har wood PROBLEM spellov nellegare and Ja 1. If the device operates at 36Hz with an anade voltage of toky and an efficiency of tor, determine the output power if the input De power Given: Republic Voltage - 600V

Soutcou:

Given: Forequency = 361+12 sonals northead

Anode voltage = 40kV.

Efficiency = +0% : utualey normals : hyper IP Do power = 1MV = 1000 KW

To tind: Old power Val - 6-7-10- COM-

Olp power = Efficiency XI/ip power

V 4.1×10 31 0001 x 7.0 =

= tookW.

à. The Enput power to the sum over of an ideal matched magic -T is IW. Find output power from the other arms when matched terminated.

1. EXIG

Solen-

cimen. No borner = 1 M. 20.1=

Magic Tee Behavior:

· When yp at the sum port: I 801.06 4 * O/P power splits equally blw port 1 & porta

* No power comes out of part 4.

00!

PA = 0.5W.

Pa = 0.5W.

PA = OW.

3. If the supeller voltage is set to -book, and electron path length is 1.5 mm, estimate the election transit time in nanoseconds. Solution: In out & sound Judguo out survivately Griven: Repeller Voltage = -600V D= 1.5mm = 1.5 x 10-3 m. Electron charge e-1.6x10 1c. Electron mass m=9.1×10⁻³¹kg ty: Electron velocity:

1 mo2 = eV => 0 = 2eV

2 mo2 = eV => 0 = 2eV roway all prof or 2 = 2×1-6 ×10-19 × 600 | 1 × 0 × 3 | 9 | 0 × 10 × 3 | = 1.9×10-16 The Englit power to the sam 1818 miles 2000 Step a: Franct time time To sipon bondow from the other owns when matched terminated $=\frac{1.5\times10^{3}}{1.45\times10^{7}}=1.03\times10^{-10}$ + 2.0.103 no frost much est do gy marked. * of pouxor sputs equally blu port a sports to to power come out of port 4.

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4. If the input power is sow, and coupling factor is 10dB, determine the power coupled to auxiliary Port.

solu:

Given: 9/p power = 80W

Coupling factor = lods.

Proupled = Pinput X10 - wupling factor

$$= 80 \times 10^{-\frac{10}{10}} = 80 \times 10^{-1}$$

Posupled = 8W.

5. A semiconductor device exhibits a unique current—
voltage characteristics, with a peak current of 3m A
at forward voltage of 0.07 V and a valley current
Of 0.8 mA at a voltage of 0.2V. Determine the
Peak-to-valley current ratio (PVCR) of this divice.

solu.

Given: Beak current Ip: 3mA

valley award In = 0.8 mA.

PVCR = Ip

 $=\frac{3}{0.8}$

PVCR = 3.75