1051

Register
Number

III Semester Diploma Examination, April/May-2019
ANALOG ELECTRONICS CIRCUITS

Time : 3 Hours]

[Max. Marks : 100

Instructions : (i) Answer any **six** questions from Part – A. (**6 × 5 = 30** marks)

(ii) Answer any **seven** full questions from Part – B. (**7 × 10 = 70** marks)

PART – A

1. List any five IC voltage regulators and mention their rated output voltage levels. **5**

2. List any five comparission between ON-line and OFF-line UPS. **5**

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

4. Classify the power amplifiers and explain. **5**

5. Show mathematically that the gain of a non-inverting amplifier is $1 + \dfrac{R_f}{R_{in}}$. **5**

6. List any five applications of Op-Amp. **5**

7. List any five applications of active filters. **5**

8. Sketch and explain the combinational clipping circuit. **5**

9. Define oscillator. Explain Barkhausen criteria for obtaining sustained oscillation. **5**

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PART – B

10. (a) Describe the operation of half wave rectifier circuit with waveforms. **6**
    (b) Show mathematically the ripple factor of a bridge rectifier is 0.48. **4**

11. (a) Explain the block diagram of SMPS. **6**
    (b) Explain voltage regulator using Zener diode. **4**

12. (a) Explain the working of a voltage divider bias circuit. **5**
    (b) List any five differences between Class-A and Class-B power amplifiers. **5**

13. (a) Differentiate between voltage and power amplifiers. **4**
    (b) Illustrate how the problems in Class-B push-pull amplifier are solved in complementary symmetry Class-B amplifier. **6**

14. (a) Explain the operation of Op-Amp as a comparator. **4**
    (b) Explain the operation of full wave rectifier with a neat circuit diagram. **6**

15. (a) Explain the operation of Op-Amp summing amplifier with three inputs. **6**
    (b) Mention any four applications of integrator. **4**

16. (a) Explain the operation of first order butter worth high pass filter using Op-Amp. **6**
    (b) Design a low pass filter using Op-Amp at a cut-off frequency of 1 kHz with a pass gain of 2. **4**

17. Explain the need and working of instrumentation amplifier with a neat circuit diagram. **10**

18. (a) Describe the working of RC integrator circuit. **5**
    (b) List any five applications of clamper circuit. **5**

19. (a) Explain the operation of RC phase shift oscillator circuit. **6**
    (b) Determine the frequency of Colpitt's oscillator using $C_1 = 150$ pf, $C_2 = 1.5$ nf and $L = 50$ mH, also sketch Colpitts oscillator circuit using BJT. **4**

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