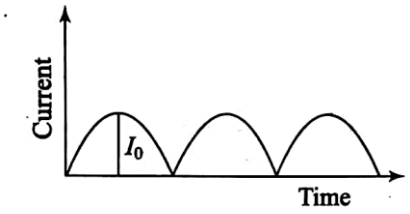
Ch—07 Alternating Current

Daily Practice Problem 01

Q1. The output current versus time curve of a rectifier is shown in the figure. The average value of output current in this case is



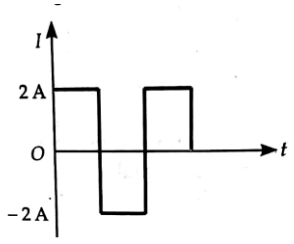
(a) 0

(b) $\frac{Io}{2}$

(c) $\frac{2Io}{\pi}$

(d) Io

Q2. Calculate the rms value of the alternating current shown in Figure.



Q3. The effective value of current in a 50 cycle a.c. circuit is 5A. What is the value of current 1/300 second after it was zero?

Q4. The peak value of an alternating current of frequency 50 Hz is 14.14 A. Find its rms value. How much time will the current take in reaching from 0 to maximum value?

Q5. A 100 Ω iron is connected to a 220 V, 50 cycles wall plug. What is

- **(i)** Peak potential difference
- **(ii)** Average potential difference
- **(iii)** Rms current

Q6. The equation of a.c. in a circuit is $\boldsymbol{I = 50 \sin 100 \pi t}$. Find

- **(i)** Frequency of a.c.,
- **(ii)** Mean value of a.c. over positive half cycle.
- **(iii)** Rms value of current and
- **(iv)** The value of current 1/300 second after it was zero.

Q7. The electric current in a circuit is given by $\boldsymbol{i = io(t/\tau)}$ for some time . Calculate the rms current for the period t=0 to t=τ.

Q8. The instantaneous value of an alternating voltage in volts is given by the expression $\varepsilon t = 140 \sin 300t$ where t is in second. What is

(i) Peak value of the voltage
(ii) Its rms value and
(iii) Frequency of the supply
(Take $\pi = 3, \sqrt{2} = 1.4$)

Q9. The plate on the back of a personal computer says that it draws 2.7 A from 120 -V, 60-Hz line. For this computer, what is

(i) The average of the square of the current
(ii) The current amplitude
(iii) The average current for positive half cycle, and
(iv) The average current for a full cycle?

ANSWERS

1. (c) **2.** 2 A **3.** 6.123 A

4. 10 A, 5ms **5.(i)** 311 V **(ii).** 198 V

(iii). 2.2 A

6.(i) 50Hz, 31.8 A, 35.35 A, 43.3 A

(9) (i) 7.3 A^2 (ii) 3.8 A
(iii) 2.42 A (iv) 0

7. $\frac{io}{\sqrt{3}}$

(8). (i)140 V (ii) 100 V (iii) 50 Hz