AL Physics MC Answers

Year:1982

Question Number:17,25,26,

1982MC(17)

Principal maxima $d\sin\theta = m\lambda$

Slit separation $d = 10^{-2}/5000 = 2 \times 10^{-6}$ m = 2000 nm

m	**0**	**1**	**2**	**3**	**4**
Yellow	**0**	**17.5^0**	**36.9^0**	**64.2^0**	**not exist**
Blue	**0**	**11.5^0**	**23.6^0**	**36.9^0**	**53.1^0**

(A) All colors overlap at the central, so the color formed there is white.

(B) m = 1, blue is closer to the central.

(C) Both are situated at 36.9^0.

(D) Yes, it is $\sin^{-1}(2 \times 600/2000) = \sin^{-1}(0.6)$

(E) No, the fourth order of blue light exits.

1982MC(25)

Induced emf = $-\frac{dNBA}{dt}$ {Note: A is the area encircling the B-filed}

L_1 and L_2 are ONE-loop wires, so N = 1,

L_1 is a loop just inside the solenoid and L_2 is a loop just outside the solenoid,

so both use the same A All things are the same, so the e.m.f. induced in L_2 is also 1.2 V

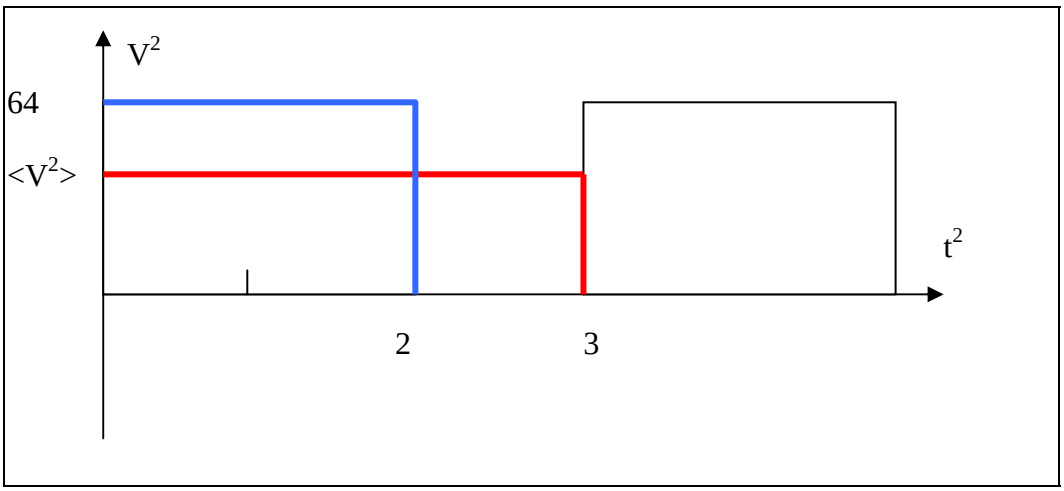
Q: If area of L_2 > area of S > area of L_1, what area should be used in calculating ε ?

A: ε in L_2 : area of S is used;

ε in L_1 : area of L_1 is used. (Why?)

1982MC(26)

Square of the voltage



The period is 3 s.

Mean of V^2 = 2 x 64/3 = 128/3 (same area under the red line and the blue line)

Square root of mean of V^2 = $\sqrt{\frac{128}{3}} = 8\sqrt{\frac{2}{3}}$

RMS voltage = equivalent steady d.c voltage