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 | **AW - 3757**

Time : Three Hours | Max. Marks : 80

* 0 3 6 3 *

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) Explain ADUM 140x multi channel isolator. **6**

b) Draw and explain AD210 three port isolation instrumentation amplifier in current sensing system for motor control. **7**

OR

2. a) Draw and explain monolithic software programmable PGA instrumentation amplifier. **7**

b) Enumerate the demerits of conventional classes of digital isolation devices? Explain how i-coupler technology can remove some of disadvantages. **6**

3. a) Explain selection of active components PIN Diodes (FREDS) for switched regulators, also state advantages over standard fast recovery diodes. **8**

b) Explain with circuit diagram the working of switch mode Buck Regulator technology, hence derive necessary equations. **6**

OR

4. a) Design Buck regulator for Vdc = 12V, Vo=6V and R_L=500 Ω, peak to peak ripple output voltage = 15 mV for switching frequency of 25 KHz. **8**

b) Describe the factors for selection of proper semiconductor switches in switching regulators. **6**

5. a) Explain active sonar systems with active sonar equations. **7**

b) Draw block diagram and explain working of Digital phase and frequency detector system. **6**

OR

6. a) Draw and explain the block diagram of moving target detector. **7**

b) Explain phase lock loop with it's applications. **6**

SECTION – B

7.	a)	Explain engine speed tachometer system and engine temperature monitor system for air craft.	**6**
	b)	Draw and explain Gas turbine engine features and hence explain turbine starting and ignition system for air craft.	**7**
		OR	
8.	a)	Explain digital engine control system for automobiles.	**6**
	b)	Draw and explain the block diagram of components of electronically controlled engine for automotive control system.	**7**
9.	a)	Explain with applications the working of ultrasound meters.	**6**
	b)	Explain with the help of block diagram working of Bar code scanner.	**7**
		OR	
10.	a)	Explain the working of portable device for measurement of blood sugar.	**7**
	b)	Explain intelligent battery management system.	**6**
11.	a)	What is Reliability? Explain design aspect of reliability.	**7**
	b)	What is thermal management? Draw & explain electrical analog model for heat sink transfer from component to ambient. Also explain some practices that will improve thermal performance.	**7**
		OR	
12.	a)	Explain fundamental issues to be considered when dealing with current return path with or without ground plane.	**7**
	b)	Explain rules for design of enclosure for EMC product, hence explain shielding efficiency.	**7**

****