1131

Code : 15EC-31

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2017

ANALOG ELECTRONICS CIRCUITS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **SIX** questions from **Part-A**.
(ii) Answer any **SEVEN** full questions from **Part-B**.

PART - A

1. Explain the working of ON-Line UPS. **5**

2. Sketch and explain full wave Centre tapped rectifier circuit. **5**

3. Define biasing of BJT and explain the need for biasing. **5**

4. Explain the operation of transformer coupled class-A power amplifier. **5**

5. Explain the block diagram of OP-amp. **5**

6. List any 5 ideal characteristics of OP-amp. **5**

7. List any 5 advantages of active filter over passive filters. **5**

8. Explain the operation of positive clamper circuit. **5**

9. Describe how oscillations develop in LC tank circuit with a suitable sketch. **5**

PART - B

10. (a) Describe the block diagram of regulated DC power supply. **5**
    (b) Show mathematically the ripple factor of a half wave rectifier is 1.21. **5**

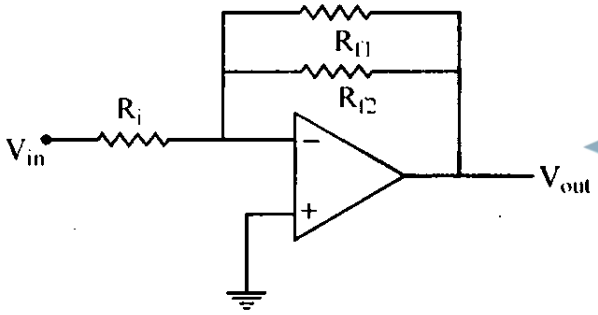
11. (a) Explain the working of π-filter with Half wave rectifier. **5**
    (b) Explain IC voltage regulator using LM 317. **5**

12. (a) Explain the concept of AC Load line for large signal amplifiers. 5
    (b) Describe the working of class-AB amplifier. 5

13. (a) Explain the working of common emitter RC coupled amplifier. 5
    (b) Tabulate the efficiencies and conduction angles of power amplifiers. 5

14. (a) Define the following w.r.t. Op-amp :
        (i) Input offset voltage
        (ii) CMRR
        (iii) Input impedance
        (iv) Slew-rate
        (v) PSRR 5
    (b) Construct an Op-amp circuit that converts square wave into triangular wave. 5

15. (a) Explain the working of Schmitt trigger circuit using Op-amp & also sketch the hysteresis plot. 5
    (b) Estimate the gain in the following circuit given $R_i = 1\ k\Omega$, $R_{f1} = R_{f2} = 10\ k\Omega$ 5



16. (a) Illustrate how Band elimination filter (BEF) can be realized using LPF & HPF. 7
    (b) List any 3 applications of active filter. 3

17. (a) Explain the operation of PLL with a neat diagram. 6
    (b) Design a first order button worth LPF circuit for a gain of 10, cut off frequency of 1 kHz. 4

18. (a) List any 5 applications of clipper circuit. 5
    (b) Illustrate the operation of RC differentiator with response to square wave signal. 5

19. (a) Explain the working of wein-bridge oscillator with neat circui diagram. 6
    (b) A Hartley oscillator circuit has C = 500 pf, L_1 = 20 mH & L_2 = 5mH. Find the
        (i) frequency of oscillation
        (ii) Sketch Hartly oscillator circuit using BJT. 4