

**SARDAR PATEL UNIVERSITY**  
**T.Y.B.Sc. EXAMINATION**  
**2011**  
**Monday, 10<sup>th</sup> October**  
**10.30 am to 1.30 pm**  
**EL-301: ELECTRONICS**

**Total Marks: 80**

**Note: Figures to the right indicate full marks.**

- Q.1 a Define output non linear distortion. In brief explain it 04
- b Draw block diagram for voltage amplifier. Find out input resistance for it. 05
- c Derive expression for output resistance for voltage shunt feed back amplifier. 05

OR

- Q.1 A In brief explain wien bridge oscillator. 09
- b Write a note on tuned circuit oscillator 05
- Q.2 a Explain working of voltage regulator IC 723 07
- b With the help of circuit diagrams explain series regulator 06

OR

- Q.2 a Derive conversion efficiency for class A – series fed and transformer coupled amplifier. 08
- b State origin of cross over distortion. How it can be eliminated? 05
- Q.3 a Construct summing amplifier and phase shifting amplifier from the inverting amplifier. Derive expression for both circuits. 04
- b In brief explain instrumentation amplifier. 09

OR

- Q.3 a State differences between active and passive filters. Define different types of filter. 06
- b Draw circuit diagram for first order low pass butterwort filter. Derive expression for frequency and voltage gain for it. Draw frequency response for the same. 07

*P.T.O.*

Q.4

- (a) Why precision rectifier is necessary? Draw the circuit of a precision full wave rectifier and explain its working. [07]
- (b) Draw the circuit of monostable multivibrator using an op-Amp and explain its working with the help of necessary waveforms. [06]

OR

Q.4

- (a) Discuss in detail the antilog amplifier. [06]
- (b) Discuss in detail the temperature compensated log amplifier. [07]

Q.5

- (a) With the help of necessary diagram explain the charge amplifier. [07]
- (b) What is clipper? Explain the positive clipper with necessary diagrams. [06]

OR

Q.5

- (a) With the help of the circuit diagram explain the working of frequency to voltage converter. [07]
- (b) Explain the working of temperature to voltage converter with the help of necessary diagram. [06]

Q.6

Justify the name 555 timer. Draw the functional block diagram of astable multivibrator using 555 timer and derive the expression for the frequency of oscillation. [14]

OR

- (a) Discuss the application of astable multivibrator as a linear ramp generator. [07]
- (b) Explain how the monostable multivibrator can be used as a missing pulse detector. [07]



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**SARDAR PATEL UNIVERSITY**  
**T.Y B.Sc. EXAMINATION**  
**Wednesday, 12<sup>th</sup> October 2011**  
**10.30 p.m. to 1.30 p.m.**  
**EL- 303 : ELECTRONICS**

**Total Marks: 80**

**Note: Figures to the right indicates marks.**

Q.1

- (a) Explain the Architecture of 8085 Microprocessor with necessary diagram. [10]  
(b) Explain the Demultiplexing Bus. [04]

**OR**

Q.1

- (a) Explain the Pinout diagram of 8085 Microprocessor. [10]  
(b) Explain Generating Control Signal. [04]

Q.2

- (a) Explain the classification of Instruction according to their word size. [06]  
(b) Explain addressing modes. [04]  
(c) Explain (1) IN 8 bit port address (2) MVI R, 8 bit data [03]

Q.2

- (a) Explain logical Instructions with necessary example. [10]  
(b) Explain (1) ADI 8 bit data (2) SUB B (3) SUI 8 bit data [03]

Q.3

- (a) Explain Looping, Counting and Indexing in detail. [07]  
(b) Explain the Rotate and Compare instructions. [06]

**OR**

Q.3

- (a) Explain Additional data transfer and 16 bit arithmetic instructions. [07]  
(b) Explain arithmetic operations Related to memory. [06]

Q.4

- (a) Explain the STACK instructions in detail. [07]
- (b) Explain the conditional and unconditional CALL and RETURN instructions. [06]

OR

Q.4

- (a) Write a program to count continuously in hexadecimal from FFH to 00H in a system with a 0.5  $\mu$ s clock period. Use register c to set up a one milisecond (ms) delay between each count and display the numbers at one of the output ports. [07]

[Given: in loop T States = 14 T States out  
out-loop T States = 35 T States.]

- (b) Explain Advanced Subroutine Concepts. [06]

Q.5

- (a) A BCD number between 0 and 99 is stored in an R/W memory location called the Input Buffer. Write a main program and a conversion subroutine (BCDBIN) to convert the BCD number into its equivalent binary number. Store the result in a memory location defined as the output buffer. [08]

- (b) Explain (1) LHLD 16 bit (2) SHLD 16 bit (3) XCHG [06]

OR

Q.5

- (a) A binary number is stored in memory location BINBYT. Convert the number into BCD and store each BCD as two unpacked BCD digits in the output buffer. To perform this task, write a main program and two subroutines, one to supply the power of ten and the other to perform the conversion. [08]

- (b) Explain (1) DAD RP (2) XTHL (3) PCHL [06]

Q.6 Explain 8085 Vectored Interrupts in detail. [13]

OR

Q.6 Explain EI, DI, SIM, RIM in detail. [13]

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**SARDAR PATEL UNIVERSITY**  
**T.Y B.Sc. EXAMINATION**  
**Thursday, 13<sup>th</sup> October 2011**  
**10.30 a.m. to 1.30 p.m.**  
**EL- 304 : ELECTRONICS**

**Total Marks: 80**

**Note: Figures to the right indicates marks.**

Q.1

- (a) Explain in detail Kelvin double bridge for measurement of low value resistors. [11]
- (b) The ac bridge is in balance with following constants, arm AB,  $R=450\Omega$ , arm BC,  $R=300\Omega$  in series with capacitor  $C=0.265\mu F$  arm CD unknown, arm DA  $R=200\Omega$  in series with  $L=15.9mH$ . The oscillator frequency is 1kHz. Find the constants of arm CD. [03]

**OR**

Q.1

- (a) Describe in detail Working of Schering bridge. [12]
- (b) Draw impedance triangle for capacitor and Inductor. [02]

Q.2

- (a) Define Transducer. How they are classified? Give one example of each. [03]
- (b) Explain Working of LVDT. [08]
- (c) What property of Piezoelectric material is used to make transducer? [02]

**OR**

Q.2

- (a) What are the three important blocks of instrumentation system. What is function of each block? [03]
- (b) What are thermistors? What are they made up of? In what shapes and sizes they are available? [04]
- (c) Explain current voltage characteristics of thermistor. [06]

Q.3

- (a) What is principle of true RMS responding voltmeter? [02]
- (b) Explain in detail working of Ramp type DVM. [11]

**OR**

Q.3

- (a) Draw circuit of basic Q meter circuit and state its principle of operation. [04]
- (b) Draw circuit diagram of successive approximation voltmeter and explain need of sample and hold circuit. [05]
- (c) The self capacitance of a coil is to be measured by using two measurements. The first measurement is at  $f_1=2MHz$  and  $C_1=460PF$ . The second measurement is at  $f_2=4MHz$  yield a new value of tuning capacitor  $C_2=100PF$ . Find the distributed capacitance Cd. [04]

- Q.4  
(a) Write a short note on Frequency Synthesised Signal Generator. [08]  
(b) What are Signal Sources? What are the characteristics of the signal. [06]

OR

Q.4 Describe the working of Piston and Pi type attenuater. [14]

Q.5 Write a short note on multichannel data acquisition system, different types of multichannel DAS and explain them in detail. [13]

OR

Q.5 What are Recorders? Discuss fully the analog displays and recorders. [13]

Q.6

- (a) Discuss in detail the computer controlled measurement system for testing an audio amplifier. [08]  
(b) Draw the pin diagram of IEEE488 connector and label each pin. [05]

OR

Q.6

- (a) Draw the schematic of open collector IEEE488 bus transreceiver and explain its working. [07]  
(b) Explain the different control signals for IEEE488. [06]

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SARDAR PATEL UNIVERSITY  
T.Y.B.Sc. EXAMINATION  
2011  
Friday, 14<sup>th</sup> October  
10.30 am to 1.30 pm  
EL-305: ELECTRONICS  
(Industrial Electronics)

- Q.1(a) Describe series operation of SCRs with necessary equalizing circuits. (08)
- (b) Discuss principle of operation and characteristic of SCR. (06)

OR

- Q.1(a) State important points to design gate control circuit of SCR.  
Discuss different methods of -  
'TURNING ON' a SCR. (08)
- (b) Discuss 'TURN OFF' mechanism of SCR giving its characteristic. (06)

①

(P.T.O.)

Q.2 (a) Discuss application of SCR as static circuit breaker for A.C. and D.C. input supply. (07)

(b) Discuss application of UJT as 'Relaxation oscillator'. (06)

OR

Q.2 (a) Describe technique of controlling over voltage using thyristor devices. (07)

(b) Write note on 'Low power devices' of thyristor family. (06)

②

(P.T.O.)

Q.3 (a) Draw schematic diagram of D.C. motor and discuss its functional mechanism. (08)

(b) Write short note on 'STEPPER MOTOR'. (05)

OR

Q.3 (a) Describe functional mechanism of series type inverter with necessary diagrams. (08)

(b) Write short note on 'Basic Parallel-inverter'. (05)

Q.4 (a) Draw circuit diagram of full-wave phase control ~~circuit~~ system and discuss it in detail. (09)

(b) Differentiate between Half-wave and Full-wave phase control circuits. (05)

OR

Q.4 (a) Discuss functional mechanism of Dual converter system and state its uses. (09)

(b) Explain concept of speed-control of motor for single phase configuration. (05)

(3)

Q.5 (a) Write note on 'Principle of chopper operation with necessary ~~circuit~~ diagram. (07)

(b) Discuss different types of control strategies of chopper system. (06)

OR

Q.5 (a) Discuss functional mechanism of first quadrant type-A chopper with necessary diagram. (07)

(b) Discuss different types of basic chopper variations. (06)

④

(P.T.O.)

Q.6 (a) What is PLC ?

Discuss different terms and terminologies used in PLC system.

(10)

(b) State applications of PLC system.

(03)

OR

Q.6 (a) Draw schematic block diagram of PLC system and discuss function of each section of it.

(10)

(b) Briefly discuss utility of PLC system.

(03)

