1469

1470

Code : 15EC-34T

Register Number | | | | | | | |

III Semester Diploma Examination, Nov./Dec. 2016

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** question from Part-**A** ($5 \times 6 = 30$ marks)

(ii) Answer any **seven** full questions from Part-**B** ($7 \times 10 = 70$ marks)

PART – A

1. Compare the features of AC and DC bridges. **5**

2. List the factors for selection of a Transducer. **5**

3. List Pros and Cons of Electronic voltmeter. **5**

4. Explain : **5**

   (i) Voltmeter Sensitivity

   (ii) Load effect of voltmeter

5. List the features of standard RF signal generator. **5**

6. List the advantages and applications of Digital Storage Oscilloscope. **5**

7. Explain with block diagram Microprocessor based instruments. **5**

8. Describe successive approximation Digital voltmeter. **5**

9. Write short note on grounding and shielding. **5**

[Turn over

PART – B

10. Explain how Wheatstone bridge is used for measurement of resistance and mention its applications. 10

11. (a) Describe direct and indirect methods of measurements. 5
    (b) Explain the working principle of capacitive transducer. 5

12. (a) Sketch LVDT and explain the working principle. 5
    (b) Write a note on PIR sensors. 5

13. A basic d'Arsonval movement with internal resistance, R_m = 100 Ω and full scale deflection current I_{fsd} = 2mA, is to be converted into a multirange dc voltmeter with voltage range of 0–1 V, 10 V, 100 V and 250 V. Draw the necessary circuit arrangement and calculate the values of suitable multipliers. 10

14. (a) Differentiate PMMC over Electrodynamometer. 5
    (b) Describe DC Ammeter with extension of range. 5

15. Illustrate with block diagram a typical function generator and list its applications. 10

16. (a) List the features of Wave Analyser. 5
    (b) List the advantages and applications of sampling oscilloscopes. 5

17. Show how Decade counter is used in different modes as Electronic counter. 10

18. (a) Discuss how is automatic polarity indication and automatic zeroing in Digital Instruments. 5
    (b) List the features of IEEE488 GPIB. 5

19. Write about precaution for instrument safety and instrument usage. 10

1134

Code : 15EC34T

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2017

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Time : 3 Hours] [Max. Marks : 100

Note : (i) Answer any six question from **Part-A.**
(ii) Answer any seven question from **Part-B.**

PART – A

$5 \times 6 = 30$

1. Define error. List the different kinds of errors with respect to measurement. 5
2. Explain briefly the strain gauge transducer. 5
3. Explain the working principle of P.M.M.C. meter. 5
4. Explain the working of AC voltmeter using full wave rectifier. 5
5. List the application of Digital storage oscilloscope. 5
6. Sketch the block diagram of Digital storage oscilloscope. List any two advantages of Digital storage oscilloscope. 5
7. List the features of digital meters. 5
8. Explain how electronic counter can be used for totalizing. 5
9. Discuss the precautions to be taken to prevent instrument damage. 5

[Turn over

$7 \times 10 = 70$

PART-B

10. (a) An ammeter is used for measurement of 20 mA current. The reading obtained is 19.85 mA. Determine : 5
    (i) absolute error
    (ii) percentage error
    (iii) Accuracy
    (b) Explain with block diagram Generalised Electronic Measurement System. 5

11. (a) Set of 5 independent voltage measurements are as follows : 5
    10.15 V, 10.10 V, 10.19 V, 10.13 V, 10.12 V
    Calculate the arithmetic mean and average deviation.
    (b) Describe active and passive transducer. Give one example for each. 5

12. (a) Illustrate how load cell can be used for measuring force. 5
    (b) Explain how piezoelectric material can be used as a transducer. List any two piezoelectric material. 5

13. (a) Define Calibration. Describe the process of calibration of DC Voltmeter. 5
    (b) Explain the working of Electrodynamometer type voltmeter. 5

14. Explain with neat block diagram the working of solid state voltmeter using op-amp. 10

15. (a) Explain the concept of dual trace in CRO. 5
    (b) Define a CRO probe. List the various types of CRO probes. 5

16. Illustrate how function generator can be used to produce different kinds of waveform. List any two application. 10

17. Explain how a ramp type DVM can be used for measuring voltage. 10

18. (a) List the applications of Digital LCR Meter. 5
    (b) Sketch and explain with block diagram digital frequency meter. 5

19. (a) List the various causes of interference in an electronic measurement system. 5
    (b) Illustrate the procedure of generalised trouble shooting. 5

194

Code : 15EC34T

Register Number | | | | | | | |

III Semester Diploma Examination, Nov./Dec. 2017

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Time : 3 Hours] [Max. Marks : 100

Note : (i) Answer any **six** questions from **PART-A.** (6 × 5 = 30 Marks)
(ii) Answer any **seven** full questions from **PART-B.** (7 × 10 = 70 Marks)

PART-A

1. Define w.r.t. measurements : 5
   (i) Speed of response
   (ii) Dynamic error
   (iii) Accuracy
   (iv) Fidelity
   (v) Resolution

2. List the criteria for selection of transducer. 5

3. Explain the principle of PMMC meters. 5

4. Discuss the concept of calibration of meters. 5

5. List the features of spectrum analyzer. 5

6. Explain the working of CRT with a neat sketch. 5

7. Compare analog meter and digital meter. 5

8. Describe with block diagram how time interval measurement can be done. 5

9. Explain how grounding reduces interference in measuring instruments. 5

PART-B

10. Illustrate the block diagram of generalized electronic measurement system. 10

11. (a) Discuss Arithmetic Mean, Deviation from the Mean, Average Deviation, Standard Deviation and Variance used in statistically analysis measuments of instruments. 5

    (b) Explain the principle of working of thermocouple. 5

12. (a) Explain working principle of piezo-electric transducer. 5

    (b) Write about proximity sensor. 5

13. (a) Explain the pros and cons of electronic voltmeter. 5

    (b) Write a short note on solid state voltmeter using op-amp. 5

14. (a) Explain electrodynamometer with its construction and working principle. 5

    (b) Explain series and shunt type ohmmeters. 5

15. (a) List the applications of CRO. 5

    (b) Explain D.S.O with the help of block diagram. 5

16. (a) Explain different types of CRO probes. 5

    (b) Describe standard RF signal generator. 5

17. Show with block diagram how digital LCR meter is used for measurement. 10

18. (a) Discuss with block diagram the working principle of digital frequency meter. 5

    (b) State the pros and cons of digital instruments. 5

19. Write about generalized trouble-shooting procedure for measuring instruments. 10

1288

Code : 15EC34T

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2018

ELECTRONIC MEASUREMENTS & INSTRUMENTATION

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** full questions from Part – A. (5 × 6 = 30 Marks)
(ii) Answer any **seven** full questions from Part – B. (7 × 10 = 70 Marks)

PART – A

1. Explain the working principle of Wheatstone bridge. **5**

2. List the factors which describes the selection of transducer. **5**

3. Explain the working of peak responding voltmeter. **5**

4. Define : **5**
   (i) Voltmeter sensitivity
   (ii) Calibration of meter

5. List the features of distortion analyser. **5**

6. Describe the working of Digital Storage Oscilloscope. (DSO) **5**

7. Explain the working of successive approximation type DVM. **5**

8. Explain the working of Digital Frequency Meter. **5**

9. Discuss the precautions to prevent damage to measuring instruments. **5**

[Turn over

PART – B

10. A set of independent current measurements was taken by six observers as 12.8 MA, 12.2 MA, 12.5 MA, 13.1 MA, 12.9 MA & 12.4 MA. Calculate : **10**
    (i) Arithmetic mean
    (ii) The deviation from the mean

11. (a) With neat figure, explain working of a piezo-electric transducer. **5**
    (b) Compare AC and DC bridges. **5**

12. Explain the working of **10**
    (a) L.V.D.T.
    (b) Thermo couple

13. Explain the working of **10**
    (a) Series type ohm-meter
    (b) Shunt type ohm-meter

14. Explain the operation of basic d.c. ammeter & explain why shunt resistor is necessary with an example. **10**

15. With neat block diagram, explain the operation of Cathode Ray Oscilloscope. (CRO) **10**

16. Sketch the neat block diagram of digital storage oscilloscope & explain its working and list its applications. **10**

17. With neat block diagram, explain the working of Ramp type DVM. **10**

18. Explain the working of L.C.R. meter with neat block diagram. **10**

19. (a) Explain the procedure of generalized trouble shootings in instruments.
    (b) Write short notes on grounding and shielding. **10**

1290

Code : 15EC32T

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2018

DIGITAL ELECTRONICS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** full questions from Part – **A**
(ii) Answer any **seven** full questions from Part – **B**

PART – A

1. Define decoder. List applications of Decoder. **5**

2. State race around problem. Illustrate elimination of same using logic diagram. **5**

3. Define registor. List application of shift registors. **5**

4. Write short note on Counter. **5**

5. Define following w.r.t. ADC: **5**
   (a) Conversion time
   (b) Quantization error
   (c) Accuracy

6. Explain Dynamic Random Access Memory Cell. **5**

7. Write a note on Flash memory. **5**

8. Compare fixed logic device and programmable logic device. **5**

9. Define : **5**
   (a) fan out
   (b) power dissipation
   (c) propagation delay of logic gates

[Turn over

PART – B

10. Explain decimal to BCD encoder and also write logic diagram, truth table and logic symbol. 10

11. Construct BCD to seven segment decoder and explain logic diagram, truth table and logic symbol. 10

12. Explain JK flip-flop with the help of logic diagram, truth table and timing diagram. 10

13. (a) Explain with the help of circuit diagram of astable multivibrator using IC 555 timer. 7

    (b) List features of IC 555 timer. 3

14. (a) Explain serial in serial out shift register with logic diagram and truth table. 5

    (b) Explain ring counter with diagram and truth table. 5

15. State modulus of a counter. Explain configuration of decade counter using IC 7490 and write logic diagram and truth table. 10

16. (a) List application of DAC. 5

    (b) List specifications of DAC. 5

17. Construct circuit diagram of dual slope ADC and explain. 10

18. (a) Implement and explain full adder using PAL write logic diagram and truth table. 5

    (b) Explain memory word size and capacity of memory with examples. 5

19. (a) Compare TTL and CMOS logic families. 5

    (b) Explain circuit diagram & working of TTL NAND gate. 5

1291

Code : 15EC31T

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2018

ANALOG ELECTRONICS CIRCUITS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** questions from Part – A.
(ii) Answer any **seven** full questions from Part – B.

PART – A **6 × 5 = 30**

1. Describe the working of full wave rectifier with C filter circuit diagram and waveforms. 5

2. List any five IC voltage regulators and mention their rated output voltage levels. 5

3. Define operating point. Describe the role of DC load line in locating it. 5

4. Classify Amplifiers. 5

5. Discuss the relevance of CMRR and slew rate in op-amp applications. 5

6. Construct an op-amp integrator circuit to and explain. 5

7. Explain the need for instrumentation amplifier. 5

8. Explain the operation of combination clipper. 5

9. Draw the Wein bridge oscillator circuit and write the expression for frequency of oscillations. 5

PART – B $7 \times 10 = 70$

10. (a) Explain the functioning of of-line UPS with block diagram.
    (b) List the applications of SMPS and DC regulated power supply. 10

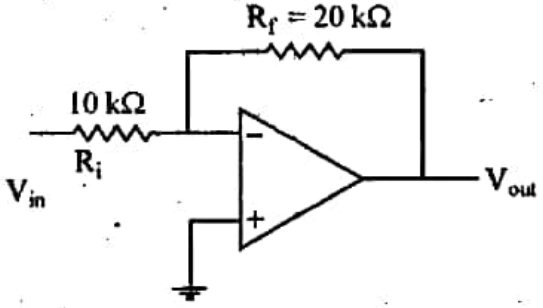
11. (a) Illustrate the need for zener diode as a voltage regulator. 5
    (b) Define : 5
    (i) Rectification (ii) Ripple factor (iii) Ripple frequency
    (iv) P.I.V. (v) Efficiency

12. (a) Compare power amplifiers with reference to conduction angle and efficiency. 5
    (b) Explain the principle of operation of transistor as an amplifier. 5

13. (a) Modify class B push-pull amplifier to overcome cross-over distortion. 5
    (b) Establish the relation between gains of individual stages and overall gain in a multi stage amplifier. 5

14. (a) List the ideal characteristics of op-amp. 5
    (b) Discuss the concept of precision rectification and realise it using op-amp. 5

15. (a) Suggest a method to add voltages together and amplify the same with the help of op-amp. 5
    (b) If $V_{in} = 2V$, find (V_O & A_V) output voltage and gain for the given circuit. 5



16. (a) Define active filter and mention its classification. 5
    (b) Explain the operation of PLL and mention its applications. 5

17. (a) Sketch the frequency response plot and circuit of an op-amp LPF circuit. 5
    (b) List the advantages and disadvantages of active filters over passive filters. 5

18. (a) Describe the working of RC differentiator. 5
    (b) Define Clamper. Explain the working of positive clamper with waveforms. 5

19. (a) Explain the role of RC network in RC phase shift oscillator and write an expression for frequency of oscillation. 5
    (b) Design LC circuit for Hartley & Colpitts oscillators to oscillate at 600 kHz. 5

1289

Code : 15EC33T

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2018

ANALOG COMMUNICATION

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** full questions from Part – **A**

(ii) Answer any **seven** full questions from Part – **B**

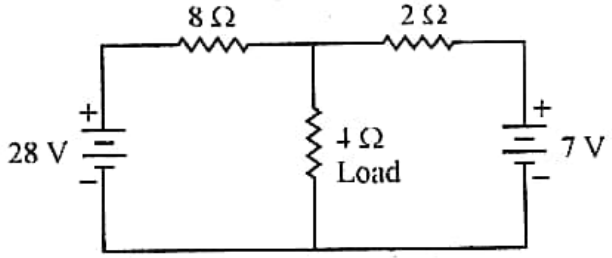
PART – A

6 × 5 = 30

(Answer any six questions from Part-A)

1. State and explain maximum power transfer theorem. **5**

2. Draw the Norton's equivalent circuit for the network shown in the figure across 4 Ω load. **5**



3. Derive an expression for resonant frequency for a series resonant circuit. **5**

4. Write a note on attenuators. **5**

5. Explain co-axial cable with diagram. **5**

6. Define reflection co-efficient and standing wave ratio. **5**

7. Explain the working principle of parabolic reflector with suitable diagram. **5**

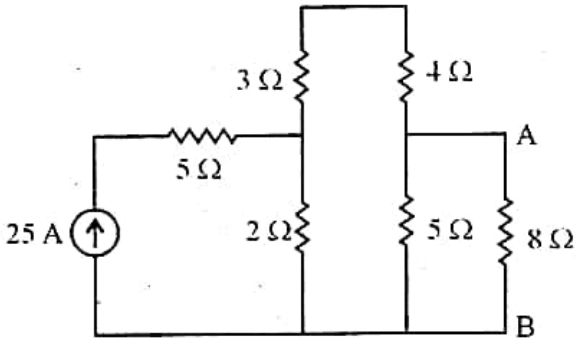
8. Explain ground wave propagation. **5**

9. Write a note on VSB and mention its advantages and disadvantages. **5**

PART – B
(Answer any seven full questions from Part-B)

10. State Thevenin's theorem. Write the steps to reduce any linear internal network into its equivalent Thevenin's network. **10**

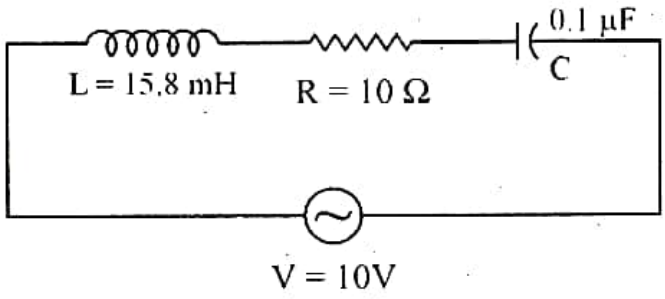
11. Using Norton's theorem find current through 8Ω resistor for the circuit shown in figure. **10**



12. (a) Design constant KT type LPF with cut-off frequency 4 KHz and characteristics impedance of 600 Ω. **5**

(b) Explain parallel resonance with neat diagram. **5**

13. (a) A series RLC circuit consists L = 15.8 mH, C= 0.1 μF and R = 10Ω and line voltage V = 10V as shown in fig. Find resonant frequency and current at resonance. **5**



(b) Mention the applications of attenuator. **5**

14. Explain the need of impedance matching in a transmission line. Discuss single stub and double stub matching in a line. **10**

15. (a) Write features of the Yagi – Uda antenna. **5**

(b) Define polarization and isotropic radiators, directivity, power gain, and antenna resistance. **5**

1131

Code : 15EC-31

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2017

ANALOG ELECTRONICS CIRCUITS

Time : 3 Hours | **| Max. Marks : 100**

Note : (i) Answer any **SIX** questions from **Part-A**.
(ii) Answer any **SEVEN** full questions from **Part-B**.

PART - A

1. Explain the working of ON-Line UPS. **5**

2. Sketch and explain full wave Centre tapped rectifier circuit. **5**

3. Define biasing of BJT and explain the need for biasing. **5**

4. Explain the operation of transformer coupled class-A power amplifier. **5**

5. Explain the block diagram of OP-amp. **5**

6. List any 5 ideal characteristics of OP-amp. **5**

7. List any 5 advantages of active filter over passive filters. **5**

8. Explain the operation of positive clamper circuit. **5**

9. Describe how oscillations develop in LC tank circuit with a suitable sketch. **5**

PART - B

10. (a) Describe the block diagram of regulated DC power supply. **5**
    (b) Show mathematically the ripple factor of a half wave rectifier is 1.21. **5**

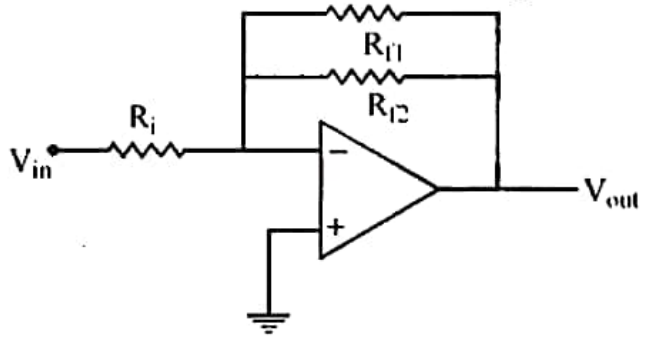
11. (a) Explain the working of π-filter with Half wave rectifier. **5**
    (b) Explain IC voltage regulator using LM 317. **5**

12. (a) Explain the concept of AC Load line for large signal amplifiers. 5
    (b) Describe the working of class-AB amplifier. 5

13. (a) Explain the working of common emitter RC coupled amplifier. 5
    (b) Tabulate the efficiencies and conduction angles of power amplifiers. 5

14. (a) Define the following w.r.t. Op-amp :
        (i) Input offset voltage
        (ii) CMRR
        (iii) Input impedance
        (iv) Slew-rate
        (v) PSRR 5
    (b) Construct an Op-amp circuit that converts square wave into triangular wave. 5

15. (a) Explain the working of Schmitt trigger circuit using Op-amp & also sketch the hysteresis plot. 5
    (b) Estimate the gain in the following circuit given $R_i = 1\ k\Omega$, $R_{f1} = R_{f2} = 10\ k\Omega$ 5



16. (a) Illustrate how Band elimination filter (BEF) can be realized using LPF & HPF. 7
    (b) List any 3 applications of active filter. 3

17. (a) Explain the operation of PLL with a neat diagram. 6
    (b) Design a first order button worth LPF circuit for a gain of 10, cut off frequency of 1 kHz. 4

18. (a) List any 5 applications of clipper circuit. 5
    (b) Illustrate the operation of RC differentiator with response to square wave signal. 5

19. (a) Explain the working of wein-bridge oscillator with neat circui diagram. 6
    (b) A Hartley oscillator circuit has C = 500 pf, L_1 = 20 mH & L_2 = 5mH. Find the
        (i) frequency of oscillation
        (ii) Sketch Hartly oscillator circuit using BJT. 4

1132 **Code : 15EC32T**

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2017

DIGITAL ELECTRONICS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **SIX** questions from **Part-A.**
(ii) Answer any **SEVEN** questions from **Part-B.**

PART-A

1. Define Multiplexer. Explain the working of 4 : 1 Multiplexer with suitable diagram. 5

2. Compare combinational and sequential circuits. 5

3. Construct 4-bit Johnson counter with suitable logic diagram and truth Table. 5

4. Explain how to configure the IC7490 as a Decade counter. 5

5. Define : 5
   (a) Resolution
   (b) Accuracy
   (c) Monotonocity
   with respect to DAC

6. Describe the working principle of SRAM. 5

7. List five differences between the SRAM and DRAM. 5

8. Realize the full adder using PROM. 5

9. List the five comparisons between TTL logic devices with CMOS logic devices. 5

PART – B

10. Construct and explain the working operation of 1 to 8 De-multiplexer. 10

11. With the help of circuit and Truth Table, explain the working of Decimal to BCD Encoder. 10

12. (a) Construct and explain JK flip flop using gate level circuit. 5

    (b) What is Race-around problem. Mention its remedies. 5

13. Explain the working operation of Monostable Multivibrator using 555 TIMER. 10

14. Construct and explain the operation of 3 bit SIPO and PISO shift Register. 10

15. Design and explain the MOD-6 Asynchronous counter with the help of circuit diagram and Truth Table. 10

16. (a) Describe the Binary Ladder type DAC with suitable diagram and expression. 5

    (b) List the applications of DAC and ADC. 5

17. Explain the working of Dual slope type ADC and list its advantages. 10

18. Explain the expanding of word size and Capacity of Memories with an example. 10

19. (a) Explain the operation of TTL NAND gate with circuit and Truth Table. 5

    (b) Define the following with respect to logic gates : 5

    (i) Fan in

    (ii) Fan out

    (iii) Propogation Delay

    (iv) Power dissipation

    (v) Noise Margin

1133

Code : 15EC-33T

Register Number | | | | | | | |

III Semester Diploma Examination, April/May-2017

ANALOG COMMUNICATION

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** questions from **Part-A.**
(ii) Answer any **seven** full questions from **Part-B.**

PART – A

1. State and explain Superposition theorem. **5**

2. State the Norton's theorem and write the steps to solve the network using Norton's theorem. **5**

3. Derive an expression for series resonant frequency. **5**

4. Define filter, and give the classification of filters. **5**

5. What are the primary and secondary constants of transmission line ? **5**

6. Write a note on Single-stub matching and double-stub matching. **5**

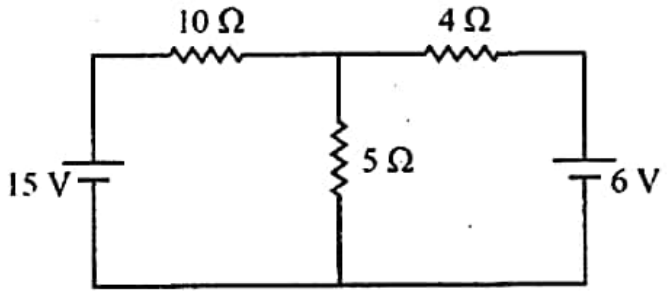
7. Explain briefly the working of broadside antenna array. **5**

8. Write two merits and three demerits of ground wave propogation. **5**

9. Explain the Electronic communication system with Block diagram. **5**

PART – B

10. Find the current through 4Ω resistor, using Thevenin's theorem. **10**



11. Illustrate the application of maximum power transfer theorem with an Example. **10**

12. Derive expression for frequency of resonance, Q factor, power factor and Band width & selectivity, for parallel resonance. **10**

13. Design a symmetrical T-type and π-type attenuator whose attenuation factor of 30 dB and characteristic resistance is 600 Ω and sketch the ckt's. **10**

14. What are transmission lines ? Mention their classification and Explain any one of them with a neat figure. **10**

15. (a) Explain briefly the working of end fire array. **5**
    (b) Explain the working of parabolic reflector. **5**

16. (a) Explain the need for modulation and list the modulation techniques. **5**
    (b) Explain AM linear diode detector circuit. **5**

17. Explain the working principle of
    (a) SSBSC **5**
    (b) DSBSC **5**

18. (a) Explain the working of varactor diode method of FM generation. **5**
    (b) Write note on Pre-emphasis and De-emphasis circuits. **5**

19. Explain the Foster-Seeley method of FM detection with a, neat diagram. **10**

1467 **Code : 15EC-31T**

Register Number | | | | | | | |

III Semester Diploma Examination, Nov./Dec. 2016

ANALOG ELECTRONICS CIRCUITS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** questions from Part-**A** ($5 \times 6 = 30$ marks)
(ii) Answer any **seven** full questions from Part-**B** ($7 \times 10 = 70$ marks).

PART – A

1. State the role of different sub-circuits of a DC regulated Power supply. **5**

2. Explain the need for SMPS & UPS. **5**

3. On the output characteristics of BJT, show the region of operation for **5**
   (i) an amplifier and
   (ii) a switch

4. Show that total gain is equal to the product of gains of individual stages in a multi-stage amplifier. **5**

5. Define : **5**
   (i) CMRR
   (ii) Gain
   (iii) Gain–Bandwidth product
   (iv) Slew Rate
   (v) Input impedance
   For an Op-amp.

6. Explain the operation of a Op-amp comparator with waveforms. **5**

7. Define Active filter and mention its classification. **5**

8. Briefly describe the working of positive clipper with a circuit diagram and waveforms. **5**

9. Compare RC oscillators with LC oscillators. **5**

PART – B

10. (a) Explain the operation of half wave rectifier with waveforms. 5
    (b) With a neat block diagram, explain the working of on-line UPS. 5

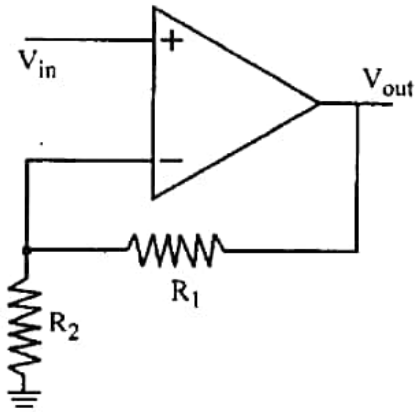
11. Show mathematically that the efficiency of bridge rectifier is 81.2% and ripple factor is 0.48. 10

12. (a) Explain the voltage divider bias for BJT amplifier. 5
    (b) Describe the working of class-B push pull amplifier. 5

13. (a) Sketch the frequency response plot of an RC coupled amplifier and explain the same. 5
    (b) List the features of a transformer coupled amplifier. 5

14. (a) Construct Op-amp integrator and sketch its response for square wave input. 5
    (b) Show that gain of an inverting amplifier is $\frac{-R_f}{R_i}$ 5

15. (a) Construct an Op-amp circuit to add two voltages and amplify the same by 10 times. 5
    (b) If $V_{in} = 2V$, R_1 and R_2 are 5 kΩ, find the output voltage and voltage gain for the given circuit. 5



16. (a) Construct first order high pass filter circuit with cut-off frequency of 10 kHz and sketch its frequency response. 5
    (b) Describe how BPF can be realized using LPF & HPF. 5

17. Explain the need for an operation of Instrumentation Amplifier. 10

18. (a) Explain simple positive clamper circuit. 5
    (b) Illustrate the operation of RC differentiator circuit. 5

19. (a) Explain Bark Hausen Criteria as applicable to oscillator circuits. 5
    (b) Explain the working of Hartely oscillator with neat diagram. 5

1468 **Code : 15EC-32T**

Register Number | | | | | | | |

III Semester Diploma Examination, Nov./Dec. 2016

DIGITAL ELECTRONICS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** questions from Part-**A**.

(ii) Answer any **seven** questions from Part-**B**.

PART – A

1. Define combinational logic circuit. List any three combinational logic circuits. **5**

2. Define flip-flop. List types of flip-flops. **5**

3. Define Shift Registers and mention the different types of shift registers based on data movement. **5**

4. Compare the difference between Asynchronous and Synchronous counter. **5**

5. Distinguish between ADC and DAC. **5**

6. List the types of Programmable Logic Devices (PLD). **5**

7. List comparison between SRAM and DRAM. **5**

8. Implement two input EX-OR gate function using PAL. **5**

9. Define Fan in, Fan out and Propagation of Delay. Power dissipation and Noise margin with respect to logic gates. **5**

PART – B

10. (a) Explain the working of 2:1 MUX with Logic circuit. 5

(b) Explain the operation of 1:2 Demultiplexer using gates. 5

11. (a) Write a logic diagram, T.T. and Logic symbol for BCD to Decimal decoder. 5

(b) Illustrate the concept of 4-bit priority encoder with truth table and logic symbol. 5

12. (a) Demonstrate conversion of JK-flip-flop into T-flip-flop. 5

(b) List the features of 555 timer I.C. 5

13. (a) Write a circuit diagram and waveform of Monostable multivibrator by using 555 timer I.C. 5

(b) Write a gate level circuit of JK-flip-flop and its truth table. 5

14. (a) Explain 4-bit SISO Shift Register. 5

(b) List the application of counter. 5

15. Explain the construction of 3-bit. Asynchronous counter with help of logic diagram, Truth table and waveform. 10

16. (a) List the features of DAC-0808 I.C. 5

(b) Calculate % resolution and voltage resolution of 12 bit ADC having full scale analog I/p of 5V. 5

17. Construct Dual slope ADC and explain function with help of logic diagram and waveform. 10

18. (a) A semi-conductor memory chip is specified 2K × 8. 5

(i) How many bit can this chip store ?

(ii) How many addresslines are required to access this chip ?

(b) Write a note on Flash memory. 5

19. (a) Give the classification of logic families. 5

(b) Explain the CMOS inverter gate with circuit diagram. 5

1469 **Code : 15EC-33T**

Register Number | | | | | | | |

III Semester Diploma Examination, Nov./Dec. 2016

ANALOG COMMUNICATION

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** question from Part-A ($5 \times 6 = 30$ marks)

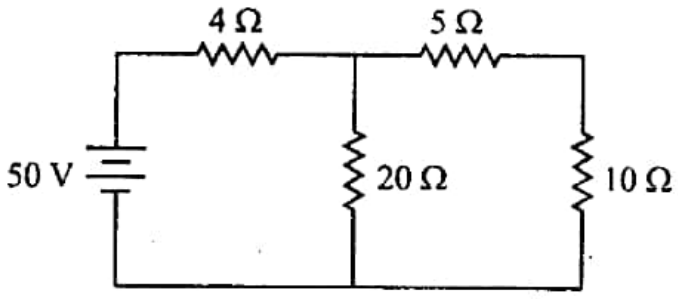
(ii) Answer any **seven** questions from Part-**B** ($7 \times 10 = 70$ marks)

PART – A

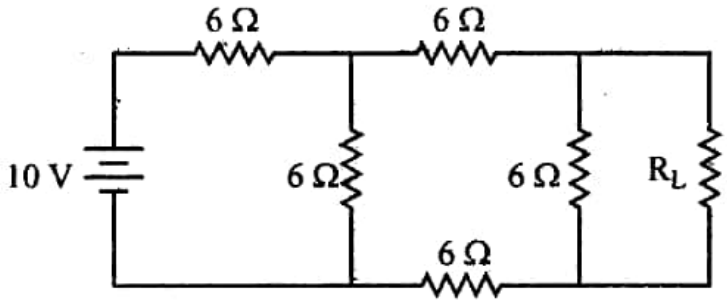
1. State superposition theorem. List the steps to be followed to solve a network. **5**
2. State and explain Norton's theorem with an example. **5**
3. Define filter. Classify filters. **5**
4. Derive the relation between Decibel and Niper. **5**
5. Define characteristic impedance. Deduce an equation of Z_0 for Co-axial cable. **5**
6. Explain the need for impedance matching in a transmission line. **5**
7. Describe Ground wave propagation. **5**
8. Explain the working of Broadside array. **5**
9. Define amplitude modulation. Write expression for the components present in AM output. **5**

PART – B

10. Find the current through 10 Ω resistor by using thevenin's theorem. **10**



11. Determine the value of load resistance R_L for transferring maximum power to it in the circuit shown below. Also find max^n power deliver to it. **10**



12. Design a low pass filter (T and π type) to have a cut-off frequency of 800 Hz & load impedance of 900 Ω. **10**

13. Write the block diagram to realize B.P.F. and B.R.F. using L.P.F. and H.P.F. **10**

14. Explain the Electrical model for a transmission line. **10**

15. (a) Explain broadside array with a neat diagram. **5**
    (b) Compare different modes of wave propagation. **5**

16. (a) List the difference between AM & FM. **5**
    (b) Define modulation. Explain the need for modulation. **5**

17. Define Demodulation and explain the working of AM linear diode detector circuit. **10**

18. Explain need for Pre emphasis & De emphasis, along with the circuit. **10**

19. Explain Foster seeley discriminator method of F.M. detection. **10**

1470 **Code : 15EC-34T**

Register Number | | | | | | | |

III Semester Diploma Examination, Nov./Dec. 2016

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** question from Part-**A** ($5 \times 6 = 30$ marks)

(ii) Answer any **seven** full questions from Part-**B** ($7 \times 10 = 70$ marks)

PART – A

1. Compare the features of AC and DC bridges. **5**

2. List the factors for selection of a Transducer. **5**

3. List Pros and Cons of Electronic voltmeter. **5**

4. Explain : **5**

   (i) Voltmeter Sensitivity

   (ii) Load effect of voltmeter

5. List the features of standard RF signal generator. **5**

6. List the advantages and applications of Digital Storage Oscilloscope. **5**

7. Explain with block diagram Microprocessor based instruments. **5**

8. Describe successive approximation Digital voltmeter. **5**

9. Write short note on grounding and shielding. **5**

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PART – B

10. Explain how Wheatstone bridge is used for measurement of resistance and mention its applications. 10

11. (a) Describe direct and indirect methods of measurements. 5

    (b) Explain the working principle of capacitive transducer. 5

12. (a) Sketch LVDT and explain the working principle. 5

    (b) Write a note on PIR sensors. 5

13. A basic d'Arsonval movement with internal resistance, R_m = 100 Ω and full scale deflection current I_{fsd} = 2mA, is to be converted into a multirange dc voltmeter with voltage range of 0–1 V, 10 V, 100 V and 250 V. Draw the necessary circuit arrangement and calculate the values of suitable multipliers. 10

14. (a) Differentiate PMMC over Electrodynamometer. 5

    (b) Describe DC Ammeter with extension of range. 5

15. Illustrate with block diagram a typical function generator and list its applications. 10

16. (a) List the features of Wave Analyser. 5

    (b) List the advantages and applications of sampling oscilloscopes. 5

17. Show how Decade counter is used in different modes as Electronic counter. 10

18. (a) Discuss how is automatic polarity indication and automatic zeroing in Digital Instruments. 5

    (b) List the features of IEEE488 GPIB. 5

19. Write about precaution for instrument safety and instrument usage. 10
