বিদ্যাসাগর বিশ্ববিদ্যালয়

VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2022

(Under CBCS Pattern)

Semester - VI

Subject : ELECTRONICS

Paper : C 13-T

Communication Electronics

Full Marks : 40

Time : 2 Hours

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

1. Answer any *four* questions. Each question carries five marks : 5×4=20

(i) Explain why modulation is needed in electronic communication system? Define noise figure, noise temperature and SNR. 2+3

(ii) What do you mean by modulation index of an AM signal ? For an AM signal prove that $P_t = P_c\left(1+\frac{m^2}{2}\right)$ 2+3

(iii) With a neat sketch discuss the Armstrong method of wide band FM generation. 5

(iv) Discuss how a PCM system works. What do you mean by quantization noise? 3+2

(v) Explain the TDM and FDM techniques used in electronic communication system. 5

(vi) Write down the Shannon's law regarding the channel capacity. What do you mean by M-array coding? Explain the difference between bit rate and baud rate. 1+2+2

2. Answer any *two* questions. Each question carries ten marks : 10×2=20

(i) Discuss how you can generate SSB-SC AM signal using phase shift method? What is selective filtering method for SSB generation? Write down the advantage of VSB signal over SSB and DSB signals. Explain the principle of operation of an envelope detector. 3+3+2+2

(ii) Discuss with proper block diagram how a superheterodyne receiver works. What do you mean by image frequency? How image frequency can be suppressed in a superheterodyne receiver? How FM can be demodulated using slope detection method ? 4+2+2+2

(iii) State and prove the Nyquist sampling theorem. Write a short note on PAM and PPM. (3+3)+2+2

(iv) What do you mean by quantization in a PCM system ? What is non uniform quantization? What do you mean by companding? Write short notes on FSK, PSK and ASK. 2+1+1+2+2+2