NEPAL ENGINEERING COUNCIL

Concept of Basic Electrical and Electronics Engineering

Bishal Rimal
2024

Contents

1.1 Basic concept: Ohm´s law, electric voltage current, power and energy, conducting and insulating materials. Series and parallel electric circuits, start-delta and delta-star conversion, Kirchhoff's law, linear and non-linear circuit, bilateral and unilateral circuits, active and passive circuits. (AExE0101)

1.2 Network theorems: concept of superposition theorem, Thevenin`s theorem, Norton`s theorem, maximum power transfer theorem. R-L, R-C, R-L-C circuits, resonance in AC series and parallel circuit, active and reactive power. (AExE0102)

1.3 Alternating current fundamentals: Principle of generation of alternating voltages and currents and their equations and waveforms, average, peak and rms values, three phase system. (AExE0103)

Contents

1.4 Semiconductor devices: Semiconductor diode and its characteristics, BJT Configuration and biasing, small and large signal model, working principle and application of MOSFET and CMOS. (AExE0104)

1.5 Signal generator: Basic Principles of Oscillator, RC, LC and Crystal Oscillators Circuits. Waveform generators. (AExE0105)

1.6 Amplifiers: Classification of Output Stages, Class A Output Stage, Class B Output Stage, Class AB Output Stage, Biasing the Class AB Stage, Power BJTs, Transformer-Coupled Push-Pull Stages, and Tuned Amplifiers, op-amps.

अनुसूची २
पूर्णाङ्क, अंकभार र परीक्षा समय सम्बन्धी ब्यवस्था

- परिक्षा समय - २ घण्टा
- पूर्णाङ्क - १००
- उतीर्णाङ्क - ५०%
- १ अंकभार जम्मा प्रश्नहरु - ६०, अनुमानित समय १ मिनेट / प्रति प्रश्न
- २ अंकभार जम्मा प्रश्नहरु - २०, अनुमानित समय २ मिनेट / प्रति प्रश्न
- १ अंकभार प्रश्नहरु वितरण : १ प्रश्न प्रति सवचेप्टर, ६० सवचेप्टरबाट ६० प्रश्न। टेवल १ मा उल्लेख भएअनुसार ।
- २ अंकभार प्रश्नहरु वितरण : २ प्रश्नहरु (बढीमा) प्रति चेप्टर, १ प्रश्न (बढीमा) प्रति- सवचेप्टर गरि १० चेप्टरबाट २० प्रश्नहरु । टेवल २ मा उल्लेख भएअनुसार ।

टेबल १ : १ अंकभार प्रश्नहरुको संख्या, विषय र उप-विषयहरुको लागि तालिका

Chapter/Sub-Chapter	CH01	CH02	CH03	CH04	CH05	CH06	CH07	CH08	CH09	CH10	No. of Questions	Total Marks
SCH01	1										10	10
SCH02	1										10	10
SCH03	1										10	10
SCH04	1										10	10
SCH05	1										10	10
SCH06	1										10	10
Total Questions	6	6	6	6	6	6	6	6	6	6	60	60

टेबल २ : २ अंकभार प्रश्नहरुको संख्या, विषय र उप-विषयहरुको लागि तालिका

Chapter/Sub-Chapter	CH01	CH02	CH03	CH04	CH05	CH06	CH07	CH08	CH09	CH10	No. of Questions	Total Marks
SCH01	1										Questions per sub-chapter: 1 (Max)	
SCH02	1											
SCH03	1											
SCH04	1											
SCH05	1											
SCH06	1											
Maximum Question	2	2	2	2	2	2	2	2	2	2	20	40