Registration No:

Total Number of Pages: 02   **B.Tech**
                                                                PME5H006

5th Semester Regular Examination 2017-18
Analog & Digital Electronics
BRANCH: MECH
Time: 3 Hours
### Max Marks: 100
Q.CODE: B496

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1   **Answer the following questions:** *multiple type or dash fill up type*   **(2 x 10)**
- **a)** Emission coefficient of Germanium is ………….
- **b)** What is mean by PIV rating of a diode
    a) Maximum reverse bias potential which can be applied across a diode without breakdown
    b) Maximum forward bias potential which can be applied across a diode without breakdown
    c) Minimum potential required by a diode to reach conduction state
    d) Maximum power allowable to a diode
- **c)** When temperature increases reverse saturation current ………………
- **d)** MOSFET can be used as a
    A. current controlled capacitor
    B. voltage controlled capacitor
    C. current controlled inductor
    D. voltage controlled inductors
- **e)** Which of the following is not associated with a p-n junction
    A. junction capacitance
    B. charge storage capacitance
    C. depletion capacitance
    D. channel length modulation
- **f)** The cascade amplifier is a multistage configuration of ----------------
- **g)** SR Flip flop can be converted to T-type flip-flop if ……………
- **h)** The load impedance Z_L of a CE amplifier has R and L in series. The phase difference between output and input will be ………..
- **i)** The Gray code for decimal number 6 is equivalent to ……………
- **j)** The decimal equivalent of 10010111 is -----

Q2   **Answer the following questions :**   **(2 x 10)**
- **a)** What is difference between latch and flip-flop?
- **b)** What is barkhausen criterion ?
- **c)** The Boolean expression A.B+ A.B+ A.B is equivalent to .
- **d)** Derive the Shockley's equation.
- **e)** What is common collector configuration of BJT ?
- **f)** What is the use of state diagram?
- **g)** A half wave diode circuit using ideal diode has an input voltage 20 sin ωt volts. Calculate the average and rms values of output voltage .
- **h)** Define race around condition.
- **i)** The input impedance of op-amp circuit of figure is
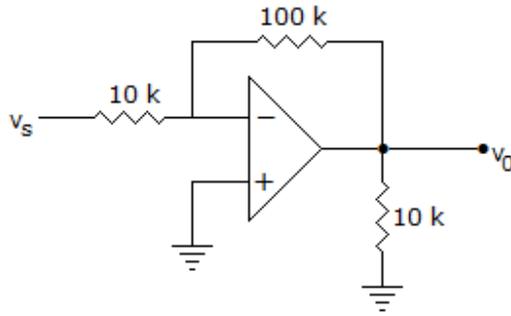
j) A CB amplifier has r_e = 6 Ω, R_L = 600 Ω and a = 0.98. Find the voltage gain .

Q3 a) Draw the circuit for voltage divider configuration for BJT. **(10)**
a. Also derive the expression for the operating point.
b) Write the differences between BJT and FET. **(5)**

Q4 a) For the circuit given below find I_D, V_{DS}, V_{GG} **(10)**
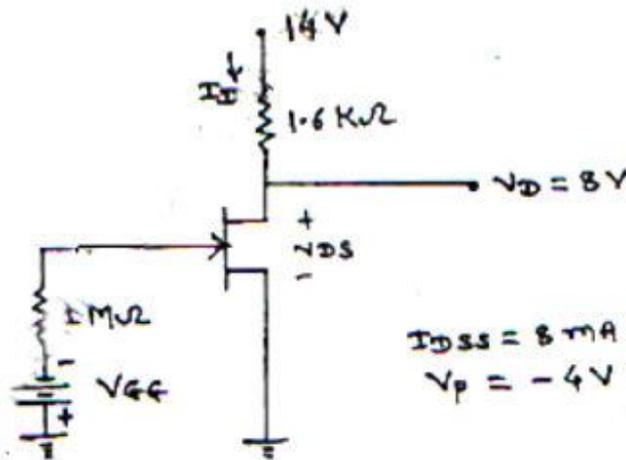
b) Write down current equation of diode and explain significance of each **(5)**
parameters.

Q5 a) Mention the types of feedback connections. Draw their block diagrams **(10)**
indicating input and output signal.
b) List the general characteristics of a negative feedback amplifier and write its **(5)**
advantages.

Q6 a) Convertthefollowingtoother canonical form. **(10)**
i) F(A,B,C,D)=Σ(0,2,6,11,13,14)
ii) F(x,y,z)=Π(0,1,2,3,4,6,12)
b) ObtainTruthtableforfunctionF=xy+xy'+y'z. **(5)**

Q7 a) Configure16 to1MUXusing4to1 MUX **(10)**
b) Implement XOR gate using NAND gate . **(5)**

Q8 a) Define slew rate of Op–Amp. (ii) Determine the cutoff frequency of OP–amp **(10)**
whose unity gain
bandwidth is 1 MHz and open loop gain is 2 x 105. (iii) List the expression for
the output of non–inverting amplifier and inverting op-amp amplifier
b) What is differences b/w ideal and practical op-amp amplifier? **(5)**

Q9 a) State and prove Demorgan's laws **(10)**
b) Explain carry look ahead generator. **(5)**