M 26481

Reg. No. : ....

Name : ....

I Semester M.A./M.Sc./M.Com. Degree (Reg./Supple./Imp.) Examination,
November 2014
PHYSICS
(2013 & Earlier Admn.)
PH 103 : Electronics

Time : 3 Hours   Max. Marks : 50

Instructions : 1) Answer **any two** questions from **A. Each** question carries
    10 marks.
2) Answer **any 5** questions from **B. Each** question carries **3** marks.
3) Answer **any 3** questions from **C. Each** question carries **5** marks.

SECTION – A

1. Explain the working of real op-amp in inverting and non-inverting configuration and derive expression for gain.

2. Discuss the theory of op-amp integrator and draw the output waveforms for sine and square wave input signals.

3. Draw the circuit of a first order low-pass Butterworth filter. Derive the equation for the cut-off frequency of the filter.

4. Draw the functional block diagram of 8085 μp and explain each block.

SECTION – B

5. Define slew rate and input offset voltage of an op-amp.

6. What is a zero crossing detector ?

7. Explain the working of voltage comparators using op-amp.

8. Explain the function of logarithmic amplifier.

9. Explain the operation of a JK Flip-flop.

10. What are shift registers ? Mention its applications.

P.T.O.

11. Differentiate between synchronous and asynchronous counters.

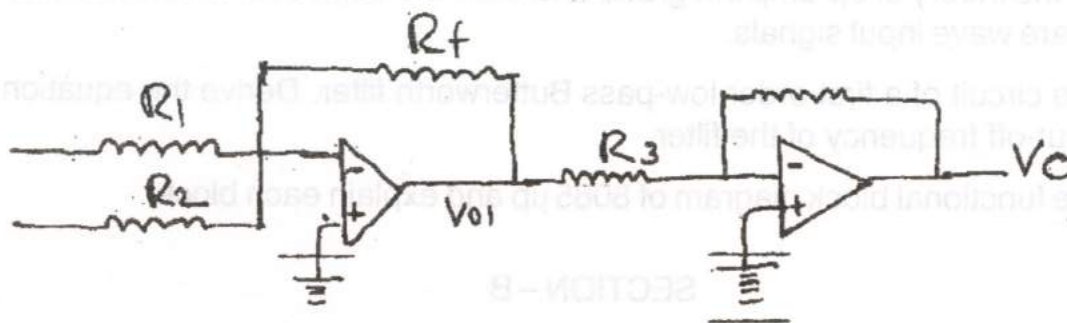12. Explain data and address buses in a Intel 8085 microprocessor.

SECTION – C

Answer **any three** questions.

13. For the inverting amplifier shown in fig. R = 2 KΩ, Rf = 1 MΩ. Calculate
    (i) Voltage gain (ii) Input resistance (iii) Output resistance, assuming the op-amp to be an ideal one.
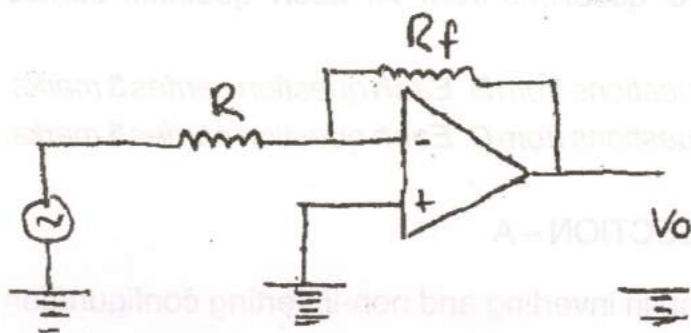
14. Design an op-amp having an output voltage $V_0 = 3V_1 + 5V_2$.

15. Design a second order low-pass Butterworth filter for a cut-off frequency of 2 KHz.

16. For a type 741 op-amp following parameters are given. Quiescent collector current $I_c = 9.5\ \mu A$, $C_c = 30$ pF, peak amplitude input voltage $V_m = 15$ V. Calculate the slew rate and full power band width (f_{max}).

17. Write a program to add two numbers 32H and 48H in a microprocessor system.