Indian Institute of Information Technology Sri City, Chittoor
End Semester Exam

Subject: BEC Duration: 90 Mins Max. Marks: 30

Instructions:

1. Do not copy from any source, if found you will be penalized according to institute norms.
2. Scientific calculators are allowed.
3. Answer all questions
4. Write neatly on A4 size sheets
5. Write Question paper code, your name and roll number on all pages
6. Scan properly and convert into .pdf format as single file

Question Paper Code:	G

Answer the following:

Q1. Let us consider a circuit having four resistances (R1 = 1Ω, R2 = 3Ω, R3 = 5Ω and R4 = 7Ω) and they are connected in parallel. In that case total Current = 28 A. Then calculate the circuit voltage V, I1 , I2, I3, I4? (6 Marks)

Q2. If a band-pass active filter (non-inverting) having the gain 10 is designed using the following circuits: Low-pass (R = 3 KΩ, C = 0.8 μF) and high-pass filter (R = 3 KΩ, C = 0.006 μF) combination, draw the band-pass active filter circuit, obtain the expression for Vo and thereby solve for Vo if the input Vin = 12 V. (6 Marks)

Q3. Draw the Wien Bridge oscillator circuit and determine the transfer function of the feedback network. (4 Marks)
(ii) By imposing the appropriate condition for oscillations, determine the frequency of operation, if R_s = 12 kΩ, R_p = 12 kΩ , C_s = 25 nF and C_p = 35 nF. (2 Marks)

Q4. Draw the 555 timer internal circuit in monostable multivibration mode of operation. Derive the expression for the time period of 555 Timer based Monostable Multivibrator mode and calculate the frequency when C = 10 nF and R= 1.2 kΩ. (6 Marks)

Q5. Draw the circuit diagram for flash ADC. If the reference voltage is 8 V, what is the digital equivalent of the signal voltage of 6.5 V. (6 Marks)