

M.E. First Semester (Digital Electronics) (Part Time / Full Time) (C.G.S.- New)  
**13203 : Elective-I : Modern Electronic Design Techniques : 1 UMEF 3**

P. Pages : 2

Time : Three Hours



**AX - 3486**

Max. Marks : 80

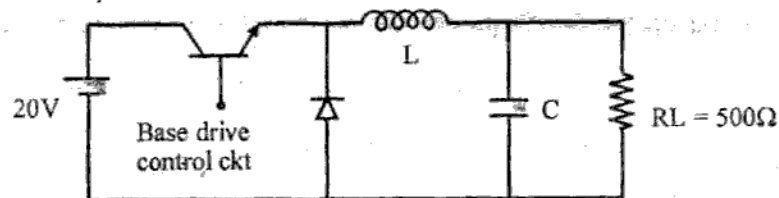
- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
  2. Assume suitable data wherever necessary.
  3. Illustrate your answer necessary with the help of neat sketches.
  4. Use of pen Blue/Black ink/refill only for writing the answer book.

**SECTION - A**

1. a) What is PGA? How the gain is programmable. Explain it's working with circuit diagram. 7  
b) Explain digital isolation Techniques? 6

**OR**

2. a) Design Low noise PGA for gain 2, 4, 8 and 16 using suitable circuit. 7  
b) Draw and explain AD8037 clamp amplifier circuit with the help of block diagram. 6
3. a) For the circuit shown in figure find values of L, C for ripple voltage 20mV,  $V_0 = 12V$  (Assume suitable data). 7



- b) What is switch mode power converters? Explain working Buck converter with waveforms and design concept. 7

**OR**

4. a) Describe the factors for selection of proper semiconductor switches in switching Regulators. 7  
b) Draw and Explain pulse frequency modulation circuit for switching Regulators. 7
5. a) What is phase Lock loop? Explain with block diagram the working of PLL. 6  
b) Explain with block diagram the working of moving target detector system. 7

**OR**

6. a) Explain propagation of sound in water. Hence explain speed of sound, attenuation of sound reverberation of sound in under water sound system. 7  
b) Explain working of Radar with basic range equations. 6

**SECTION - B**

7. a) Draw and explain the block diagram of components of electronically controlled engine for automotive control system 7  
b) Explain various basic flight instrumentation systems. 6

**OR**

8. a) Draw and explain typical cruise control system for automobiles, Hence explain digital cruise control system for vehicle motion control. 7  
b) Draw and explain electrical starting system of turbine engine starter circuit for aircraft. 6  
9. a) Explain the working of portable bar code scanner. 7  
b) Explain common portable applications and type of battery selection with specification for portable devices. 7

**OR**

10. a) Explain the principle of VOIP phone why dedicated VOIP phone models not popular in India? 7  
b) Explain the concept of smart Battery. 7  
11. a) Explain the role of Bypass or decoupling capacitor in the layout for analog & digital circuit. 7  
b) What is EMC? Discuss EMC issues & design of enclosure for electronic product. 6

**OR**

12. a) Explain testability techniques, hence explain in circuit testing, functional testing by ATE & boundary scan JTAG. 7  
b) Explain the performance parameters used for evaluating reliability of electronic system. 6

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