

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE
Supplementary Winter – 23 End Semester Examination

Course: B. Tech.	Branch: Electronics Engineering	Semester: VI
Subject Code & Name: BTEXOE604B-Communication Engineering (Open Elective 2 Group B)		
Max Marks: 60	Date: 23-01-24	Duration: 3 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

	(Level/CO) Marks
Q. 1 Answer the following. (ANY TWO)	
A. Explain Broadcast and point to point communication system with necessary diagram	CO 01 6
B. State and explain sampling theorem.	CO 01 6
C. Write short note on FDM	CO 01 6
Q.2 Solve/Answer the following. (ANY TWO)	
A. Explain Balanced Modulator with necessary circuit diagram	CO 02 6
B. The output signal from an AM modulator is: $u(t) = 5\cos(1800\pi t) + 20\cos(2000\pi t) + 5\cos(2200\pi t)$ (i) Determine the modulating signal $m(t)$ and the carrier signal $c(t)$. (ii) Determine the modulation index. (iii) Determine the ratio of the power in the sidebands to the power in the carrier.	CO 02 6
B. Draw block diagram of AM-ISB generation and explain.	CO 02 6
Q. 3 Solve/Answer the following. (ANY TWO)	
A. Derive the mathematical expression for FM signal and draw its frequency spectrum.	CO 03 6
B. Explain Stabilized Reactance Modulator (AFC) with necessary block diagram	CO 03 6
C. In an FM system, when the AF is 500 Hz and AF voltage is 2.4 V the deviation is 4.8 KHz. If the AF voltage is now increased to 7.2 V. What is the new deviation? If the AF voltage is raised to 10V, while the AF is dropped to 200 Hz, what are the deviations? Find the modulation index in each case.	CO 03 6
Q.4 Answer the following. (ANY TWO)	
A. List the various advantages and disadvantages of Super-heterodyne Receiver over TRF receiver.	CO 04 6
B. What is Image frequency? Explain image frequency rejection.	CO 04 6
C. Explain the working of delayed AGC with necessary circuit diagram.	CO 04 6
Q. 5 Solve/Answer the following. (ANY TWO)	
A. Explain the operation of practical diode detector with necessary circuit diagram.	CO 05 6
B. Explain how the drawback of simple slope detector is eliminated in balanced slope detector.	CO 05 6
C. A radio receiver, connected to an antenna whose resistance is 50 ohm has an equivalent resistance of 50 ohm. Calculate the receivers noise figure in dB and its equivalent noise temperature (at an assumed temperature).	CO 05 6

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