ROADMAP PROBLEM : 3

$H_2C = CH_2$

(i) $Hg(OAc)_2 / H_2O$
(ii) $NaBH_4$

↓

P

$\downarrow$ PCC

Q

$\downarrow$ $\overset{\ominus}{O}H / \Delta$

R

$\downarrow$ H_2 / Pt

S

$\downarrow$ $KMnO_4 / H^+$

T

$\downarrow$ $NaOH + CaO$
Δ

U $\xrightarrow[hv]{Cl_2}$ V $\xrightarrow[\Delta]{Alc.\ KOH}$ W
major

C

↑ Br_2 / hv

B

↑ Na / DE

A

↑ PCl_3

Z

↑ $NaBH_4$

$[X] + Y_{MW = 44}$

↑ (i) O_3
(ii) H_2O / Zn

W

Y $\xrightarrow{KCN}$ D $\xrightarrow{H_3O^+}$ E

$\downarrow$ PCl_5

F

$\downarrow$ Alc. KOH / Δ

G $\xrightarrow{NaNH_2\ (excess)}$ H $\xrightarrow{CH_3Br\ (excess)}$ I

$\downarrow$ $H_2 / PdCaCO_3$
Quinoline

J

$\downarrow$ Cold. Alk.
$KMnO_4$

N $\xleftarrow[H^+]{EtOH}$ M $\xleftarrow[H^+]{K_2Cr_2O_7}$ L $\xleftarrow{HIO_4}$ K

$\downarrow$ NaOEt / Δ

O