



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

First Semester, B.E. - Semester End Examination; Dec - 2017/Jan - 2018

Electronic Devices and Communication

(Common to All Branches)

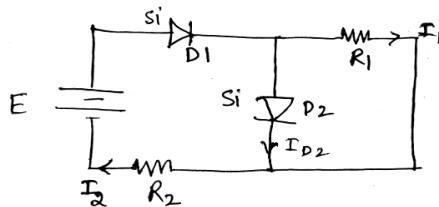
Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

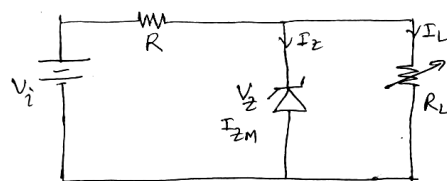
- 1 a. Describe the working of center-tapped transformer full wave rectifier with its circuit diagrams and waveforms. Determine PIV for each diode. 8
- b. Explain the procedure to draw DC load line and Q point for series diode configuration. 6
- c. For the network shown in Fig. 1(c), calculate;
 - i) I_1 ii) I_2 iii) I_{D2} .



$E = 20V$
 $R_1 = 3.3K\Omega$
 $R_2 = 5.6K\Omega$

fig 1 (c)

- 2 a. Explain the biasing circuit and characteristics of photodiode. 8
- b. With neat diagram, discuss the working of solar cell. 6
- c. For the network shown in Fig. 2(c), compute;
 - i) Range of R_L and I_L that will result V_{RL} being maintained at 20 V
 - ii) Maximum wattage rating of the diode.



$V_i = 60V$
 $R = 1K\Omega$
 $V_Z = 20V$
 $I_{ZM} = 34mA$

fig 2 (c)

UNIT - II

- 3 a. Explain the basic operation and drain characteristics of η - channel depletion type MOSFET with related diagrams. 10
- b. Draw the diagram of constructing PMOS FET and nMOS FET on the same substrate and also explain the working of CMOS inverter with circuit diagram. 10
- 4 a. Draw the circuit diagram and its AC equivalent network for E-MOS FET drain-feedback configuration. Write the equation for i) Z_i ii) Z_o iii) A_v . 8
- b. Explain Barkhausen criterion for oscillation. 6
- c. Discuss the working of phase shift oscillator with neat circuit diagram. 6

UNIT - III

- 5 a. Define following parameters of Op-Amp : 6
- i) CMRR ii) Slow Rate iii) Output offset voltage.
- b. Write the Op-Amp circuit diagram and output voltage equation for, 8
- i) Differentiator ii) Non-inverting Amplifier
- iii) Integrator iv) Unity follower.
- c. Discuss the double-ended operation of Op-Amp. 6
- 6 a. Write the circuit diagram, explain Op-Amp as : 6
- i) Non-inverting voltage controlled voltage source
- ii) Current controlled current source.
- b. Write the Op-Amp circuit and its frequency response for; 6
- i) First order low pass filter ii) First order high pass filter.
- c. Write the Op-Amp circuit and output voltage equation for; 8
- i) 3-input summing amplifier ii) Voltage subtractor iii) Constant-gain multiplier.

UNIT - IV

- 7 a. List the major differences between Microcontroller and Microprocessor. 5
- b. Write note on : 6
- i) 8-bit Microcontroller ii) 16-bit Microcontroller.
- c. Compute the following conversions : 9
- i) $(52.8125)_{10} = (\quad)_2 = (\quad)_{16}$ ii) $(CAD.BF)_{16} = (\quad)_{10} = (\quad)_2$
- iii) $(31C)_{16} = (\quad)_{10} = (\quad)_2$.
- 8 a. Write the block diagram of 8051 Microcontroller architecture and list its features. 8
- b. Explain 8051 μ c oscillator circuit and timing with neat diagram. 6
- c. Explain the 8051 μ c flags and PSW. 6

UNIT - V

- 9 a. Discuss the concept of Frequency Division Duplexing and Time Division Duplexing. 8
- b. Explain the block diagram of Basic cellular system. 6
- c. Describe the operation of Cordless telephone system. 6
- 10 a. Explain the following two types of topologies used in wireless network : 8
- i) Infrastructure network topology
- ii) Ad-HOC network topology
- b. Describe the frequency management systems for the Advanced Mobile Telephone System (AMPS). 7
- c. List the advantages of GSM. 5