VISHWAKARMA INSTITUTE OF TECHNOLOGY, PUNE. VISHWAKARMA INSTITUTE OF TECHNOLOG
Q:5] A p-n junction is doped with NA = 2 x 1016 cm
and Np=9 x 1015: cm-3 petermine the capacita
and the state of t
of the device with VR= OV and VR= IV
in a solution to the state of the solution of
We first obtain the built-in potential.
Va = VT. In NANP
Mi ²
),
Vo = 0.73 V
Thus ter VR=0 and q=1.cx10-9 C, we have
Ció = 1 Esia NAND
2 NA +ND VO
Esi = 71.7 x 8.85 x To-14 = cm10
expresents dielectric constant of silicon
= \ 11.7.x8.85.x10-14x 1.6x10-19 x. 2x1016 x 9x101
2×2×1016 x9×1015 x. 0.72
= 2.65 × 10 ⁻⁸ F/cm ²
10: 000 77 11102
$\frac{1}{1} \frac{\text{Cjo} - 0.265 \text{ fF}}{\text{cm}^2}$
where I FF (Femto Farad) = 10-15 F
For VR = IV
without the same of the stayers on the
Ci = Cio
1 Tut VR
Vo Vo
V VI AV VI A
= 0.265 N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
variable of the my 17 th and and and were the
In a bigger and off N .0.73 The In address to the
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control of the land of the second of the sec
$G = 0.172 \text{ f} = 1 \text{ lm}^2$