# Third Semester B.E. Degree Examination, Dec.08 / Jan.09
## Electronic Circuits

Time: 3 hrs.            Max. Marks:100

**Note : Answer any FIVE full questions.**

**1**   a. Define clipping circuit. Mention a few applications.     (04 Marks)

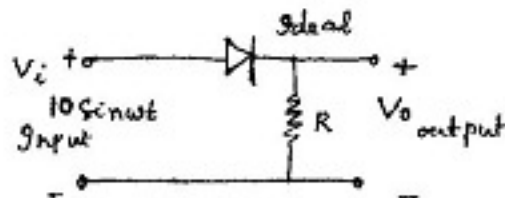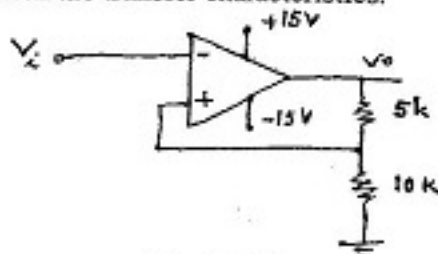b. For the clipping circuit shown in figure Q1 (b), sketch the output and transfer characteristics.     (06 Marks)



Fig. Q1 (b)

c. Explain the working of C-filter and derive expression for the ripple factor for a full wave rectifier fitted with C-filter.     (10 Marks)

**2**   a. What is biasing of a transistor and what are its requirements?     (04 Marks)

b. Explain 'emitter bias'.     (06 Marks)

c. Derive expression for voltage gain ($A_v$) and current gain ($A_I$) of an amplifier circuit using BJT in CE configuration using approximated hybrid parameter model.     (10 Marks)

**3**   a. Explain the working of single stage R-C coupled amplifier using BJT.     (12 Marks)

b. A three stage amplifier has these power gains $G_1 = 10$, $G_2 = 100$ and $G_3 = 1000$. What is the total power gain? What is the Bel power gain of each stage? What is the bel power gain of the 3 stage amplifier?     (08 Marks)

**4**   a. Explain the concept of 'feed back' in amplifiers.     (08 Marks)

b. Explain the working of any one type of feedback amplifier and list its characteristics.     (12 Marks)

**5**   a. What are power amplifiers and how do they differ from small signal voltage amplifier.     (04 Marks)

b. Explain the working of a push-pull amplifier and derive expression for its efficiency.     (12 Marks)

c. Define class A and Class B type of amplification.     (04 Marks)

**6**   a. For an operational amplifier define the following parameters:
    i) Slew rate.
    ii) CMRR (Common Mode Rejection Ratio)
    iii) Input offset voltage.
    iv) Output offset voltage
    v) Open loop voltage gain
    vi) Input bias current
                     (12 Marks)

b. What are active filters? List the advantages of active filters over passive filters.     (04 Marks)

c. For the inverting mode Schmitt trigger shown in figure Q6 (c) calculate upper and lower threshold voltages and sketch the transfer characteristics.     (04 Marks)



Fig. Q6 (c)

7   a.  Explain the working of a 3-bit DAC using R-2R ladder network.                              (08 Marks)
    b.  What are the specifications of a DAC?                                                       (04 Marks)
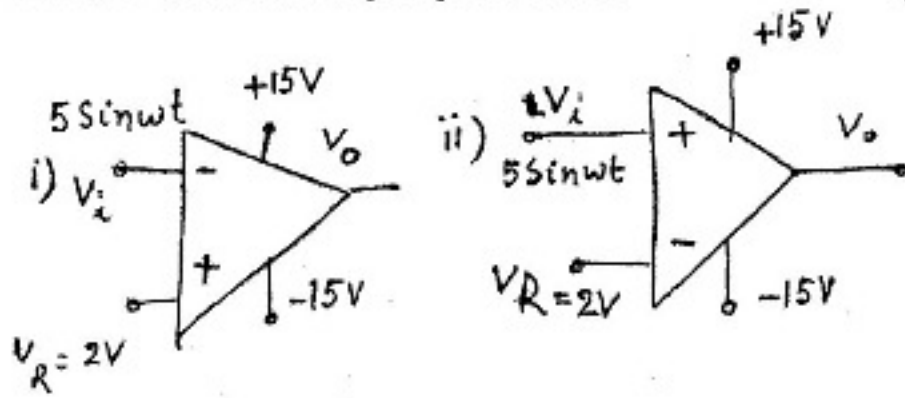    c.  Sketch the output $V_o$ of the following comparator circuits.                               (08 Marks)



Fig. Q7 (c)

8   a.  Give pin configuration of timer IC 555.                                                     (05 Marks)
    b.  Explain the working of astable multivibrator using timer IC 555 and derive expression for
        time period (T)/ frequency of oscillation.                                                 (15 Marks)

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