Roll No_____   ID: 181031/171031/121031/31031
Semester: 3rd
Branch: Mechatronics Engg
Subject Name : Electronic Devices & Circuits
Shift: 17.03.2021 (Morning)

Time Allowed : 3Hrs.   MM: 100
Section –A
Note: Objective type questions. Attempt any eight questions out of ten.   8x2=16
Q.1   CMRR stands for_____.   (CO 7)
Q.2   Unit of gain is _____.   (CO 1)
Q.3   7812 produces _____regulated dc voltage.   (CO 8)
Q.4   IC 555 is _____ number of pins IC.   (CO 6)
Q.5   Ideal operational amplifier has infinite input resistance and zero output resistance.
       (T/F)   (CO 7)
Q.6   Class _____ power amplifiers have the highest collector efficiency (CO 2)
Q.7   Negative feedback _____the noise level in amplifiers.   (CO 3)
Q.8   A tuning circuit having higher value of Q factor will have _____selectivity.   (CO 5)
Q.9   An electronic circuit that generates square wave is called _____. (CO 6)
Q.10   RC Coupling is used for _____amplification.   (CO 2)
Section-B
Note: Very short answer type questions. Attempt any eight questions out of twelve
**   questions.   8x3=24**
Q.11   What do you mean by frequency response curve?   (CO 2)
Q.12   Write the name of any two multistage amplifiers.   (CO 1)
Q.13   What is the importance of heat sink?   (CO 3)
Q.14   Which type of coupling is preferred for impedance matching.   CO 2)
Q.15   Which type of feedback is used by Oscillators.   (CO 4)
Q.16   What is the use of positive feedback?   (CO 4)
Q.17   Define Slew rate.   (CO 7)
Q.18   Define positive and negative IC regulators.   (CO 8)
Q.19   Draw series resonant circuit.   (CO 5)
Q.20   Define line regulation.   (CO 8)
Q.21   Define input offset current.   (CO 7)
Q.22   What do you mean by the multi-vibrator?   (CO 6)
Section –C
Note: Short answer type Questions. Attempt any five questions out of ten questions.
**   5x8= 40**
Q.23   Compare different types of multistage amplifiers.   (CO 2)
Q.24   Discuss any two advantages of negative feedback.   (CO 3)
Q.25. Write short notes on (a) adder (b) subtractor.   (CO 7)
Q.26   Why multistage amplifier is required in practical circuits?   (CO 1)
Q.27   Explain single ended power amplifier.   (CO 2)
Q.28   Define the characteristics of ideal Op-amp   (CO 7)
Q.29   Explain the concept of fixed voltage regulator.   (CO 8)
Q.30   Explain the single tuned voltage amplifier.   (CO 5)
Q.31   Explain the operation of crystal oscillator.   (CO 4)
Q.32   Discuss the working of emitter follower amplifier and its application. (CO 3)
Section –D
Note: Long answer type Questions. Attempt any two questions out of four.   2x10=20
Q.33   Explain the IC 555 timer as monostable multivibrator with diagram.   (CO 6)
Q.34   Explain R-C coupled multistage amplifier with the help of diagram. Write down its
       Applications.   (CO 2)
Q.35   Discuss the principle and working of wein bridge oscillator. Give its applications. (CO 4)
Q.36   Discuss the working of double tuned voltage amplifier. Draw its frequency response.
                                                                           (CO 5)

180832/170832/120832/
30832/31034/106

Computer Engg / IT / Eletx.

Subject : Digital Electronics / Digital Eltx-I

Time : 3 Hrs.   M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory   (10x1=10)

Q.1   A _____ signal varies continuously with time.

Q.2   In _____ codes, each digit of the code do not have any position weight.

Q.3   There are _____ cells in a 3 variable K-Map.

Q.4   A 16:1 MUX has _____ number of select lines.

Q.5   A counter is a _____ circuit consisting of a combination of flip flops used for counting pulses (combinational/Sequential).

Q.6   Expand the terms PIPO and PISO.

Q.7   A _____ FF does not have a race around condition.

Q.8   A full adder is having _____ inputs and _____ outputs.

Q.9   For a five input OR gate there can be _____ input combination in the truth table.

Q.10 Find the 2's Complement of the binary number 01100111.

SECTION-B

Note: Very Short answer type questions. Attempt any ten questions out of twelve.   10x2=20

Q.11 Define A/D and D/A convertor.

Q.12 Define Ring counter.

Q.13 Define encoder and decoder.

Q.14 Define De-Morgan theorem.

Q.15 Convert $(101011)_2$ to Gray code.

Q.16 What are digital signals?

Q.17 Name different types of semiconductor memories.

Q.18 Convert the following binary numbers to decimal

    (i) $(0100110)_2 = ( )_{10}$

    (ii) $(10101010)_2 = ( )_{10}$

Q.19 Give the Truth table for NAND gate.

Q.20 Give the truth table and the logic diagram of a full adder.

Q.21 Define positive edge triggered flip flop.

Q.22 Give the logic diagram of 4 bit serial in serial out shift register using D flip flop.

SECTION-C

Note: Short answer type questions. Attempt any five questions. $5 \times 8 = 40$

Q.23 Perform

(i) $(16)_{10} - (5)_{10}$ using 1's Complement.

(ii) $(10)_{10} - (14)_{10}$ using 2's Complement.

Q.24 What do you mean by error detection codes? Explain about even parity.

Q.25 Why NAND and NOT gates are called universal gates?

Q.26 Simplify the expression using Boolean algebra and draw the logic circuit of the simplified expression.

$\overline{A} \, B \, \overline{C} + \overline{A} \, \overline{B} \, C + \overline{A} \, B \, C + \overline{A} \, B \, \overline{C}$

Q.27 Write short note on four bit adder.

Q.28 Give the basic function of a MUX. Draw block diagram and Truth Table of a 8 x 1 MUX.

Q.29 Differentiate between synchronous and asynchronous counter.

Q.30 What is race abound condition and how is it removed.

Q.31 Write difference between static and dynamic memories.

Q.32 Discuss the working principle of D/A converter.

SECTION-D

Note: Long answer type questions. Attempt any three questions. $3 \times 10 = 30$

Q.33 Explain with block diagram the working of a 4-bit SISO shift register.

Q.34 Draw a K-Map to reduce the following function and realize the reduced function using NAND gates only

$F = \sum m \, (0, 1, 3, 6, 11, 15) + d \, (2, 5, 13)$

Q.35 What are logic gates? Explain all logic gates with symbol and Truth Table.

Q.36 Write short notes on any two

(i) JK master slave flip flop

(ii) R-2R ladder D/A convertor

(iii) Postulates of Boolean algebra

(**Note:** Course outcome/CO is for office use only)

181033/171033/121033
/31033

3rd Sem. / ECE

Subject : Principal of Comm. Engg

Time : 3 Hrs.   M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory   (10x1=10)

(Course Outcome/CO)

Q.1   Free of carries wave is_____   (CO-1)

Q.2   The AM produce _____ number of side bands.   (CO-1)

Q.3   SSC-SC stand for _____.   (CO-1)

Q.4   PAN stands for _____.   (CO-7)

Q.5   Aramstrong Method of FM Generation is _____ (Direct/ Indirect Method).   (CO-3)

Q.6   Diode detector is used to demodulate _____ (AM.FM)   (CO-5)

Q.7   In sampling theorem FS _____ F.M(>,<)   (CO-3)

Q.8   Slope detector is used to demodulate _____(AM,FM)   (CO-5)

Q.9   In AM the value of (M) lies B/W_____   (CO-1)

Q.10 FDM stand for_____.   (CO-7)

SECTION-B

Note: Very Short answer type questions. Attempt any ten parts   10x2=20

Q.11 Modulation   (CO-1)

Q.12 Carson's Rule   (CO-3)

Q.13 NOISE   (CO-2)

Q.14 VCO   (CO-5)

Q.15 DSB-SC   (CO-1)

Q.16 TDM   (CO-7)

Q.17 PLL   (CO-3)

Q.18 Limiter   (CO-2)

Q.19 Capture effect (CO-3)

Q.20 PWM (CO-7)

Q.21 BANDWIDTH (CO-3)

Q.22 AFC (CO-7)

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten. 5x8=40

Q.23 State Sampling Theorem. (CO-3)

Q.24 Need of modulation. (CO-1)

Q.25 Write note on FDM. (CO-7)

Q.26 Explain modulation index. (CO-2)

Q.27 What is De-emphasis. (CO-2)

Q.28 Difference between AM & FM. (CO-1)

Q.29 Discuss VSB Technique. (CO-2)

Q.30 Explain principle and waving of Ratio Detecrtor, (CO-5)

Q.31 Explain principal and waving of 'Reactance

Modulator' (CO-4)

Q.32 Expression for frequency Modulator wave. (CO-1)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.33 Explain "Indirect Method" of FM generation with block Diagram. (CO-3)

Q.34 Explain Circuit Diagram and working of BALANCED MODULATOR. (CO-4)

Q.35 What is A.M ? Derivation of experience for an Amplitude Modulated waves? (CO-1)

Q.36 Explain Circuit Diagram and working foster Seeley Discrimitor (CO-4)

(**Note:** Course outcome/CO is for office use only)

Roll No_____   **ID: 181034/171034/121034**

Semester: 3rd
Branch: Mechatronics Engg
Subject Name : Computer Programming using C
Shift: 12.03.2021 (Morning)

Time Allowed : 3Hrs.   **MM: 100**

Section –A

Note: Objective type questions. Attempt any eight questions out of ten.   8x2=16

Q.1	Define flow chart.	(CO 1)
Q.2	What is Size of a integer?	(CO 3)
Q.3	Write assignment operator	(CO 3)
Q.4	What is nesting?	(CO 2)
Q.5	What is the purpose of 'if' statement.	(CO 5)
Q.6	What is direct addressing?	(CO 6)
Q.7	Can be adding two pointer variables (Y/N).	(CO 10)
Q.8	% C symbol used for?	(CO 3)
Q.9	Define function.	(CO 5)
Q.10	Define array.	(CO 9)

Section-B

Note: Very short answer type questions. Attempt any eight questions out of twelve questions.   8x3=24

Q.11	Define Header file.	(CO 3)
Q.12	Explain scanf () and printf () function.	(CO 6)
Q.13	Explain difference of '=' & '==' in C language.	(CO 6)
Q.14	Write syntax of for loop.	CO 5)
Q.15	Explain exit() function.	(CO 6)
Q.16	Write syntax of if - else.	(CO 6)
Q.17	Write three advantages of pointer.	(CO 10)
Q.18	Write syntax of pointer declaration.	(CO 10)
Q.19	Write two benefits of function.	(CO 5)
Q.20	What is user defined functions?	(CO 5)
Q.21	Write drawbacks of return function.	(CO 5)
Q.22	Write Syntax of 2-D array declaration.	(CO 4)

Section –C

Note: Short answer type Questions. Attempt any five questions out of ten.   5x8= 40

Q.23	Write an algorithm for calculation of compound interest.	(CO 1)
Q.24	Write five features of 'C' language.	(CO 2)
Q.25.	Explain formatted output functions.	(CO 3)
Q.26	Write and explain exit check loops.	(CO 6)
Q.27	Define keyword with example.	(CO 5)
Q.28	Write arithmetic operations for pointer.	(CO 10)
Q.29	Explain dynamic memory allocation.	(CO 10)
Q.30	Explain void pointer.	(CO 10)
Q.31	Write different array operations.	(CO 4)
Q.32	Explain recursion process.	(CO 5)

Section –D

Note: Long answer type Questions. Attempt any two questions out of four.   2x10=20

Q.33	Define and explain different operators in 'C' language.	(CO 3)
Q.34	Write a C program to find a factorial of a given number.	(CO 7)
Q.35	Explain following:-	
	a) if –else nesting	(CO 5)
	b) Storage class specifier with array	(CO 4)
	c) Interpreter	(CO 5)
Q.36	Differentiate between following:-	
	a) Call by value and call by reference	(CO 8)
	b) Entry check and exit check loops	(CO 5)

3rd Sem. / ECE

Subject : NFTL (Network filters + Transmission files

Time : 3 Hrs.   M.M. : 100

SECTION-A

Note: Objectiv type questions. All questions are
compulsory   (10x1=10)

(Course Outcome/CO)

Q.1   A pair of terminals at which signal can enter or
leave a network is called port. (True / False)
(CO-1)

Q.2   In a T-network, the circuit elements are
arranged in a manner that looks like English
alphabet 'T' (True/False)   (CO-1)

Q.3   Battery is _____ (Active/Passive) elements.
(CO-1)

Q.4   Network obtained by splitting symmetrical T
network into two equal parts are called _____
(Half/Lattice) Network.   (CO-1)

Q.5   Attenuator is used to _____ (increase /

decrease) the signal level.   (CO-2)

Q.6   Unit of attenuation is 'Ohm'.(True/False).(CO-2)

Q.7   Filters are used in radio and TV receivers.
(True/False).   (CO-3)

Q.8   The frequencies which separates pass band
from stop band are called _____.   (CO-3)

Q.9   In optical fibres, energy is transferred in the form
of_____. (current/Light).   (CO-4)

Q.10 What is full form of VSWR?   (CO-4)

SECTION-B

Note: Very Short answer type questions. Attempt any
ten parts   10x2=20

Q.11 Define L-network.   (CO-1)

Q.12 Draw a symmetrical two port л-network. (CO-1)

Q.13 What is active network.   (CO-1)

Q.14 Define two port network?   (CO-1)

Q.15 What is relationship between Neper and
Decibel.   (CO-2)

Q.16 Write any two uses of attenuator.   (CO-2)

Q.17 What is ideal filter?   (CO-3)

Q.18 What is band pass filter? (CO-3)

Q.19 What is cut off frequency of low pass filter? (CO-3)

Q.20 Define transmission line. (CO-4)

Q.21 Define stub. (CO-4)

Q.22 What are secondary constants of transmission line. (CO-4)

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten. 5x8=40

Q.23 What is difference between linear and non-linear network? (CO-1)

Q.24 With the help of diagram, Explain ladder network. (CO-1)

Q.25 Explain the terms:

a) Propagation constant

b) attenuation constant (CO-1)

Q.26 What is image impedance of asymmetrical network. (CO-1)

Q.27 What are general characteristics of attenuator? (CO-2)

Q.28 Write main properties of filters? (CO-3)

Q.29 What are limitations of prototype filters. (CO-3)

Q.30 Explain basic concept of active filters and their comparison with passive filters. (CO-3)

Q.31 What are applications of transmission lines? (CO-4)

Q.32 Explain the concept of infinite line. (CO-4)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.33 What is asymmetrical network? Explain iterative impedance of a asymmetrical network. (CO-1)

Q.34 Derive the design equations for symmetrical T-attenuator. (CO-2)

Q.35 What is Crystal filter? Explain special properties of piezoelectric filters and their uses. (CO-3)

Q.36 What is High voltage DC transmission (HVDC)? Also write its advantages and disadvantages. (CO-4)

(**Note:** Course outcome/CO is for office use only)

181036/171036/121036
/31036

3rd Sem. / ECE

**Subject : EIM (Electronic Instrument
& Measurement)**

Time : 3 Hrs.   M.M. : 100

SECTION-A

Note: Objective type questions. All questions are
compulsory   (10x1=10)

(Course Outcome/CO)

Q.1 _____ (Accuracy / Resolution) is also referred
to the degree to closeness to the true value.
(CO-1)

Q.2 Errors may be occurred due to environmental
conditions surrounding the instruments.
(True/False)   (CO-1)

Q.3 Full form of DC is_____.   (CO-2)

Q.4 Full form of CRT is _____.   (CO-3)

Q.5 The brightest spot, on a CRO screen occurs
at_____(corner/Centre).   (CO-3)

Q.6 Wheat stone bridge is simplest_____(AC/DC)
bridge.   (CO-4)

Q.7 RF stands for_____.   (CO-5)

Q.8 Distortion meter measure the total harmonic
distortion in the waveform. (True/false) (CO-5)

Q.9 Digital voltmeter measures _____.   (CO-6)

Q.10 In signature analyser, Fault can be detected by
comparing waveform. (True/False)   (CO-6)

SECTION-B

Note: Very Short answer type questions. Attempt any
ten parts   10x2=20

Q.11 Define Sensitivity.   (CO-1)

Q.12 What is calibration?   (CO-1)

Q.13 Write two advantages of moving iron
instruments.   (CO-2)

Q.14 Write two applications of CRO.   (CO-3)

Q.15 What is the function of control grid in CRO?
(CO-3)

Q.16 What is blanking circuit? (CO-3)

Q.17 Name any two Ac bridges. (CO-4)

Q.18 What is pulse generator? (CO-5)

Q.19 What is attenuator? (CO-5)

Q.20 Draw sin wave and square wave. (CO-5)

Q.21 Write any two applications of digital multimeter. (CO-6)

Q.22 What is the use of logic pulser? (CO-6)

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten. 5x8=40

Q.23 What are different types of errors? (CO-1)

Q.24 What is the importance of standards? (CO-1)

Q.25 Explain measurement of frequency using CRO. (CO-3)

Q.26 What are various focusing techniques. (CO-3)

Q.27 Explain Maxwell's induction bridge. (CO-4)

Q.28 Write a short note on "function generator".(CO-5)

Q.29 What are applications of instrumentation amplifiers? (CO-5)

Q.30 Write a short note on "RF signal generator". (CO-5)

Q.31 Explain the working principle of logic probe. (CO-6)

Q.32 Write specifications of digital multimeter.(CO-6)

SECTION-D

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.33 Explain the construction of PMMC instruments with the help of suitable diagram. (CO-2)

Q.34 Draw and explain block diagram of DSO.(CO-3)

Q.35 Explain the working principle of Q meter with the help of suitable diagram. (CO-4)

Q.36 Explain in detail, comparison of analog and digital instruments. (CO-6)

(**Note:** Course outcome/CO is for office use only)

181535/171035
/121035/031035

3rd Sem. / I.C.

Subject : Electrical Machine

Time : 3 Hrs.   M.M. : 100

SECTION-A

Note: Objective type questions. All questions are compulsory   (10x1=10)

Q.1   Three phase induction motor is not self-starting(true/False).

Q.2   The armature of DC motor is laminated to reduce eddy current losses(True/Flase).

Q.3   Iron Losses are variable losses (True/False).

Q.4   In DC machine, the armature winding is mounted on_____.

Q.5   Phase and line voltages are equal in star connection(True/False).

Q.6   Stepper motor rotates in_____.

Q.7   Transformer is a _____device.

Q.8   Synchronous motor rotates at constant speed (True/False).

Q.9   The EMF generated in an alternator depends upon_____.

Q.10 Synchronous motor can operate at leading power factor(True/False).

SECTION-B

Note: Very short answer type questions. Attempt any ten questions out of twelve questions. 10x2=20

Q.11 Write two applications of synchronous motor.

Q.12 Define commutator.

Q.13 Write the name of losses which takes place in a transformer.

Q.14 Write two advantages of 3-phase system over 1-phase system.

Q.15 Define generator.

Q.16 Write relation between phase and line current in delta connection.

Q.17 Define Starter.

Q.18 How a revolving magnetic fields is produced in a three phase supply?

Q.19 Write basic principle of motor.

Q.20 Define all day efficiency of a transformer.

Q.21 Write the names of types of 1-phase synchronous motor.

Q.22 Define servomotor.

SECTION-C

Note: Short answer type questions. Attempt any five questions out of ten.   5x8=40

Q.23 Write short note on 3-phase induction motor.

Q.24 Explain power factor improvement by synchronous machine.

Q.25 Write short note on voltage regulation of a transformer.

Q.26 Explain the factors determining the speed of a DC motor.

Q.27 Explain EMF induced in a coil rotating in a magnetic field.

Q.28 Explain working of different types of 1-phase synchronous motor.

Q.29 Explain power measurement by three wattmeter method.

Q.30 Explain Faraday's law of electromagnetic induction.

Q.31 What is the function of commutator for generating action.

Q.32 Write short note on stepper motor.

SECTION-D

Note: Long answer type questions. Attempt any three questions out of four questions.   3x10=30

Q.33 Explain working principle of 1-phase induction motor. Also explain the construction of different types of 1- phase induction motor.

Q.34 Explain working principle of synchronous machine in detail with the help of neat diagram.

Q.35 Explain construction and working principle of DC generator in detail.

Q.36 Write short note on any two parts-

   i)   Potential Transformer

   ii) Current Transformer

   iii) Torque angle