

M.Sc. 3rd Semester Examination, 2023

ELECTRONICS

(Electronic and optical Communication Lab)

(Practical)

PAPER – 395

Full Marks : 50

Time : 3 hours

Answer **all** questions

Candidates are required to give their answers in their own words as far as practicable

A. Answer any *one* question selecting it by lucky draw :

1. Design and implement a circuit on bread-board to generate pulse width modulated (PWM) signal using IC 555. Observe the

output and record the data. Plot widths of the pulses with time. Repeat the process for another set of modulating signal.

2. Design and implement a circuit using IC OTA 3080 for amplitude modulation. Record the data for three sets of modulating signal amplitude at fixed frequency and calculate the modulation index for each case. Plot the variation of modulation index with modulating signal amplitude.
3. Find the numerical aperture of the given optical fiber. Calculate the acceptance angle for the fiber.
4. Measure the dimension of circular aperture by LASER beam.
5. Design a frequency modulation circuit using IC8038 and implement it on a

breadboard. Verify the operation of the circuit and calculate the frequency deviation and modulation index.

6. Design and implement a circuit for optical conversion of 4-bit signal to its analog form by R-2R ladder network.
7. Design an AM demodulation circuit with an envelope detector. Plot the demodulated waveform for 60% and 75% modulation. Compare the results.
8. Generate an amplitude modulated signal using a transistor on breadboard. Show your result for different amplitudes with a fixed frequency of the modulating signal. Repeat it for another fixed input frequency. In such case calculate the values of modulation index.

9. Generate pulse amplitude modulated (PAM) signal using a transistor. Observe the output and record the amplitude and time period. Repeat the same for another set.
10. Draw the characteristics of the given LDR for three light intensities. Calculate LDR resistances for each case and compare them.

Distribution of Marks

Theory	: 05 Marks
Circuit	: 10 Marks
Experiment	: 15 Marks
Result and discussions	: 05 Marks
Viva-voce	: 10 Marks
Laboratory Note Book	: 05 Marks
Total	: 50 Marks