

Code: EC2T5

**I B.Tech - II Semester – Regular/Supplementary Examinations
April - 2018**

**ELECTRONIC DEVICES & CIRCUITS
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1.

- a) Define Potential.
- b) Mention the function of X-deflection plates in a cathode ray tube.
- c) Write the differences between Zener break down and Avalanche break down.
- d) Determine the current flowing in the Si diode when 0.6V reverse bias is applied at room temperature and the reverse saturation current at room temperature is $10\mu\text{A}$.
- e) Draw the Bridge rectifier circuit with input and output waveforms.
- f) Compare the performance of L and π - section filters.
- g) Define the relation among α , β and γ .
- h) Transistor works as an amplifier, justify.
- i) What is the need for biasing?
- j) Define Thermal runaway.
- k) A JFET has $V_p = -4.5\text{V}$, $I_{\text{dss}} = 10\text{mA}$ and $I_{\text{ds}} = 2.5\text{mA}$.
Determine V_{GS} .

PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a) Draw the diagram of CRT and Explain 8 M
- b) What is the trajectory of a charged particle entering in a direction perpendicular to a uniform magnetic field? Explain. 8 M
3. a) What is PN junction diode? Explain the working of PN junction under forward bias and reverse bias with neat diagram. 8 M
- b) Write short notes on: i) Photo diode ii) LED 8 M
4. a) A Full-wave rectifier is connected with an inductor filter, derive expression for the ripple factor and draw relevant waveforms. 8 M
- b) Design LC filter for a Full-wave rectifier circuit to provide an output voltage of 10 V with a load current of 200 m A and the ripple is limited to 2%, $f=50\text{Hz}$. 8 M
5. a) Draw the drain characteristics of depletion mode MOSFET. Explain different operating regions of MOSFET. 8 M

b) For the NPN transistor connected in CE mode with $V_{CC}=12V$, $V_{BB}=5V$, $I_C=15\text{ mA}$, $V_{CE}=5\text{ V}$, $\beta=99$, $V_{BE}=0.7\text{ V}$ and $R_E=55\Omega$ Find I_B , R_B and R_C . 8 M

6. a) Explain the working of collector – Base bias circuit using NPN transistor. 8 M

b) For the circuit shown in Figure-1, $I_C = 2\text{mA}$, $\beta=100$ & $V_{CE}=3V$. Calculate R_1 & R_C . Assume $V_{BE}=0.6\text{V}$. 8 M

