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- (D) Explain the working of OP-AMP as Integrator.
Draw the circuit diagram also. **12**

Or

Explain the working of frequency to voltage converter. Draw the necessary circuit diagram.

Unit-IV

4. (A) What are active filter ? **2**
(B) What are the basic difference between first order low pass and first order high pass filters ? **2**
(C) Discuss OP-AMP as square wave generator. **4**

Or

Discuss OP-AMP as triangular wave generator.

- (D) Describe first order Butterworth filter. Draw the necessary circuit diagram. **12**

Or

Describe integrator and differentiator circuit using OP-AMP. Discuss its application.



Roll No.

Total No. of Sections : 4

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III Semester Examination

M.Sc.

PHYSICS

Paper III

[Special Paper I-Electronics]

Time : Three Hours]

[Maximum Marks : 80

[Min. Passing Marks : 16

Note : Part A and B of each question in each unit consists of Very Short Answer Type Questions which are to be answered in one or two sentences. Part C (Short Answer Type) of each question will be answered 200-250 words. Part D (Long Answer Type) of each question should be answered within the word limit 400-450. Draw the necessary circuits.

Unit-I

1. (A) What is CMRR ? Calculate CMMR if common mode and differential gain are 10 and 100 respectively. **2**
(B) What are the circuit assumptions made for DC and AC analysis of the differential amplifier? **2**

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- (C) What do you mean by constant current bias in differential amplifier. Draw the necessary circuit diagram. **4**

Or

Explain the DC analysis of dual input balanced output differential amplifier.

- (D) Explain the differences between constant current bias and current mirror. Draw the necessary circuit diagram. **12**

Or

Draw and explain the Common Emitter Common Base (CE-CB) cascade amplifier and explain its D.C. analysis.

Unit-II

2. (A) What is an OP-AMP ? Why an ideal OP-AMP requires infinite band width ? **2**
- (B) Draw the ideal voltage transfer curve of a normal OP-AMP. **2**

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- (C) Describe CMRR, Slew rate and frequency response of OP-AMP. **4**

Or

Explain OP-AMP with negative feedback.

- (D) What do you mean by Input resistance and output resistance with feedback and also discuss the band width with feedback in OP-AMP. **12**

Or

Explain briefly open loop OP-AMP configuration.

Unit-III

3. (A) What do you mean by summing amplifier ? **2**
- (B) What is the difference between DC and AC amplifier of OP-AMP ? **2**
- (C) Explain the working of OP-AMP as DC amplifier. **4**

Or

What is multivibrator ? Explain it in brief.