TRADE TEST FOR CRAFTS INSTRUCTOR
(SEMESTER SYSTEM)
JANUARY – 2015

TRADE: ELECTRONICS MECHANIC
SEMESTER – I
SUBJECT : THEORY

TIME : 3 Hrs.
MARKS: 100

1. (A) Choose the correct answer: (10x1=10)

i) Which transistor mode gives the inverted output?
   a) Common emitter  
   b) Common base
   c) Common collector  
   d) None of these

ii) Bubbles on the gate shows –
    a) Active high
    b) Active low
    c) Both (a) and (b)  
    d) None

iii) Which one of the following is a D to A conversion technique?
     a) Successive approximation
     b) Weighted resistor technique
     c) Dual slope technique  
     d) Single slope technique

iv) Intel’s 80186 and 80286 microprocessors are –
    a) 16-bit
    b) 8-bit
    c) 32-bit  
    d) None of these

v) The oscillator which gives most stable frequency is –
   a) Crystal oscillator
   b) Wien bridge oscillator
   c) RC phase shift oscillator  
   d) Hartley oscillator

vi) In a master slave flip flop circuit, master is enabled –
    a) At positive trigger edge
    b) At negative trigger edge
    c) Both positive and negative trigger edge  
    d) Without any trigger

vii) When a step-input is given to an op-amp integrator, the output will be –
     a) A ramp
     b) A sinusoidal wave
     c) A rectangular wave  
     d) A triangular wave with dc bias

viii) The function of a bleeder resistor in a power supply is –
     a) The same as that of load resistor
     b) To ensure a minimum current drain in the circuit
     c) To increase the output dc voltage  
     d) To increase the output current

ix) The ‘Slew rate’ of an operational amplifier indicates (when a step input signal is given) –
    a) How fast its output current can change
    b) How fast its output impedance can change
    c) How fast its output power can change  
    d) How fast its output voltage can change

x) A analog Panel Meter basically measures –
    a) Voltage
    b) Current
    c) Power  
    d) Depends upon parameter

Contd...2/-
(B) State ‘True’ or ‘False’. In case of false, correct the statement. (10x1=10)
   i) Machine language is the only language which a computer understands.
   ii) We cannot delete the entire data in a data sheet.
   iii) Thermistors have a high negative temperature coefficient of resistance.
   iv) In a transistor with normal bias, the collector junction is of low resistance.
   v) Transistor should not be checked when it is connected in circuit.
   vi) Hybrid ICs are most widely used.
   vii) OP-AMP is a current controlled voltage source device.
   viii) In an astable multivibrator $\beta = 1$.
   ix) Bluetooth is used for WAN.
   x) SCTP is a cable.

(C) Fill in the blanks: (10x1=10)
   i) W W W stands for ____________
   ii) Software helps a user to give ____________ to the computer hardware.
   iii) LVDT can be used to measure ____________.
   iv) In a CE amplifier, a positive going input signal produces a ____________ going output signal.
   v) RC coupled amplifier has a very ____________ frequency response curve.
   vi) Instrumentation amplifier uses ____________ OP-AMP.
   vii) Thermistors are ____________ transducers.
   viii) A 555 IC has ____________ number of pins.
   ix) Output voltage of an OP-AMP is independent of ____________ current.
   x) Router is ____________ component.

2. Write short answers on Any Twenty of the following: (20x2=40)
   a) Differentiate between PNP and NPN transistors.
   b) Define Bit, Nibble, Byte and Word.
   c) Define flip flop and write the names of different type of flip-flop.
   d) What finally decides the shape of the waveform for bistable multivibrator?
   e) Name the four library components in a simulation software.
   f) Describe the internet.
   g) Name two techniques adopted for DAC.
   h) State the advantages and disadvantages of step up chopper circuit.
   i) Draw the circuit diagram of RC coupled amplifier.
   j) Write name of different types of seven segment display.
   k) Describe Ethernet switch.
   l) Write any four advantages of (SMT) Surface Mount Technology?
   m) Discuss principle of working of LCD.
   n) Draw the block diagram of Automatic voltage stabilizer.
   o) Differentiate between Microprocessor and Microcontroller.
p) Draw the Wien bridge oscillator circuit using OP-AMP.
q) State the difference between inverters and UPS.
r) State any two advantages and any two disadvantages of capacitive transducer.
s) List the various types of strain gauges transducer.
t) Write two applications of solar cell?
u) What is the difference between active and passive transducers?
v) Write short note on HDMI.

3. **Answers on Any Six of the following:**  
   \( 6 \times 5 = 30 \)
   a) Design FULL ADDER using two HALE ADDER. Write its truth table also?
b) Describe the term I S P. What is a search engine? Name any four websites that provide the e-mail facility.
c) Explain construction and working principle of LVDT.
d) Draw and explain the principle operation of inverter with the help of block diagram.
e) Explain the various network topologies.
f) Compare FTP, BNC, RCA, HDMI.
g) Describe the use of digital panel meter (DPM) with LCD to display different voltage signals.

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