| eat No.: Enrolment No. |
|------------------------|
|------------------------|

|     |   | GUJARAT TECHNOLOGICAL UNIVERSITY  |           |
|-----|---|---|-----------|
| Su  | BE - SEMESTER-III (OLD) - EXAMINATION – SUMMER 2017<br>Subject Code: 130902 Date: 31/05 |   |           |
|     | •   | t Name: Analog and Digital Electronics  | 1,        |
|     | •   | 10:30 AM to 01:00 PM Total Marks:   | <b>70</b> |
| Ins | 2   | . Attempt all questions.  |           |
| Q.1 | (a)<br>(b)  | Explain the block diagram of op-amp with function of each block. What are ideal characteristics of operational amplifier?   | 07<br>07  |
| Q.2 | (a)   | Describe inverting and noninverting amplifier using op-amp with relevant circuit diagrams, waveforms and equations.   | 07        |
|     | <b>(b)</b>  | Explain the working of op-amp as integrator and differentiator. <b>OR</b>   | 07        |
|     | <b>(b)</b>  | Describe working of a differential amplifier using three op-amps.   | 07        |
| Q.3 | (a)   | Explain the basic principle of comparator. Describe the working of Schmitt trigger circuit.   | 07        |
|     | <b>(b)</b>  | Discuss summing, scaling and averaging amplifier.  OR   | 07        |
| Q.3 | (a)<br>(b)  | Discuss IC555 with function of each pin. Write a brief note on instrumentation amplifier using op-amp.  | 07<br>07  |
| Q.4 | (a)<br>(b)  | Describe the working of a 3 to 8 line decoder.<br>Explain a 4 input multiplexer.  | 07<br>07  |
|     | , ,   | OR  |           |
| Q.4 | (a)<br>(b)  | Explain JK master slave flipflop.  Define the following terms w.r.t. flip flops: set up time, propagation delay time, hold time, preset, clear, race around, truth table. | 07<br>07  |
| Q.5 | (a)<br>(b)  | Discuss 78XX and 79XX three terminal voltage regulators. State and explain De Morgan's theorems.  OR  | 07<br>07  |
| Q.5 | (a)   | Reduce using K-map (i) $\Sigma$ m(5,6,7,9,10,11,13,14,15) (ii) $\Pi$ M(1,5,6,7,11,12,13,15).  | 07        |
|     | <b>(b)</b>  | Discuss working of IC555 with function of each pin.   | 07        |

\*\*\*\*\*

**07**