

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-3 EXAMINATION, JUNE 2016

BT/BTDD 4th Semester

COURSE CODE : 15B11EC414

MAX. MARKS: 35

COURSE NAME: Basic Electronics

COURSE CREDITS: 04

MAX. TIME: 2HRS

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. This paper has three pages.

1a. Explain the series RLC circuit with its phasor diagram. Also explain resonance in series and parallel RLC circuits. (3)

b. What is a zener diode? Explain its V – I characteristics. (2)

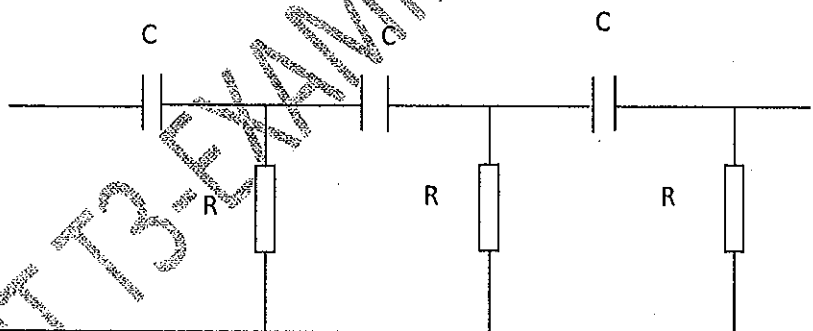
2a. Draw and explain the CE amplifier circuit. (2)

b. Describe the h parameters of BJTs. (3)

3a. To an amplifier with a gain of 100, negative feedback of $\beta = 0.02$ is applied, what will be the percentage change in the overall gain if the internal gain of the amplifier is reduced by 5%. (3)

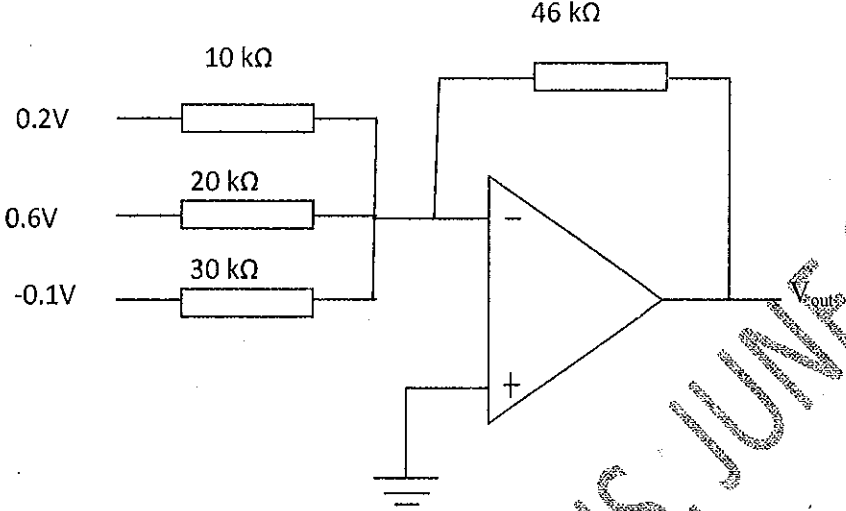
b. A negative feedback amplifier gain of 200 and a feedback of 0.05. If the input resistance of this circuit is 10 k Ω , what would the input resistance have been if the feedback was not introduced? (2)

4a. For the RC network given below, the value of C is 0.01 μ F. What value of R will produce oscillations at 5 kHz (If the network is used in an oscillator circuit)? (2)

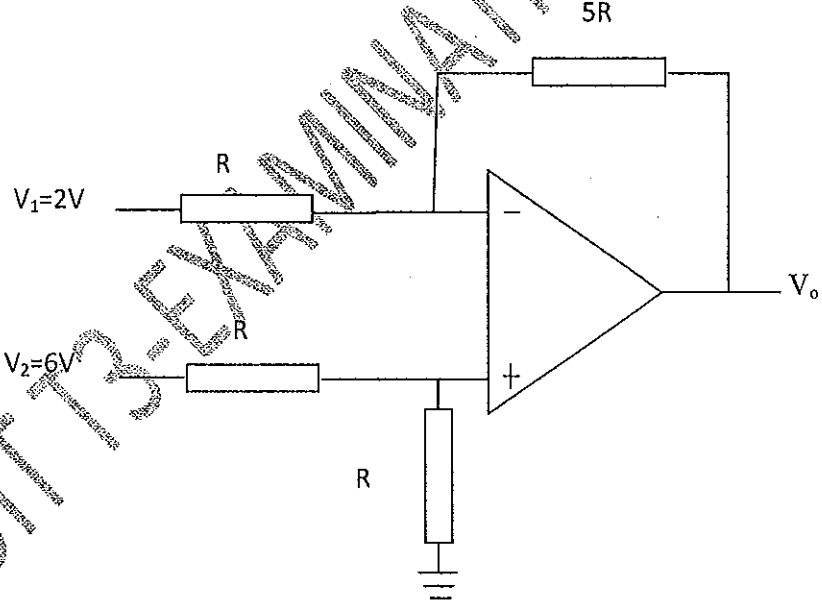


b. What is a crystal oscillator? Explain. The ac equivalent circuit of a crystal has the values $L = 1$ H, $C_s = 0.01$ pF, $R = 5$ k Ω and $C_m = 10$ pF. Determine the series and parallel resonant frequencies of this crystal. (3)

5a. For the circuit given below determine the output voltage (V_{out}) (2)



b. Determine the value of V_o in the circuit given below. (3)



6a. Convert (i) hexadecimal BC.71 to an octal number (ii) binary number 11011.011 to a decimal number and (iii) decimal number 913 into hexadecimal form. (1 + 1 + 1)

b. Simplify the following Boolean using Laws and Theorems of Boolean Algebra: (1 + 1)

(i) $Y = \bar{A}.C + \bar{A}.B + A.\bar{B}.C + B.C$ and (ii) $Y = \bar{A}.\bar{B}.\bar{C}.\bar{D} + \bar{A}.\bar{B}.\bar{C}.D$

7a. Find the SOP expression for $F(A,B,C,D) = \Sigma(0,1,3,4,7,11,13,15) + \text{don't care } \Sigma(9,12,14)$. (3)

b. Using J – K flip flop make edge triggered D and T flip flops. (2)

UNIT 13-EXAMINATIONS, JUNE 2016

