SE/SemIII/CBGS/INST/DEC 16/Analog Electronics

16/12/16

Q.P. Code : 550900

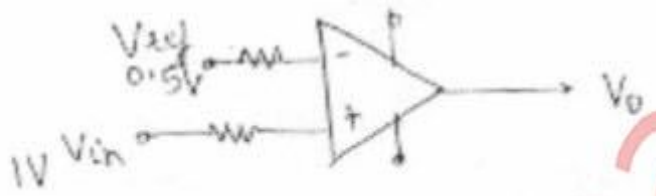
(3 Hours) **[Total Marks : 80**

N.B. : (1) Question No. 1 is **compulsory** based on entire syllabus.
(2) Solve **any THREE** main questions out of remaing.

1. Answer **any four** : **20**

a) What is the Shockley's equation in FET?

b) Draw the output of following comparator. Explain its operation. Reference voltage is 0.5V. Input is sine wave of 1V peak.



c) Compare CB CE and CC configurations.

d) What are the characteristics of an Ideal Op-Amp?

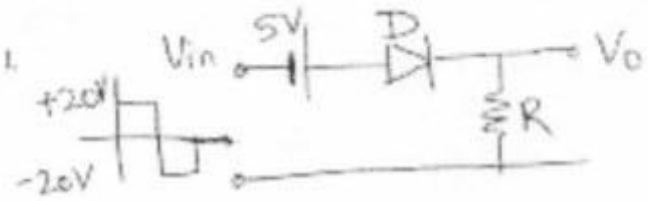
e) Draw the circuit of Log amplifier and explain.

2. Answer the following :-

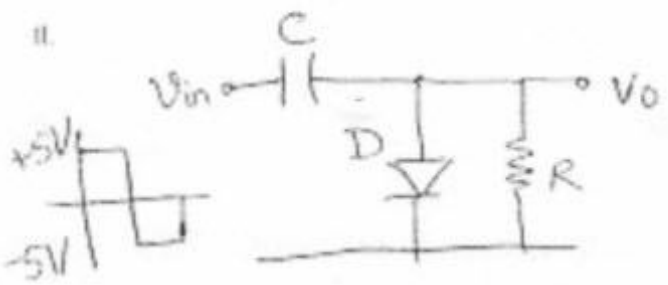
a) Perform DC analysis and detemine voltage V_{CEQ} and the current is I_B, I_C. $R_C = 4.7K$, $R_E = 1.2K$, $R_B = 250K$, $V_{CC} = 10V$. **10**

b) Detemine the output of following : **10**

I.



II.



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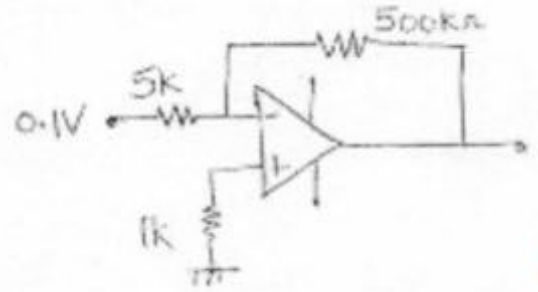
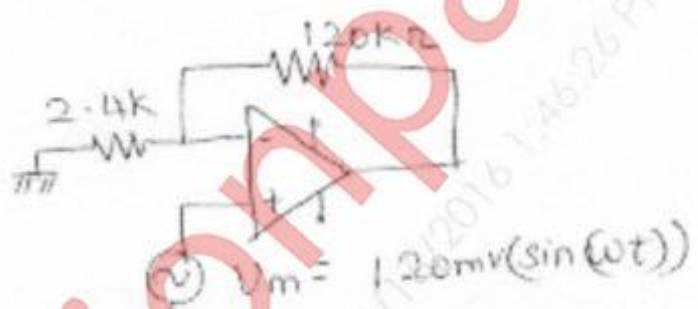
3. Answer the following :
   a) Draw the circuit and find frequency of oscillation for Wein Bridge oscillator. Explain its operation. **10**
   b) Draw and explain the circuit of integrator and differentiator using op-amp. **16**

4. Answer the following :-
   a) Draw the output of following op-amp circuits. **10**

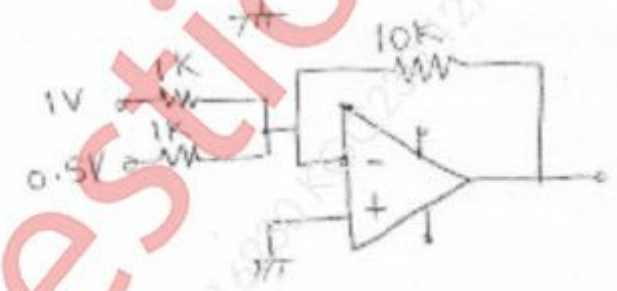
i.



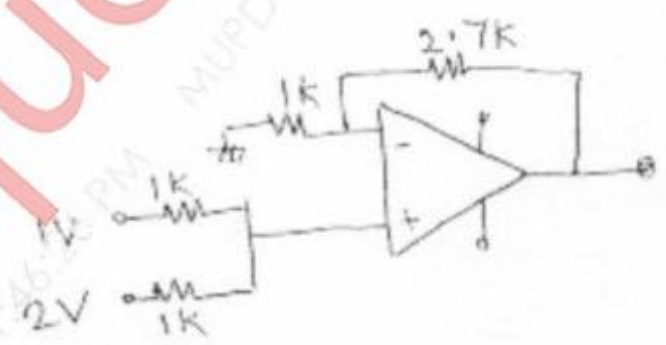
ii.



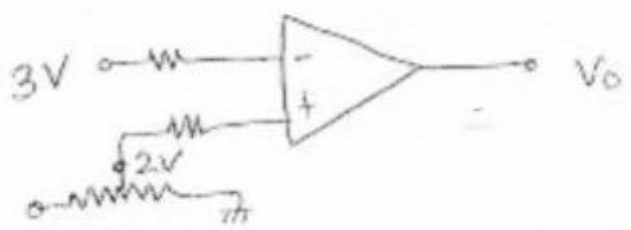
iii.



iv.



v.



   b) Explain the working of JFET. Draw the characteristics (graphs) **10``**

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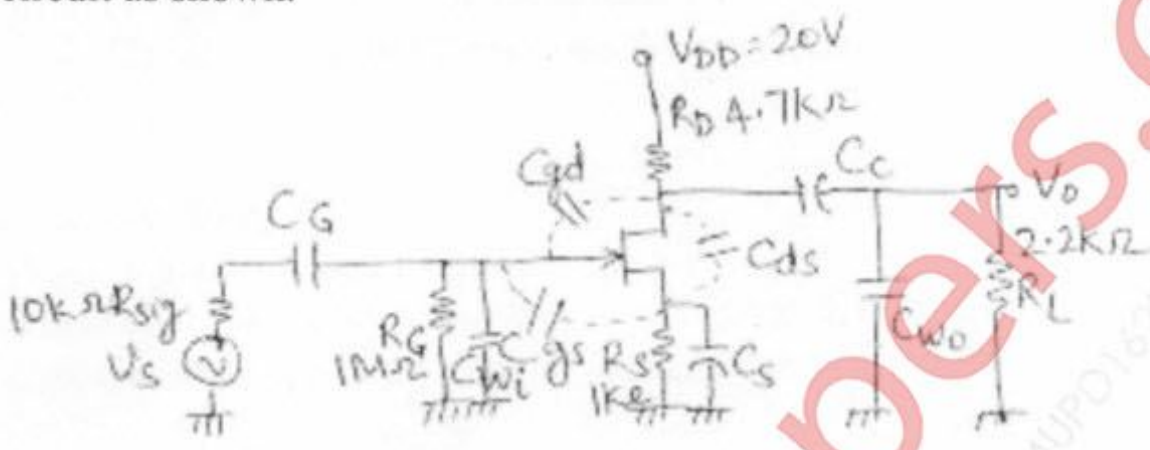
5. Answer the following :-

a) Determine the lower cutoff and higher cutof frequency for high frequency circuit as shown. **10**



C_G = 0.01 µF	C gd = 2 pF	Cwo = 6 pF	I_{DSS} = 8mA
C_C = 0.5 µF	Cgs = 6 pF	Cwi = 5 pF	Vp = 6 V
C_S = 2 µF	Cds = 0.5 pF	Av = -3	Rd = ∞

b) Draw and explain CLASS B Power amplifier. **10**

6. Answer the following :

a) Draw and explain the circuit of series regulator. **10**

b) Why is the potential divider biasing circuit best in BJT? Explain with an example. **10**
