



GENERAL INSTRUCTIONS TO THE CANDIDATES

1. Candidates are instructed to answer the questions as per Bloom's Taxonomy knowledge level (K_1 to K_6)
2. Candidates are strictly instructed not to write anything in the question paper other than their roll number.
3. Candidates should search their pockets, desks and benches and handover to the Hall Superintendent/ Invigilator if any paper, book or note which they may find therein as soon as they enter the examination hall.
4. Candidates are not permitted to bring electronic watches with memory, laptop computers, personal systems, walkie-talkie sets, paging devices, mobile phones, cameras, recording systems or any other gadget / device /object that would be of unfair assistance to him / her.
5. Corrective measures as per KCT examination policies will be imposed for malpractice in the hall like copying from any papers, books or notes and attempting to elicit the answer from neighbours.

B.E DEGREE EXAMINATIONS: MAY 2015

(Regulation 2014)

Third Semester

Electronics and Instrumentation Engineering

U14EIT301: Electronic Circuit Design

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Consider the following circuit configuration CO1 [K₂]
 - 1.common Emitter
 - 2.common Base
 - 3.Emitter follower
 4. Emitter follower using Darlington pair.

The correct sequence in increasing order of I/P impedance of these configuration:

a) 2, 1, 4, 3	b) 1, 2, 4, 3
c) 2, 1, 3, 4	d) 1, 2, 3, 4
2. The current gain for the Darlington connection is _____. CO2 [K₂]

a) $\beta_1 \cdot (\beta_2/2)$	b) $\beta_1 \cdot \beta_2$
c) β_1/β_2	d) $\beta_1 \cdot (\beta_2 - 1)$
3. If the peak value of the input voltage to a half wave rectifier is 28.28 volts and no filter is used, CO3 [K₃]
the maximum dc voltage across the load will be

List I		List II	
A. Hartley		i . Up to 1MHz	
B. Wein-bridge		ii. Up to 20KHz	
C. Crystal		iii.20 KHz to 30MHz	
D.RC phase shift		iv. above 30MHz	

A B C D

- a) i iii ii iv
b) iii i iv ii
c) ii iv iii i
d) iv ii i iii

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. What is the need for Biasing? CO1 [K₂]
12. An amplifier has voltage gain without feedback of 1000. If $\beta = 0.009$ find the gain with negative feedback. CO3 [K₃]
13. List the conduction periods of Class A, Class B and Class AB amplifier CO2 [K₂]
14. Derive the stability factor S for a Fixed Bias circuit CO1 [K₃]
15. Find out the voltage gain for the Darlington amplifier CO2 [K₃]
16. Sketch the output response of RC high pass filter for the following inputs CO3 [K₂]
- a. Square
- b. Sine
17. Derive the ripple factor of inductance filter connected to FWR CO3 [K₃]
18. Mention the applications of oscillator CO3 [K₃]
19. What are the advantages of SMPS? CO3 [K₂]
20. Draw the circuit of Mono-stable Multivibrator. CO3 [K₂]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 300 words)

Q.No. 21 is Compulsory

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|-----|--|------|-----|-------------------|
| 21. | State Barkhausen criteria for oscillation and obtain the frequency of oscillation for an RC phase shift oscillator | | CO3 | [K ₃] |
| 22. | (i) Design a Voltage Divider Bias circuit for the specified conditions. $V_{cc} = 12\text{ V}$, $V_{ce} = 6\text{ V}$, $I_c = 1\text{ mA}$, $\beta = 100$. | (7) | CO1 | [K ₃] |
| | (ii) Discuss in detail about the working of the Schmitt trigger with suitable diagram. | (7) | CO3 | [K ₂] |
| 23. | (i) Describe the operation of low frequency response CE amplifier and also discuss the effect of bypass capacitor? | (10) | CO1 | [K ₃] |
| | (ii) Elaborately explain the working principle of Transistorized series voltage regulator with necessary circuits. | (5) | CO3 | [K ₂] |
| 24. | (i) Derive the expression for efficiency of Class B amplifier. Describe in detail about the working of Class B push pull amplifier. | (7) | CO2 | [K ₃] |
| | (ii) Draw the block diagram of a voltage series feedback amplifier and derived the equation for the input impedance, output impedance and the voltage gain. | (7) | CO3 | [K ₂] |
| 25. | (i) A 230V, 60Hz voltage is applied to the primary of a 4:1 step down ,center tap transformer used in a full- wave rectifier having a load of $1\text{ K}\Omega$. Determine
a) D.c voltage across the load and current flowing through the load
b) D.c power delivered to the load
c) PIV across each diode
d) Ripple voltage and frequency | (9) | CO3 | [K ₃] |
| | (ii) Discuss the operation of diode clipper circuits with neat circuit diagram and waveform. | (5) | CO3 | [K ₃] |
| 26. | Derive the equation for differential mode gain and common mode gain of a differential amplifier and also find out the CMRR. | | CO2 | [K ₃] |
