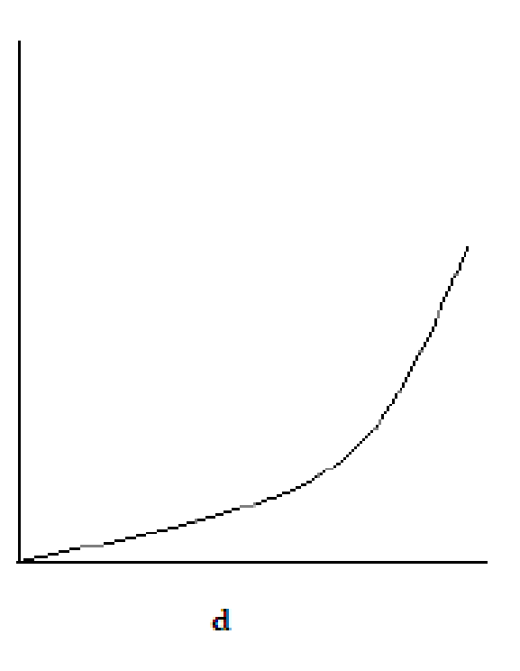


(b)

(c)



(d)



○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

10) The hall coefficient of a material is *1 point*

(a) Directly proportional to mobility

(b) Directly proportional to conductivity

(c) Inversely proportional to mobility

(d) Directly proportional to electron density

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(a)

11) Choose the correct option *1 point*

The hall voltage developed in a sample is:

(a) Directly proportional to all of Hall coefficient, magnetic field and the thickness of the sample.

(b) Directly proportional to Hall coefficient, magnetic field and inversely proportional to the thickness of the sample.

(c) Directly proportional to Hall coefficient and inversely proportional to the magnetic field and the thickness of the sample.

(d) Directly proportional to all of sample current, magnetic field and the thickness of the sample.

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)

12) If a current carrying conductor placed perpendicular to magnetic field, a potential difference will generate in the conductor which is perpendicular to both magnetic field and current. This phenomenon is called: *1 point*

(a)Joule effect

(b) Thomson effect

(c) Peltier effect

(d) Hall effect

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(d)

13) The Hall coefficient RH for a sample material is independent of. *1 point*

(a) Temperature

(b) Dimension of sample

(c) Nature of material

(d) Number density of charge carrier

○ (a)
○ (b)
○ (c)
○ (d)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(b)