

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2021****Subject Code:2130902****Date:11/09/2021****Subject Name:Analog Electronics****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1**
- (a) Give the advantages and disadvantages of hybrid parameters. **03**
- (b) Derive the equation of close loop gain of OPAMP connected in inverting configuration. **04**
- (c) Illustrate the operation of class B push pull amplifier with circuit diagram and waveform. **07**
- Q.2**
- (a) Define: (1) CMRR (2) SVRR (3) Slew rate **03**
- (b) Compare positive and negative feedbacks. **04**
- (c) Draw circuit diagram of differential amplifier with two OPAMP. Derive the equation of output voltage. **07**
- OR**
- (c) Draw and explain the functional block diagram of IC 555. **07**
- Q.3**
- (a) Justify the statement: OPAMP not works in open loop mode. **03**
- (b) State the name and importance of four stages in block diagram of OPAMP. **04**
- (c) Explain how the differentiator circuit behaves after applying the sine wave, triangular wave and square wave as input. **07**
- OR**
- Q.3**
- (a) Write the requirement of instrumentation amplifier. **03**
- (b) Explain with diagram about V to I converter with floating load. **04**
- (c) Explain the practical integrator circuit with diagram. **07**
- Q.4**
- (a) Write merits and demerits of active filters. **03**
- (b) Give the applications of following circuit. **04**
- (1) V to I converter (2) Comparator
- (3) Phase shift oscillator (4) Zero crossing detector
- (c) Illustrate the triangular waveform generator circuit. **07**
- OR**
- Q.4**
- (a) Define: (1) 3 dB frequency (2) Attenuation (3) Passband **03**
- (b) Explain the building block of PLL. **04**
- (c) Explain the working of wein bridge oscillator with neat circuit diagram. **07**
- Q.5**
- (a) In an astable circuit,  $R_a = 25 \text{ k}\Omega$ ,  $R_b = 33 \text{ k}\Omega$  and  $C = 0.5 \text{ }\mu\text{F}$ . Calculate the ON and OFF time of the load voltage waveform. **03**
- (b) Name the applications of PLL circuit and timer circuit. **04**
- (c) Design a fixed positive voltage regulator with the use of IC 78XX. **07**
- OR**
- Q.5**
- (a) Define: Astable, monostable and bistable multivibrator. **03**
- (b) Explain the principle of VCO circuit. **04**
- (c) Explain the working of IC 555 as monostable multivibrator. **07**