58. Give that the critical field for Al at absolute zero, $H_c(T = 0) = 105.16$ Oe, the stabilization energy of the superconducting state at absolute zero per unit volume of the sample is

(A) 440 ergs/cm^3

(B) 250 ergs/cm^3

(C) 760 ergs/cm^3

(D) 165 ergs/cm^3

59. An n-channel FET with donor density 9×10^{15} electrons/cm^3 and half the depletion width of 3μ is biased such that $V_{GS} = \frac{1}{2}V_p$ and $I_D = 0$. Given the relative dielectric constant as 12, the channel half width is

(A) 1 μ

(B) 0.87 μ

(C) 0.087 μ

(D) 8.7 μ

60. A full wave rectifier has to supply 100 mA at 350 V with a ripple less than 10 V. For a simple L-section filter to do this, the LC product must at least be

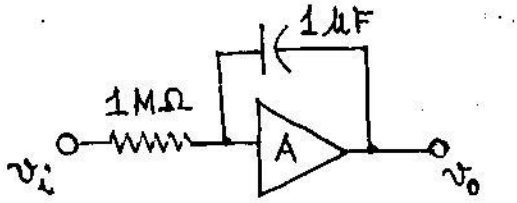
(A) 19 sec

(B) 29 sec

(C) 39 sec

(D) 49 sec

61. The output of the operational amplifier circuit shown below is



(A) $+\int v_i dt$

(B) $-\frac{dv_i}{dt}$

(C) $+\frac{dv_i}{dt}$

(D) $-\int v_i dt$

62. Which of the following is equivalent to the Boolean expression

$$\bar{A}\bar{B}\bar{C} + B\bar{C}\bar{D} + A\bar{B}\bar{C}$$

(A) $\bar{B}\bar{C} + BD$

(B) $\bar{C}\bar{B} + \bar{C}\bar{D}$

(C) $\bar{C}\bar{D} + \bar{C}D$

(D) $\bar{C}\bar{D} + \bar{B}\bar{C}D$