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III Semester Diploma Examination, November 2011

E & C BOARD

ANALOG ELECTRONIC CIRCUITS

Time : 3 Hours.]

[Max. Marks : 100

- Instructions :** (1) Section – I is compulsory.
(2) Answer any two full questions from each of the remaining sections.

SECTION – I

1. (a) Fill in the blanks : 5
- (i) The ideal value of efficiency of a bridge rectifier is _____.
- (ii) For proper amplification, the operating point must be located at the _____ of the d.c. load line.
- (iii) A wein bridge oscillator uses _____ feed back.
- (iv) An ideal op amp has _____ input impedance.
- (v) The crossover distortion is over come in _____ amplifier.
- (b) Explain Schmitt trigger circuit with a neat diagram. 5

SECTION – II

2. (a) Define : 6
- (i) Rectifier efficiency
- (ii) Ripple frequency
- (iii) PIV
- for a bridge rectifier. 5
- (b) With a neat diagram, explain the operation of a bridge rectifier. 4
- (c) Explain the capacitor filter circuit with waveforms. 6
3. (a) Explain the working of a transistor series voltage regulator with a neat diagram. 6
- (b) What is a switching regulator ? Explain the step-down switching regulator with the help of a neat diagram. 6
- (c) Mention the advantages of SMPS. 3

ECO-25



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|----|-----|---|---|
| 4. | (a) | Explain the concept of positive feedback. | 3 |
| | (b) | Explain the working of monostable multivibrator using IC 555. | 6 |
| | (c) | Explain the working of RC phase shift oscillator with a neat circuit diagram. | 6 |

SECTION - III

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|----|-----|--|---|
| 5. | (a) | What is stability factor ? Explain the concept of d.c. load line. | 4 |
| | (b) | Explain the voltage divider bias circuit with a neat diagram. | 5 |
| | (c) | Explain the working of RC coupled amplifier with a neat circuit diagram. | 6 |
| 6. | (a) | List the differences between voltage and power amplifiers. | 3 |
| | (b) | Mention the applications of integrator. | 2 |
| | (c) | Explain RC differentiator circuit with waveforms. | 4 |
| | (d) | Explain the working of class - B pushpull amplifier with a neat diagram. | 6 |
| 7. | (a) | Explain positive clamper circuit with wave forms. | 6 |
| | (b) | Mention the applications of clamper. | 3 |
| | (c) | Explain the circuit of negative clamper with waveforms. | 6 |

SECTION - IV

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|-----|-----|---|---|
| 8. | (a) | Explain the schematic diagram of 741 op amp. | 5 |
| | (b) | Define: <ul style="list-style-type: none"> (i) CMRR (ii) Gain bandwidth product (iii) Slew rate with respect to an op amp. | 6 |
| | (c) | Explain the operation of PLL. | 4 |
| 9. | (a) | Explain I order Butter worth active high pass filter using op amp. | 5 |
| | (b) | Write a note on notch filters. | 4 |
| | (c) | Explain the circuit of instrumentation amplifier. | 6 |
| 10. | (a) | Explain the voltage to frequency converter circuit. | 6 |
| | (b) | Explain integrator circuit using op amp. | 6 |
| | (c) | Mention the applications of PLL. | 3 |

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III Semester Diploma Examination, May 2011
ELECTRONICS & COMMUNICATION ENGG. BOARD
ANALOG ELECTRONIC CIRCUITS

Time : 3 Hours]

[Max. Marks : 100

- Note : (1) Q. 1 is compulsory.
(2) Answer the total six questions choosing atleast two questions from each section.

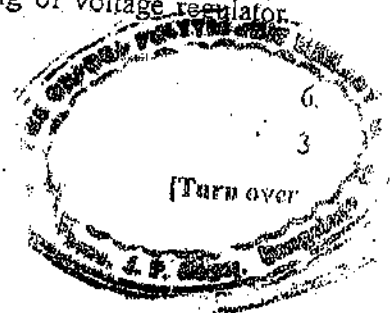
SECTION - I

1. (a) Fill in the blanks with appropriate word/words : 5 × 1 = 5
(i) Oscillator uses _____ feedback.
(ii) The ripple factor of Bridge rectifier is _____.
(iii) Differentiator is also referred as _____.
(iv) Instrumentation amplifiers are used to amplify _____ signals from the transducers.
(v) An ideal Op-Amp has _____ input impedance.
- (b) Explain the need for dc Regulated power suppliers. 5

SECTION - II

2. (a) Explain the function of regulated power supply with the help of block diagram. 6
(b) Explain with a neat circuit diagram the operation of Bridge rectifier. 6
(c) Explain the necessity of filters in power supply. 3
3. (a) Explain Barkhausen criteria for oscillation. 3
(b) Explain the working of Hartley oscillator with a neat circuit diagram. 6
(c) Explain the working of Astable Multivibrator using IC 555. 6
4. (a) Define line and load regulation and explain the working of voltage regulator using Zener diodes. 6
(b) Explain the circuit of Op-Amp series voltage regulator. 3
(c) Mention the advantages of SMPS.

EC-024



SECTION – III

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|----|-------|---|---|
| 5. | (a) | Define the following terms : | 8 |
| | (i) | Biasing | |
| | (ii) | Operating Point | |
| | (iii) | Maximum power efficiency | |
| | (iv) | Power gain | |
| | (b) | Explain self bias circuit for FET. | 4 |
| | (c) | Differentiate voltage amplifier and power amplifier. | 3 |
| 6. | (a) | Explain the frequency restore of RG coupled amplifier. | 5 |
| | (b) | Explain the classification of Amplifier. | 4 |
| | (c) | Explain the working of class-A Transformer coupled amplifier. | 6 |
| 7. | (a) | Explain the working of +ve clipper circuit. | 6 |
| | (b) | List the applications of clippers and clampers. | 4 |
| | (c) | Explain the working of RC Integrator. | 5 |

SECTION – IV

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|-----|-----|---|---|
| 8. | (a) | List the ideal characteristics of Op-Amp. | 4 |
| | (b) | Draw and explain the block diagram of LM 741. | 6 |
| | (c) | Explain comparator circuit using Op-Amp. | 5 |
| 9. | (a) | Explain with a neat circuit diagram the working of instrumentation amplifier. | 6 |
| | (b) | Explain the operation of PLL. | 5 |
| | (c) | Draw and explain the voltage to frequency converter circuit. | 4 |
| 10. | (a) | Define CMRR, Slow Rate, and gain bandwidth product with respect to an Op-Amp. | 6 |
| | (b) | Explain the Band pass filter circuit using Op-Amp. | 5 |
| | (c) | Explain zero crossing detector circuit using Op-Amp. | 4 |

Register
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III Semester Diploma Examination, November 2010

E & C BOARD

ANALOG ELECTRONIC CIRCUITS

Time : 3 Hours]

[Max. Marks : 100

- Instructions :** (1) Answer all questions. Q. No. 1 is compulsory.
(2) Answer any two questions each from remaining Sections.

1. (a) Fill in the blanks : S.X.I.I. 3
- (i) Percentage Load Regulation is given by the expression _____
- (ii) Maximum Collector efficiency of class B Power amp is _____
- (iii) CMRR is given by the ratio _____
- (iv) An oscillator uses _____ feedback.
- (v) Clamper ckt is also known as _____
- (b) Write a note on Switching I.G. Regulators. 5

SECTION - A

2. (a) Explain with a neat ckt functioning of Bridge rectifier ckt. 6
- (b) Explain the operation of Π filter. 3
- (c) Explain the operation of OPAMP Series Voltage Regulator. 6
3. (a) With a block diagram, explain operation of SMPS, Mention advantages and disadvantages. 7
- (b) Differentiate between line regulation and load regulation. 3
- (c) Define an oscillator. Explain Barkhausen Criteria for obtaining sustained oscillations. 5
4. (a) Explain the operation of Colpitt's oscilr with a ckt diagram. 5
- (b) Explain the operation of R-C Phase shift oscillator. Mention the expression for frequency of oscillation. 5
- (c) Explain the operation of IC 555 as an Astable multivibrator ckt with necessary waveforms. 5

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SECTION - B

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|----|--|---|
| 5. | (a) Define Stabilization. Explain need for Stabilization. | 5 |
| | (b) Explain with a ckt diagram Voltage divider biasing method. | 5 |
| | (c) Explain the classification of Amplifiers. | 5 |
| 6. | (a) Define Negative Feedback. Mention its advantages. | 5 |
| | (b) Explain with a circuit diagram the operation of two stage R-C Coupled amplifier. Mention advantages & disadvantages. | 7 |
| | (c) What are Class A, Class B and Class C Power amplifiers? | 3 |
| 7. | (a) Explain with a ckt diagram the operation of class 'B' push pull amplifier. | 6 |
| | (b) Define the following terms with respect to power amplifiers : | 3 |
| | (i) Collector efficiency. | |
| | (ii) Distortion. | |
| | (c) Explain the functioning of combination clipper ckt. | 6 |

SECTION - C

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|-----|---|---|
| 8. | (a) Define OPAMP. Mention ideal characteristics of an OPAMP. | 5 |
| | (b) Draw and explain the block diagram of OPAMP. | 5 |
| | (c) Define the following terms w.r.t. OPAMP : | 5 |
| | (i) I/P offset voltage | |
| | (ii) CMRR | |
| | (iii) Slew rate | |
| 9. | (a) Explain with a ckt 'OPAMP' Summing Amplifier. | 5 |
| | (b) Explain the operation of OPAMP as comparator ckt ? | 5 |
| | (c) Explain the operation of a First Order "Butter Worth Low Pass Filter". | 5 |
| 10. | (a) Define Instrumentation amplifier. What are its needs ? | 5 |
| | (b) Explain with a <u>ckt</u> Voltage to Frequency Converter. | 5 |
| | (c) With a block diagram, explain the operation of PLI. Mention its applications. | 5 |