COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

B.TECH. DEGREE IV SEMESTER EXAMINATION IN MARINE ENGINEERING JUNE 2020

MRE 1404 MARINE ELECTRONICS
(2013 Scheme)

Time: 2hrs 30 Minutes [30 Minutes for Answering and Scanning/Uploading the page of the Answer Sheet per module]
Max. Marks: 70 (14 per module)

INSTRUCTIONS

1. You have to be available in Google Meet on demand by the faculty.
2. You have to share your '**live location**' to the faculty before uploading the answer sheet.
3. You have to answer only one question per module.
4. Answer may not exceed one page of an A4 size paper in a standard handwriting, as far as possible.
5. If at all an answer goes beyond one page, (due to your handwriting) another page can also be used. In such a situation, the page number should be given as 1/2, 2/2.
6. You have to put dated signature along with Register Number, Subject Code, Module/Group Number (as given in the Question Paper) in each page.
7. You have to put the Question Number correctly.
8. After answering the question, you have to scan and upload the answer page.

MODULE - I
(Answer *ANY ONE* question)

I(1).   Draw the circuit of complementary symmetry Push pull power amplifier. In steps write how it amplifies the input signal.   (14)

OR

I(2).   Draw Op-amp circuit which produces square wave at its output for a sinusoidal input. Draw the necessary waveforms.   (14)

MODULE - II
(Answer *ANY ONE* question)

II(1).   Draw Mod 4 ripple up counter using positive edge triggered flip flop and write its truth table.   (14)

OR   (14)

II(2).   Implement $F = \pi M (0,4,9,10,11,14,15)$ using AOI logic. Use only two input logic gates.

MODULE - III
(Answer *ANY ONE* question)

III(1).   A single phase full converter is supplied from 230V, 50Hz source. For R-L load with extinction angle β equal to π+α, where α is the firing angle, plot the output voltage and current waveforms. Draw the output voltage if free- wheeling diode is connected across the load.   (14)

OR

III(2).   What is CMOS technology, construct the NOT gate using only NMOS. Define terms Fan-in and Fan-out in digital integrated circuits.   (14)

MODULE - IV
(Answer *ANY ONE* question)

IV(1).   Draw the block diagram of FM Super-heterodyne receiver and list the functions of each block.   (14)

OR

IV(2).   Draw the waveform of PWM, PAM and FM for sinusoidal modulating signal. Write the equation for the modulation index of FM signal.   (14)

MODULE - V
(Answer *ANY ONE* question)

V(1).   What is address multiplexing in 8085 μP. List all the registers and their uses in 8085 μP.   (14)

OR

V(2).   Write a program to fetch a number stored in memory location 9000 H and to reset the three least significant bits of this number.   (14)

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