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## Third Semester B.E. Degree Examination, Dec.2015/Jan.2016

### Electronic Circuits

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting at least TWO questions from each part.**

#### PART - A

- 1 a. What is an operating point? How to choose an operating point for faithful amplification of an input signal? (06 Marks)
- b. Derive the expressions for the operation point in voltage divider bias configuration. Use accurate method for analysis. (08 Marks)
- c. For the circuit shown in Fig.Q1(c), calculate  $I_B$ ,  $I_C$ ,  $V_{CE}$ ,  $V_C$ ,  $V_B$  and  $V_E$ . Assume  $\beta = 100$  and  $V_{BE} = 0.7V$  (06 Marks)

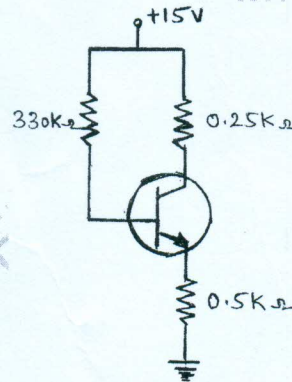


Fig. Q1(c)

- 2 a. Bring out the difference between Bipolar Junction Transistors and Field effect Transistors (05 Marks)
- b. Explain the construction and working of N - channel depletion mode MOSFET along with its characteristic curves. (10 Marks)
- c. List and briefly explain some applications of field effect transistors. (05 Marks)
- 3 a. Define the following terms with reference to photo sensors (08 Marks)
  - i) Responsivity
  - ii) Response time
  - iii) Noise equivalent power
  - iv) Spectral Response.
- b. Explain the working of a photo diode along with its VI characteristics. (07 Marks)
- c. Write a short note on Liquid crystal displays. (05 Marks)
- 4 a. With a neat diagram, explain the h - parameter model for common - emitter transistor configuration. (08 Marks)
- b. Explain bandwidth with reference to an amplifier. What are the factors affecting it? (05 Marks)
- c. Explain the importance of cascaded connection of amplifiers, with a diagram. (07 Marks)

**PART - B**

- 5 a. Classify large signal amplifier and make a suitable comparison. (10 Marks)  
b. With a block diagram explain the working of Negative feedback amplifiers. How is gain affected in these amplifiers? (10 Marks)
- 6 a. Explain Barkhausen criterion. (06 Marks)  
b. Determine the gain and phase shift for an oscillator circuit with a 1% positive feedback and a two stage CE configuration. (04 Marks)  
c. Explain the working of an Astable Multivibrator with necessary diagrams and expression for frequency of oscillations. (10 Marks)
- 7 a. What is voltage Regulation? With a neat circuit diagram explain the working of a Buck Regulator. (12 Marks)  
b. Compare linear power supplies with switched mode power supplies. (03 Marks)  
c. A regulated power supply provides a ripple rejection of - 80dB. If the ripple voltage in an unregulated input were 2V, determine the output ripple. (05 Marks)
- 8 a. Discuss any five performance parameters of an operational Amplifier. (05 Marks)  
b. Explain with neat diagrams, the working of low-pass and high pass filters using operational amplifiers. (08 Marks)  
c. For the relaxation oscillator circuit in Fig.Q8(c), determine the peak - to - peak amplitude and frequency of the square wave output given that saturation output voltage of op-amp is  $\pm 12.5V$  at power supply voltages of  $\pm 15V$ . (07 Marks)

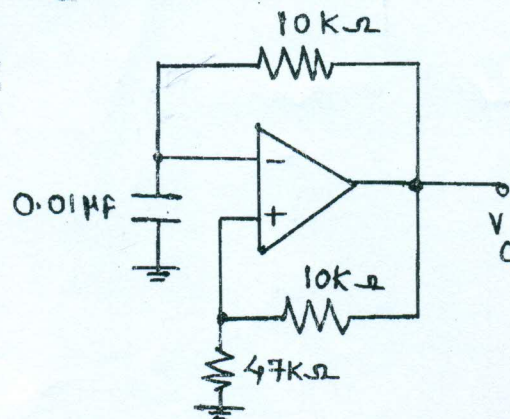


Fig. Q8(c)

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