銘傳大學 95 學年度轉學生招生考試

電子工程學系

7 月 26 日第四節　　（第 / 頁共 2 頁）

電子學試題　　（限用答案本作答）

可使用計算機

單選題(每題 2 分，40%)

1(　) In a certain common-source (CS) amplifier, V_{ds}=3.2Vrms and V_{gs}=280mVrms. The voltage gain is (a) 1 (b)11.4 (c) 8.75 (d) 3.2

2(　) Ideally, teh wquivalent circuit of a FET contains (a) a current source in eries with a resistance (b) a current sorce between drain and source erminals (c) a resistanc ebetween drain and source terminals (d) a current source between gate and source terminals

3(　) A Common Source amplifier has a load resistance of 10kΩ and R_D=820Ω. If g_m=5mS and V_{in}=500mV, the output signal voltage is (a) 5V (b) 2.05V (c) 3.89V (d) 0.5V

4(　) For small-signal operation, an n-channel JFET must be biased at (a) V_{GS}=0V (b) V_{GS}=$V_{GS(off)}$ (c) $-V_{GS(off)}<V_{GS}<0V$ (d) $0V<V_{GS}<+V_{GS(off)}$

5(　) If you are looking for both good voltage gain and high input resistance, you must use a (a) Common Gate amplifier (b) Common Drain amplifier (c) Common Source amplifier.

6(　) An amolifier that operates in the linear region at all times is (a) class A (b) class B (c) class AB (d) classC.

7(　) For maximum output, a class A power amplifier must maintain a value of quiescent courrent that is (a) one-half the peak load courrent (b) twice the peak load corrent (c) at least as large as the peak load current (d) just above the coutoff value

8(　) The maximum efficiency of a class B puch-pull amplifier is (a)79% (b) 50% (c) 25% (d) 98%

9(　) Crossover distortion is a problem for (a) into cutoff (b) right at coutoff (c) at midpoint oif the load line (d) in saturation

10(　) The efficiency of a class C amplifier is (a) less than class A (b) greater than classes A, B, or AB (c) less than class AB (d) less than class B.

11(　) The cathode of a zener diode in a voltage regulator is normally (a) grounded (b) more negative than the anode (c) at 0.7V (d) more positive than the anode

12(　) a no load condition means that (a) the load has infinite resistance (b) the load has zero resistance (c) the output terminals are open (d) answers (a) & (c)

13(　) A varactor diode exhibits (a) a constant capacitance over a range of reverse voltages (b) a variable resistance that depends on reverse voltage (c) a variable capacitance that depends on forward current (d) a variable capacitance that depends on reverse voltage

14(　) For operation as an amplifier, the base of an npn transistor must be (a) positive with respect to the emitter (b) negative with respect to the emitter (c) positibe with respect to the collector (d) 0v

15(　) The bias condition for a transistor to be used as a linear amplifier is called (a) forward-reverse (b) forward-forward (c) reverse-reverse (d) collect bias

16(　) If the base-emitter junction is open, the collector voltage is (a) Vcc (b) 0v (c) floating (d) 0.2v

17(　) The maximum value of collecro curent in a biased transistor is (a)$\beta_{DC}I_B$ (b) $I_{C(sat)}$ (c) greater than I_E (d) I_E-I_B

18(　) The disadvantage of base bias is that (a) it is very complex (b) it is too beta dependent (c) it produces low gain (d) it priduces high leakage current

19(　) Voltage-divider bias (a) cannot be independent of β_{DC} (b) can be essentially independent of β_{DC} (c) is not widely used (d) requires fewer components than all the other methods

20(　) Emitter bias is (a) essentially independent of β_{DC} (b) very dependent on β_{DC} (c) provides a stable bias point (d) answer (a)&(c)

本試題兩面印刷

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計算題 (60%)

1. (20%) Determine all low-frequency response caused by capacitor of the BJT Amplifier. $\beta ac = 100$ and $r_e' = 16\Omega$.

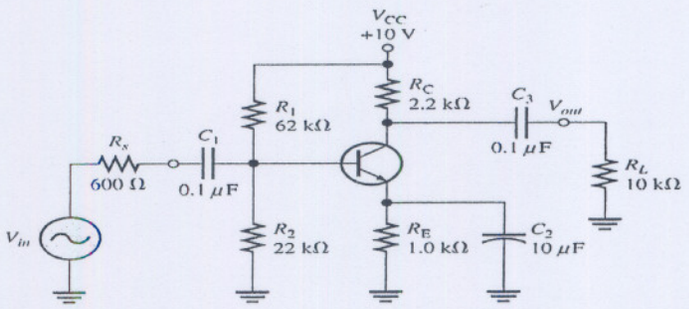
   $f_{c(input)}$=_____Hz ;

   $f_{c(output)}$=_____Hz;

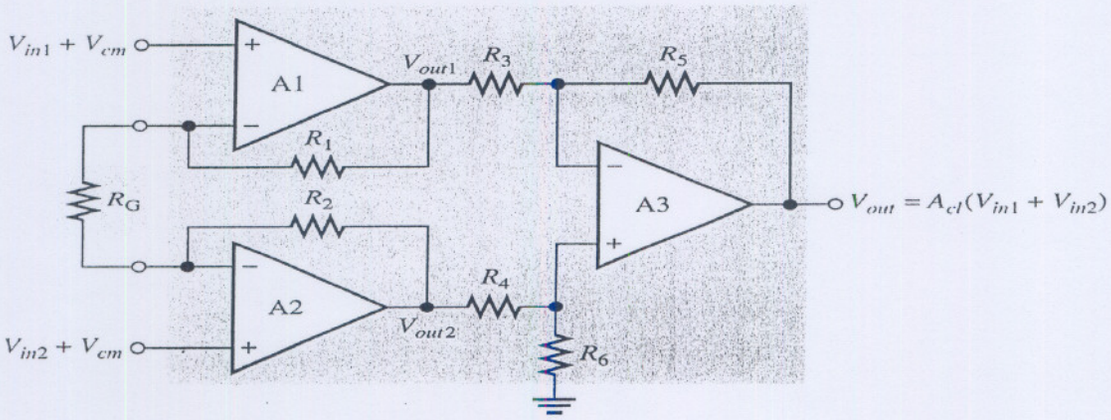
   $f_{c(bypass)}$=_____Hz;

   and the voltage gain at mid range

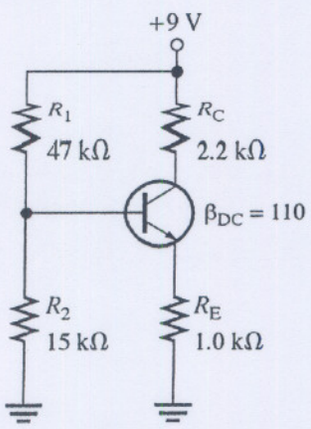
   Av=_____dB



2. (20%) For an instrument amplifier circuit, please derive closed loop gain $A_{cl} = a + \dfrac{bR}{R_G}$, where a =_____ and b =_____. Assume R_1=R_2 and R_3=R_4=R_5=R_6=R.



3. (20%)Determine all transistor terminal voltages (V_B, V_C, V_E) with respect to ground and I_C. Do not neglect the input resistance at the base or V_{BE}



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