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[5558]-104

F.E. EXAMINATION, 2019
BASIC ELECTRONICS ENGINEERING
(2015 PATTERN)

Time : Two Hours

Maximum Marks : 50

- N.B. :—** (i) Figures to the right indicate full marks.
(ii) Neat diagrams must be drawn wherever necessary.
(iii) Use of electronic pocket calculator is allowed.
(iv) Assume suitable data, if necessary.
(v) Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6 and Q. 7 or Q. 8.

1. (a) Compare Half-wave and Full-wave rectifier on the basis of below parameters : [6]
- (1) I_{dc}
 - (2) I_{rms}
 - (3) Efficiency
 - (4) Ripple factor
 - (5) P/V
 - (6) Output waveform.
- (b) Draw output characteristics of BJT in CE configuration. Indicate and explain *three* regions of operations. [6]

P.T.O.

Or

2. (a) Explain with neat diagram the positive clamper circuit with waveforms. [6]
- (b) Draw and explain BJT as a switch along with its region of operation. [6]
3. (a) Draw the diagram of IC555 as an Astable multivibrator, along with its waveform and write the T_{ON} and T_{OFF} equations. [6]
- (b) Implement full-adder using logic gates along with its truth-table and write the equation for SUM and CARRY. [6]

Or

4. (a) Draw and explain Integrator circuit using op-amp with its output equation. [6]
- (b) Mention types of shift registers and explain serial input serial output (SISO) shift register. [6]
5. (a) Draw the symbol and explain operation of TRIAC along with its V-I characteristics. [6]
- (b) Draw and explain Linear Variable Differential Transducer (LVDT) along with its transfer characteristics. [7]

Or

6. (a) Define and explain selection criteria for transducers. [6]
- (b) Draw and explain the block diagram of Digital Thermometer. [7]

7. (a) A carrier of 20 V peak and frequency 1 MHz is amplitude modulated (AM) by a sine wave of 10 V peak and frequency 1 kHz. Determine the modulation index for the modulated wave and draw the frequency spectrum for AM wave. [7]
- (b) Compare Twisted pair, co-axial and optical fibre cable. [6]

Or

8. (a) Define frequency modulation (FM) and explain : [7]
- (i) Frequency deviation
 - (ii) Modulation index
 - (iii) Frequency spectrum.
- (b) Define cellular concept and draw and explain GSM architecture. [6]