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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
I/II Semester, B.E. - Semester End Examination; May/June - 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. With circuit diagram and waveforms, explain the working of center-tapped transformer full wave rectifier.   8

   b. What is the need of DC load line? Explain the procedure to draw DC load line and Q point for series diode configuration.   8

   c. Draw and explain the V-I characteristics of Zener diode.   4

2 a. Describe the operation of photodiode with biasing circuit and characteristics.   8

   b. Discuss the regulating action of Zener diode with related equations and circuit diagram.   8

   c. Explain the operation of reflective field effect LCD.   4

UNIT - II

3 a. With a neat diagram, explain the construction and characteristics of MESFETs.   7

   b. Discuss the process of channel formation in the *N*-channel enhancement MOSFET and draw its drain characteristics.   8

   c. Write the advantages of VMOS FET's over MOSFET's.   5

4 a. State and explain Barkhausen criterion for oscillation.   5

   b. Describe the working of FET phase shift oscillator with neat circuit diagram and write equation for frequency of oscillation.   7

   c. Analyze the voltage divider biasing arrangement for *N*-channel enhancement MOSFET along with circuit diagram and related equations.   8

UNIT - III

5 a. Discuss the concept of virtual ground in an Op-amp. Write the circuit diagram and output voltage equation of Op-amp inverting and non-inverting amplifier.   10

   b. Define the following parameters of Op-amp :

   i) Slew rate

   ii) CMRR

   iii) Input offset voltage   6

   c. Write the Op-amp circuit and output voltage equation for :

   i) Integrator

   ii) Voltage follower   4

6 a. With neat circuit diagram, explain the working of voltage controlled voltage source and current controlled current source.　　8

　 b. Design an Op-amp summing amplifier to obtain an output voltage $V_0 = - [0.5V_1 + 0.8V_2 + 2V_3]$. Where V_1, V_2, V_3 are inputs. Assume $R_f = 10$ kΩ.　　6

　 c. Explain the low pass filter and high pass filter along with circuit diagram and frequency response.　　6

UNIT - IV

7 a. Briefly explain the features of 8-bit, 16-bit and 32-bit microcontroller.　　6

　 b. Draw the block diagram of microcontroller and write the fundamental differences between microprocessor and microcontroller.　　8

　 c. Compute the following conversion :　　6
　　 i) $(847.951)_{10} = (\quad)_2 = (\quad)_{16}$　　　　ii) $(A2C)_{16} = (\quad)_{10} = (\quad)_2$

8 a. Write the bit format of TMOD register and explain each bit.　　6

　 b. With a neat diagram, explain the operation of port-1 pin of 8051 μC.　　7

　 c. Explain the 8051 μC oscillator circuit and timing with a neat diagram.　　7

UNIT - V

9 a. Explain basic cellular system along with block diagram.　　6

　 b. What is Duplexing? Explain Frequency Division Duplexing and Time Division Duplexing.　　7

　 c. Describe the operation of cordless telephone system.　　7

10a. Describe the frequency management system for the Advanced Mobile Telephone System (AMPS).　　8

　 b. List the advantages of GSM.　　5

　 c. Write the advantages and disadvantages of Ad-hoc and infrastructure network.　　7

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