KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2019–2022)

B.Sc. ELECTRONICS II Year

SEMESTER – III

PAPER – III:: ANALOG CIRCUITS

(DSC-3: Compulsory)

Theory: 4 Hours/Week Credits: 4 Marks: 100 (Internal: 20; External: 80)

Practical: 3 Hours/Week Credits: 1 Marks: 25

UNIT – I

Rectifiers and filters: Rectifiers: Half-wave, full-wave and bridge rectifiers, Efficiency, Ripple factor, regulation, harmonic components in rectified output. **Filters: C**hoke input (inductor) filter, Shunt capacitor filter, L-section and π-section filters.

UNIT – II

Regulated Power Supplies: Block diagram of regulated power supply, Series and shunt transistor regulated power supplies, three terminal IC regulators (78XX and 79XX), Principle and working of switch mode power supply (SMPS). UPS – Principle and working.

UNIT – III

Transistor amplifier: Classification of amplifiers (Based on type of coupling and frequency range), Hybrid π-model of a transistor, RC-coupled CE amplifier – frequency response, analysis.

Feedback in amplifiers: Positive and negative feedback, Effect of negative feedback on gain, bandwidth, noise, input and output impedances. Emitter follower, Darlington pair and its advantages.

UNIT – IV

Oscillators:: Barkhausen criterion for sustained oscillations, RC oscillators: RC phase shift and Wien's bridge oscillators and derivation for frequency oscillations, LC oscillators: Hartley and Colpits Oscillators, derivation for frequency oscillation.

Multivibrators: Astable, Monostable and Bistable multivibrators – Qualitative treatment only.

Suggested Books:

1. Electronic Devices and Circuits-Millman and Halkias (TMH)
2. Basic Electronics and linear circuits - Bhargava, Kulshreshta& Gupta TMH
3. A first course in Electronics-AA Khan and KK Dey-PHI
4. Electronic Devices and Circuit Theory-Robert L Boylestad & Louis Nashelsky
5. Pulse, Digital and Switching circuits - Milliman and Taub

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PAPER – III:: ANALOG CIRCUITS PRACTICALS

(DSC-3: Compulsory)

Practical: 3 Hours/Week Credits: 1 Marks: 25

1. Study of Half-wave, full-wave and bridge rectifier and determination of ripple factor.
2. Series inductor, shunt capacitor, L-section and π-section filters: Determination of ripple factor using Full wave Rectifier.
3. Study of voltage regulator using ICs: 78XX & 79XX.
4. Colpitt's oscillator – determination of frequency.
5. RC Phase shift oscillator - determination of frequency
6. Astable multivibrator – determination of time period and duty cycle.
7. RC-coupled amplifier – Study of frequency response
8. **Simulation experiments ::**

   i) Rectifiers

   ii) RC-coupled amplifier

   iii) Wein's bridge oscillator

   iv) Colpitt's oscillator

   v) RC phase shift oscillator

   vi) Astable multivibrator

Note: Student has to perform minimum of six experiments

Suggested Books:

1) Lab manual for Electronic Devices and Circuits – David A Bell, 4th Edition, PHI
2) Basic Electronics – A Text Lab Manual – Zbar, Malvino, Miller.

SCHEME OF QUESTION PAPER

B.Sc. (Electronics)
Internal Assessment Examination
Semester: I/II/III/IV/V/VI
Paper:
(For DSC, DSE,)

Time: 90 Min] **[Marks: 20**

Answer ALL questions. Each question carries equal marks (2 x 10 = 20)

1. From Unit 1
2. From Unit 1
3. From Unit 1
4. From Unit 1
5. From Unit 1
6. From Unit 2
7. From Unit 2
8. From Unit 2
9. From Unit 2
10. From Unit 2

SCHEME OF QUESTION PAPER

KAKATIYA UNIVERSITY, WARANGAL
B.Sc. (Electronic) I/II/III Year Examination
Semester: I/II/III/IV/V/VI
Paper:
(For DSC, DSE, GE & Paper in lieu of project)

Time: 3 Hours] **[Marks: 80**

SECTION A: SHORT ANSWER QUESTIONS (8 X 4 = 32)

Answer Any EIGHT questions. Each question carries equal marks

1. From Unit 1
2. From Unit 1
3. From Unit 1 (Problem)
4. From Unit 2
5. From Unit 2
6. From Unit 2 (Problem)
7. From Unit 3
8. From Unit 3
9. From Unit 3 (Problem)
10. From Unit 4
11. From Unit 4
12. From Unit 4 (Problem)

SECTION B: ESSAY TYPE ANSWER QUESTIONS (4 X 12 = 48)

Answer Any FOUR questions. All questions carry equal marks

13. (a) From Unit 1
    OR
    (b) From Unit 1

14. (a) From Unit 2
    OR
    (b) From Unit 2

15. (a) From Unit 3
    OR
    (b) From Unit 3

16. (a) From Unit 4
    OR
    (b) From Unit 4