

313318

12425

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**
 - a) Draw the symbol of PN diode and Zener diode.
 - b) What is filters? Classify filters.
 - c) Define unipolar and bipolar devices.
 - d) Differentiate Multiplexer and Demultiplexer.
 - e) Classify data converters.
 - f) Draw symbol, Truth Table of D flip-flop.
 - g) Define Ripple factor and PIV of a rectifier.

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- 2. Attempt any THREE of the following:** **12**
- a) Draw the block diagram of DC power regulated supply and write the function of each block.
 - b) Describe the construction and working principle of NPN transistor with diagram.
 - c) Draw symbol, logic expression and truth table of NAND and NOR Gate.
 - d) Draw logic diagram, truth table of Half Adder.
- 3. Attempt any THREE of the following:** **12**
- a) Draw the circuit of zener diode as a voltage regulator and explain its working.
 - b) Compare CE, CB and CC configuration.
 - c) Define α and β . Derive the relationship between ' α ' and ' β '.
 - d) List different types of shift registers. Explain in details serial in serial out (SISO) registers.
- 4. Attempt any THREE of the following:** **12**
- a) Draw circuit diagram of Half wave Rectifier. Draw its input output waveform and describe its operation.
 - b) Explain working of transistor as a switch with neat diagram.
 - c) Sketch the Input and Output characteristics of CE configuration show all three regions.
 - d) State and prove De Morgan's theorem.
 - e) List any four specification of ADC 0809 and DAC 0808.
- 5. Attempt any TWO of the following:** **12**
- a) Describe working principle of successive approximation type ADC with diagram.
 - b) Draw circuit diagram and output waveform of 3 bit synchronous counter.
 - c) With the help of circuit-diagram working and Input, Output voltage waveform and Explain Bridge Rectifier.

6. Attempt any TWO of the following:

12

- a) Draw (i) OR (ii) AND (iii) NAND gate using NOR gate only.
 - b) In CE connection of transistor $\beta = 50$, $I_B = 20\mu A$ So calculate:
 - i) I_C
 - ii) I_E
 - iii) Draw CE connection of Transistor.
 - c) Give symbol, Truth table of S-R, J-K and T-FIF.
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