KARNATAKA STATE ELIGIBILITY TEST (K-SET)
FOR LECTUERSHIP

Subject: ELECTRONIC SCIENCE
Subject Code: 31

Note:
There will be two question papers, Paper-II and Paper-III. Paper II will have 50 objective Type Questions (Multiple choice, Matching type; True/False, Assertion-Reasoning type) carrying 100 marks. All the 50 questions are compulsory and have to be marked in OMR sheet. Paper III contains seventy five (75) objective type questions (Multiple choice, Matching type; True/False, Assertion-Reasoning type) of two (2) marks each. All the 75 questions are compulsory and have to be marked in OMR sheet.

SYLLABUS
Paper-II & Paper-III [Core Group]

Unit—I

Unit—II

Unit—III
Rectifiers, Voltage regulated ICs and regulated power supply, Biasing of Bipolar junction transistors and JFET. Single stage amplifiers, Multistage amplifiers. Feedback in amplifiers,
oscillators, function generators, multivibrators, Operational Amplifiers (OPAMP)-characteristics and Applications, Computational Applications, Integrator, Differentiator, Wave-shaping circuits, F to V and V to F converters. Active filters, Schmitt trigger, Phase locked loop.

Unit—IV
Logic families, flip-flops, Gates, Boolean algebra and minimization techniques, Multivibrators and clock circuits, Counters-Ring, Ripple, Synchronous, Asynchronous, Up and down shift registers, multiplexers and demultiplexers, Arithmetic circuits, Memories, A/D and D/A converters.

Unit—V
Architecture of 8085 and 8086 Microprocessors, Addressing modes, 8085 instruction set, 8085 interrupts, Programming, Memory and I/O interfacing, Interfacing 8155, 8255, 8279, 8253, 8257, 8259, 8251 with 8085 Microprocessors, Serial communication protocols, Introduction of Microcontrollers (8 bit)-8031/8051 and 8048.

Unit—VI

Introduction of FORTRAN language, programming discipline, statements to write a program, intrinsic functions, integer-type data, type statement, IF selection. Data validation, Format-directed input and output. Repetition program structure, subscripted variables and DO loops, Array, Fortran Subprogram.
Unit—VII

Unit—VIII
Basic principles of amplitude, frequency and phase modulation, Demodulation, Intermediate frequency and principle of superheterodyne receiver, Spectral analysis and signal transmission through linear systems, Random signals and noise, Noise temperature and noise figure. Basic concepts of information theory, Digital modulation and Demodulation PM, PCM, ASK, FSK, PSK, Time-division Multiplexing, Frequency-Division Multiplexing, Data Communications-Circuits, Codes and Modems; Basic concepts of signal processing and digital filters.

Unit—IX (a)
Characteristics of solid state power devices-SCR, Triac, UJT, Triggering circuits, converters, choppers, inverters, converters. AC regulators, speed control of a.c. and d.c. motors.
Stepper and synchronous motors; Three phase controlled rectifier; Switch mode power supply; Uninterrupted power supply.

Unit—IX (b)
Optical sources-LED, Spontaneous emission, Stimulated emission, Semiconductor Diode LASER, Photodetectors-p-n photodiode, PIN photodiode, Phototransistors, Optocouplers, Solar cells, Display devices. Optical Fibres-Light propagation in fibre, Types of fibre, Characteristic parameters, Modes, Fibre splicing, Fibre optic communication system-coupling to and from the fibre, Modulation, Multiplexing and coding, Repeaters, Bandwidth and Rise time budgets.

Unit—X (a)
Transducers—Resistance, Inductance Capacitance, Peizoelectric, Thermoelectric, Hall effect, Photoelectric, Techogenerators, Measurement of displacement, velocity, acceleration, force,
torque, strain, speed and sound temperature, pressure, flow, humidity, thickness, pH, position.


Analytical Instruments-Biomedical instruments-ECG, blood pressure measurements, spectrophotometers, Electron Microscope, X-ray diffractometer.

**Unit—X (b)**