

**S .R . FATEPURIA COLLEGE**

**INTERNAL ASSESMENT**

**PHYSICS (HONOURS)**

**4<sup>TH</sup> SEMESTER**

**PAPER : PHY-H-CC-T-10**

**FULL MARKS : 10**

**ANSWER ANY ONE QUESTION BELOW : (10 ×1)**

**1 . a. A Transistor has a collector current of 5 mA & base current of 20  $\mu$ A. 2  
Find the value of  $\alpha$  and  $\beta$  .**

**b. Draw the circuit diagram of a Bridge Rectifier.**

**What are the advantages of Bridge Rectifier over a Full-Wave Rectifier ? 3**

**c. Explain how the Fermi Energy level changes with doping concentration  
&temperature . 5**

**OR**

**2 . a. What do you mean by TUF ? Determine the TUF of a Half-Wave Rectifier ?**

**2**

**b. Explain how the width of the depletion region changes with biasing .**

**why do we choose active region over other regions in order to use transistor as amplifier ?**

**2+3**

**c. Calculate the barrier capacitance of a Ge p-n junction whose area is 1 mm by 1mm and whose depletion region thickness is  $2 \times 10^{-3}$  mm. Take the dielectric constant of Ge as 16 .**

**3**