



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2022

(Under CBCS Pattern)

Semester - IV

Subject: ELECTRONICS

Paper : C 8-T

(Operational Amplifiers and Applications)

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 from the following : 5×4=20
- (i) Write a short note on voltage controlled oscillator. 5
 - (ii) With a proper diagram explain the working of a monostable multivibrator. 5
 - (iii) Discuss the principle of AC to DC conversion in the SMPS module. 5
 - (iv) Explain the basic comparator circuit using OP-AMP. 5
 - (v) Give a short discussion on Phase Locked Loops. 5
 - (vi) What is an active filter? Give the advantages of an active filter over a passive filter.
What is meant by the bandwidth of a bandpass filter? 1+2+2

P.T.O.

2. Answer any *two* questions from the following :

10×2=20

- (i) Discuss the use of an OP-AMP as an adder. Derive expressions for the voltage gain of an inverting amplifier using an OP-AMP. 5+5
- (ii) (a) Explain the concept of virtual ground in OP-AMP.
(b) Explain the operation of voltage to current converter using OP-AMP. 5+5
- (iii) (a) Discuss the principle of action of an astable multivibrator with a proper diagram and show its collector voltage waveforms.
(b) Explain the operation of an OP-AMP Schmitt Trigger with a proper diagram. 5+5
- (iv) (a) How do the characteristics of a practical OP-AMP differ from those of an ideal OP-AMP?
(b) Define CMRR.
(c) Write a short note on the sample and hold system. 2+2+6
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