Besck 104C-1 - Introduction to electronics and communication vtu most important questions

Introduction to Electronics and communication (Visvesvaraya Technological University)

BESCK104C - SIMP Question bank- VTU Coachme

Module 1

1. Describe the working of a DC power supply with a block diagram.
2. Explain the operation of a full-wave bridge rectifier with a neat circuit diagram and waveform.
3. Draw the circuit diagram of a voltage regulator and explain its operation.
4. Explain the concept of a negative feedback amplifier with relevant equations and diagrams.
5. Explain the frequency response of an RC coupled amplifier.
6. With a neat circuit diagram and waveform, explain the working operation of a half-wave rectifier.
7. Draw the circuit diagram of a voltage doubler and explain its working operation.
8. An amplifier produces an output voltage of 2V for an input of 50mV. If the input and output currents are 4mA and 200mA respectively, determine:
   - The voltage gain
   - The current gain
   - The power gain

Module 2

1. Explain the Barkhausen criteria for oscillations.
2. With a neat circuit diagram, explain the operation of a Wien bridge oscillator.
3. Explain the operation of a single-stage astable multivibrator with its circuit diagram.
4. List out the ideal characteristics of an op-amp.
5. Explain the following with respect to an operational amplifier:
   - Integrator
   - Open loop voltage gain
   - Output resistance
   - Slew rate
6. Draw the circuit diagram and input and output waveforms of the following:
   - Differentiator
   - Summing amplifier
7. An operational amplifier operating with negative feedback produces an output voltage of 2V when supplied with an input of 400μV. Determine the value of closed-loop voltage gain and express the answer in decibels.
8. In a Wien bridge oscillator, if C1 = C2 = 200nF, determine the frequency of oscillation when R1 = R2 = 4kΩ.

Module 3

1. Convert the following:
   - (EACE)16 = (?)2
   - (65.45)10 = (?)2
   - (11011011011.11011)2 = (?)8
   - (2604.10546875)10 = (?)16
   - (10110001101011.111110000)2 = (?)8
   - (10110001101011.11110010)2 = (?)16
   - (1010.011)2 = (?)10

2. Perform the following:
    - (1010100)2 - (1000100)2 using 2's complement.
    - (4456)10 - (34324)10 using 10's complement method.
    - (72532 - 3250)10 using 10's complement.
    - (3250 - 72532)10 using 10's complement.
3. State and prove De Morgan's theorems with its truth table.
4. Implement the following Boolean functions using logic gates:
    - F1 = x + y'z
    - x'y'z + x'yz - xy'
5. Write the step-by-step procedure to design a combinational circuit.
6. Implement a full adder circuit using two half adders and one OR gate. Write the equations for Sum and Cout.
7. Implement a full adder circuit with its truth table and draw the logic diagram of sum and carry.
8. Express the Boolean function F = A + B'C in sum of minterms form and F = xy + x'z in product of maxterms form.

Module 4

1. What is an embedded system?
2. Compare embedded systems with general computing systems.
3. Explain the classification of embedded systems.
4. Discuss the typical embedded system elements.
5. What is the difference between RISC and CISC processors?
6. Discuss major application areas of embedded systems with examples.
7. Write a short note on:
    - Transducers
    - Sensors
    - Actuators
    - 7-segment LED display
8. Explain the working of a 7-segment LED with necessary diagrams.

Module 5

1. With a neat block diagram, explain a modern communication system.
2. Explain Amplitude Modulation (AM) and Frequency Modulation (FM) with neat diagrams.
3. List the advantages of digital communication over analog communication.
4. Write a short note on Amplitude Shift Keying (ASK) modulator and demodulator.
5. Discuss the types of communication systems.
6. Draw the block diagram of a basic communication system and briefly explain it.
7. Write a note on hard-wired and soft-wired channels.
8. Explain, with a neat diagram, the concept of radio wave propagation and its different types.