Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

(a) (i) use of 1.5 cycles **(1)**

conversion to time eg time for 1.5 cycles = 10 × 1.5 = 15ms **(1)**

calculation of frequency eg frequency = 1 / 0.010 = 100 ± 3Hz **(1)**

(ii) peak voltage = 1.5 × 2 **(1)** = 3.0V **(1)**

(iii) rms voltage = 3.0/√2 **(1)** (ce from (a) (i))

rms voltage = 2.12V **(1)**

7

(b) vertical line is formed **(1)**

of length equal to twice the peak voltage **(1)**

because trace no longer moves horizontally
or spot moves **just** up and down **(1)**

max 2

[9]

Q2.

(a) (i) *T* = 40(ms) **(1)**

$f\left(=\frac{1}{T}\right) = 25$ Hz **(1)**

(allow C.E. for value of T)

(ii) peak voltage (= 3 × 15) = 45 (V) **(1)**

rms voltage $= \frac{45}{\sqrt{2}}$ =32 V **(1)**
(31.8 V)

4

(b) (i) *I*rms = $\frac{31.8}{540}$ = 59mA **(1)**

(58.9mA)
(use of 32 V gives 59(.2) mA)

(allow C.E. for value of V_{rms} from (a))

(ii) $V_{rms} = 59 \times 10^{-3} \times 90 = 5.3(1)$ V **(1)**

(allow C.E. for value of I_{rms} from (i)) [or $V_2 = V_1 \frac{R_2}{R_1 + R_2}$]

2

(c) $V_{peak} = 5.31 \times \sqrt{2} = 7.5(1)$ (V) **(1)**

best choice: 5 V per division **(1)**

(allow C.E. for incorrect V_{rms} and for suitable reason)

reason: others would give too large or too small a trace **(1)**

3

[9]