CBCS SCHEME

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18RA35

Third Semester B.Tech. Degree Examination, Feb./Mar. 2022
Analog and Digital Electronic Circuits

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Explain positive clipper circuit with input output waveform. **(10 Marks)**

b. Design the bandpass filter shown in Fig Q1(b) so that f_c = 1KHz. Q = 3, AF = 10. Design the centre frequency to 1.5KHz, keeping AF and the bandwidth constant.

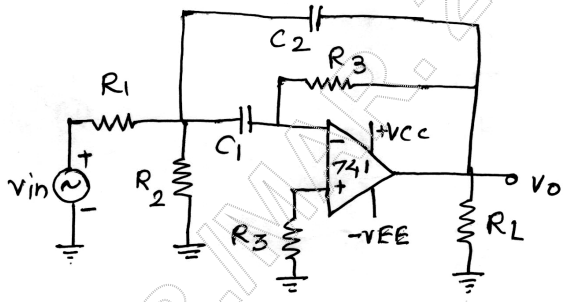

Fig Q1(b) **(10 Marks)**

OR

2 a. With neat circuit diagram explain all pass filter. **(10 Marks)**

b. Explain First order low pass Butterworth filter with frequency response. **(10 Marks)**

Module-2

3 a. Explain working of non investing comparator with input and output waveform. **(10 Marks)**

b. Explain with neat circuit diagram working, input, output waveform of phase shift oscillator. **(10 Marks)**

OR

4 a. In the circuit of investing Schmitt trigger Fig Q4(a) R_1 = 100Ω, R_2 = 56KΩ, V_m = 1V_{A^o} sine wave, and the opamp is type 741 with supply voltage = ±15V. Determine the threshold voltage V_{at} and V_{lt} and draw the output waveform.

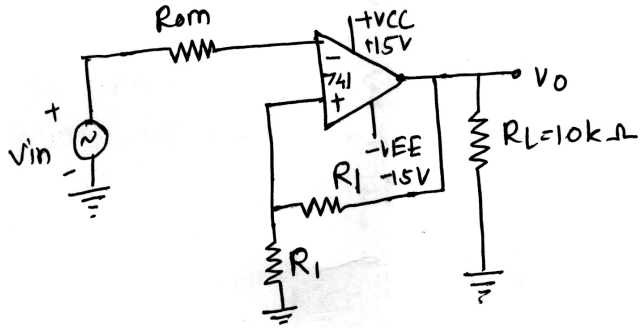

Fig Q4(a) **(10 Marks)**

b. Explain Wien Bridge oscillator with neat circuit diagram. Give expression for frequency of oscillation. **(10 Marks)**

Module-3

5 a. With neat waveform and circuit diagram, explain working of monostable multivibrator using 555 Timer. **(06 Marks)**

b. In astable multivibrator of Fig Q5(b) $R_A = 2.2K\Omega$, $R_B = 3.9K\Omega$, $C = 0.1\mu F$. Determine the positive pulse width t_c, negative pulse width t_d and free running frequency f_o.

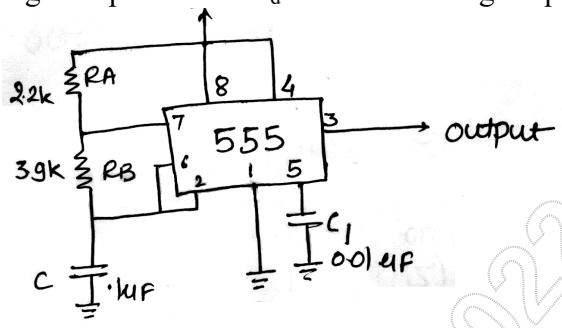

Fig Q5(b) **(06 Marks)**

c. Explain application of ICC555 astable multivibrator as square wave oscillator. **(08 Marks)**

OR

6 a. Show how IC555 timer can be used as an astable multivibrator. **(10 Marks)**

b. In the circuit diagram Fig Q6(b) $R_A = 10K\Omega$, the output pulse width $t_p = 10ms$. Determine the value of C.

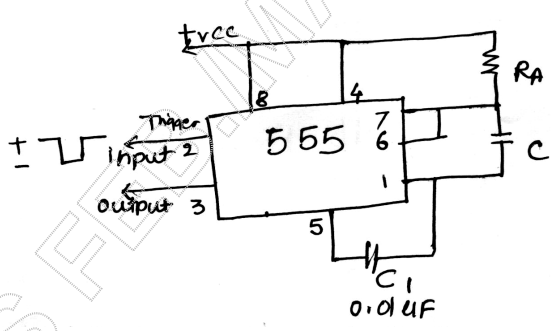

Fig Q6(b) **(05 Marks)**

c. Compare monostable multivibrature and astable multivibrator. **(05 Marks)**

Module-4

7 a. Simplify the Boolean function $f(w, x, y, z) = \Sigma(0, 1, 2\ 4, 5, 6, 8, 9, 12, 13, 14)$. **(06 Marks)**

b. Implement a full adder circuit with decoder and two OR gates. **(06 Marks)**

c. Explain octal to binary encoder with logic diagram. **(08 Marks)**

OR

8 a. Simplify the following equation Kmap $F(A\ B\ \ C\ D) = \Sigma(2, 4, 5, 13, 14) + \Sigma d(0, 1, 8, 10)$. **(06 Marks)**

b. Implement the following function with multiplexer $f(A, B, C, D) = \Sigma(0, 1, 3, 4, 8, 9, 15)$ **(06 Marks)**

c. Design BCD to decimal decoder. **(08 Marks)**

Module-5

9 a. With the help of timing diagram explain SR master slave Flip flop. **(08 Marks)**

b. With neat circuit diagram, explain Binary ripple counter. **(06 Marks)**

c. Explain T Flip flop with characteristics equation. **(06 Marks)**

OR

10 a. Explain the working of binary Up-Down counter. **(08 Marks)**

b. Explain with neat diagram working of JK flip flop and derive its characteristic equation. **(08 Marks)**

c. Differentiate between synchronous and asynchronous counter. **(04 Marks)**