Time 3 Hrs. Total Marks: 80

Instructions: 1) Question Number 1 is compulsory.
2) Attempt any three from remaining questions.
3) Use suitable data whenever is required.

Q1	Solve **Any Four**	20 Marks
a	Compare FM and AM.	
b	Explain the necessity of De-emphasis and pre-emphasis in Frequency Modulator.	
c	Define and explain Selectivity and Sensitivity for Radio Receiver.	
d	What is Aliasing? How it can be prevented?	
e	What is Time Division Multiplexing? Also give its applications.	
Q2		
a	Explain balanced modulator using diode for the generation of DSBSC AM signal.	10 Marks
b	How to Generate SSB using filter method?	10 Marks
Q3		
a	List types of noise and explain any four types of internal noise.	5 Marks
b	What do you mean by Noise factor and noise figure. How it can be improved?	5 Marks
c	Draw the block diagram of super- heterodyne receiver and explain the operation. Write frequency components present at the output of each block if audio frequency is 1 KHz and carrier frequency is 540 KHz	10 Marks
Q4		
a	With the help of neat diagram and waveforms explain generation and demodulation of Pulse position modulation	10 Marks
b	A carrier wave of frequency 100 MHz is frequency modulated by sine wave of amplitude 20 volts and frequency 100 KHz. The frequency sensitivity of the modulation is 25 KHz per volt. Determine the approximate bandwidth of FM wave using Carson's rule.	5 Marks
c	A 360 W carrier is simultaneously Amplitude modulated by two audio waves with modulation percentages of 55 and 65 respectively. What is the total sideband power	5 Marks
Q5	Write Short note on **(Any Four)**	20 Marks
a	Frequency Division Multiplexing	
b	Double Spotting and Fidelity of Radio Receiver	
c	Wide Band and Narrow Band FM	
d	Applications of pulse communication	
e	ISB Receiver	
Q6		
a	Describe Foster-seeley Discriminator with a neat circuit diagram and explain its principle with necessary Equations. What are its merits and Demerits?	10 Marks
b	Explain generation of Frequency Modulated wave using Armstrong Method	10 Marks

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