

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING – SEMESTER – III• EXAMINATION – SUMMER 2016

Subject Code: 3330303**Date: 20/05/2016****Subject Name: Medical Electronics****Time: 02:30 PM TO 5:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of programmable & Communication aids are strictly prohibited.
5. English version is authentic.

- Q.1** Define any seven out of ten. દશમાંથી કોઇપણ સાત ને વ્યાખ્યાયિત કરો. **14**
1. Input offset voltage
 ૧. Input offset વોલ્ટેજ
 2. Input bias current
 ૨. Input bias કરંટ
 3. CMRR
 ૩. CMRR
 4. Slew Rate
 ૪. Slew Rate
 5. Gain Bandwidth Product
 ૫. Gain Bandwidth Product
 6. Input impedance of Op-amp
 ૬. Input impedance of Op-amp
 7. Amplifier
 ૭. એમ્પ્લીફાયર
 8. Oscillator
 ૮. ઓસિલેટર
 9. Negative feedback
 ૯. નેગેટિવ ફિડબેક
 10. Dual input balance output.
 ૧૦. Dual input balance output.
- Q.2** (a) Explain block diagram of Op-amp in detail. **03**
- પ્રશ્ન. ૨ (અ) Op-amp નો બ્લોક ડાયાગ્રામ દોરી સમજાવો. **03**
- OR
- (a) Enlist the ideal characteristics of op-amp. **03**
- (અ) Op-amp ની ideal characteristics ની વિગત વાર યાદી આપો. **03**
- (b) Draw and explain the inverting amplifier. **03**
- (બ) Inverting amplifier દોરી સમજાવો. **03**

OR

	(b)	Draw and explain the non inverting amplifier.	03
	(બ)	Non inverting amplifier દોરી સમજાવો.	03
	(c)	Enlist and explain any one feedback configuration of op-amp.	04
	(ક)	Op-amp ની feedback configuration ની યાદી આપી કોઈ પન એક સમજાવો.	04
		OR	
	(c)	Write a short note on “Voltage Follower”	04
	(ક)	ટૂંક નોંધ લખો. “Voltage Follower”	04
	(d)	Explain the instrumentation amplifier in detail	04
	(ડ)	Instrumentation amplifier વિગત વાર સમજાવો.	04
		OR	
	(d)	Explain the importance of instrumentation amplifier in biomedical field.	04
	(ડ)	Instrumentation amplifier નું બાયોમેડીકલ ફિલ્ડ માં મહત્વ સમજાવો.	04
Q.3	(a)	Write a short note on “Integrator”	03
પ્રશ્ન. 3	(અ)	ટૂંક નોંધ લખો. “Integrator”	03
		OR	
	(a)	Write a short note on “Differentiator”	03
	(અ)	ટૂંક નોંધ લખો. “Differentiator”.	03
	(b)	Draw and explain second order high pass butter worth filter.	03
	(બ)	Second order high pass butter worth filter દોરી સમજાવો.	03
		OR	
	(b)	Draw and explain first order low pass butter worth filter.	03
	(બ)	First order low pass butter worth filter દોરી સમજાવો.	03
	(c)	Explain RC Phase shift oscillator in detail.	04
	(ક)	RC Phase shift oscillator વિગત વાર સમજાવો.	04
		OR	
	(c)	Write a short note on “Square wave generator”	04
	(ક)	ટૂંક નોંધ લખો. “Square wave generator”	04
	(d)	Explain saw tooth wave generator in detail.	04
	(ડ)	Saw tooth wave generator વિગત વાર સમજાવો.	04
		OR	
	(d)	Write a short note on “Schmitt trigger”	04
	(ડ)	ટૂંક નોંધ લખો. “Schmitt trigger”.	04
Q.4	(a)	Explain the working of digital to analog converter.	03
પ્રશ્ન. 4	(અ)	Digital to analog converter નું કામ સમજાવો.	03
		OR	
	(a)	Explain the working of successive approximation.	03
	(અ)	Successive approximation નું કામ સમજાવો.	03
	(b)	Explain the working of differential amplifier with one op amp.	04
	(બ)	એક op amp થી differential amplifier નું કામ સમજાવો.	04
		OR	
	(b)	Describe summing and scaling amplifier using inverting configurations.	04
	(બ)	Summing and scaling amplifier નું inverting configuration થી વર્ણન કરો.	04
	(c)	Explain basic Op-amp Comparator with diagram.	07

	(ક) Op-amp Comparator દોરી સમજાવો.	૦૭
Q.5	(a) Explain working of electrocardiograph amplifier with sketches	04
પ્રશ્ન. ૫	(અ) Electrocardiograph amplifier નું કામ દોરી સમજાવો	૦૪
	(b) Explain the block diagram of cardiac monitors.	04
	(બ) Cardiac monitors નો બ્લોક ડાયાગ્રામ દોરી સમજાવો.	૦૪
	(c) Differentiate the band pass and band reject filter.	03
	(ક) Band pass and band reject filter નો તફાવત આપો.	૦૩
	(d) Write a short note on “Wein bridge oscillator”.	03
	(ડ) ટૂંક નોંધ લખો. “Wein bridge oscillator”.	૦૩
