[Time: 3 Hours]   [Marks:80]
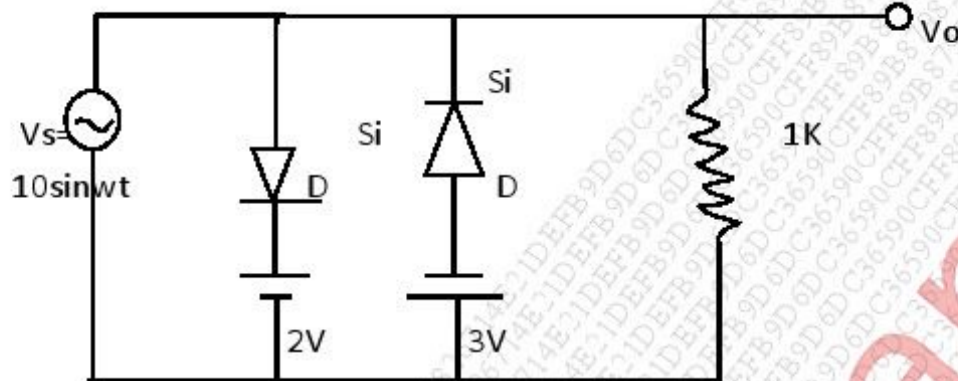
Please check whether you have got the right question paper.

N.B: 1. Question no1 is compulsory and solve any three questions from remaining.
2. Draw neat and labeled diagrams.
3. Assume suitable data if it is required.

Q.1 Solve all: 20
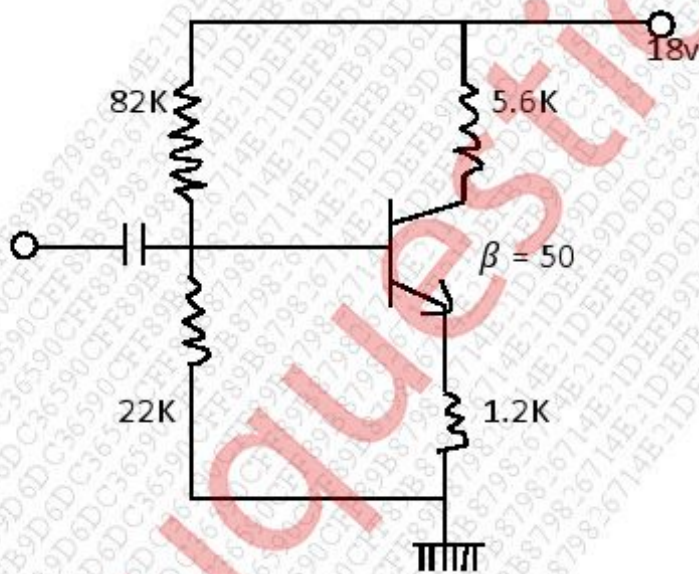
1) Draw the output voltage waveform for a shown circuit.

2) Explain self bias circuit of D-MOSFET.
3) Draw high frequency ac equivalent circuit for CS JFET amplifier.
4) State the characteristics of negative feedback amplifier.
5) Explain any one method to improve CMRR of differentiate amplifier.

Q.2 a) Determine operating point, V_B & V_E of given circuit.   10

b) Derive the expression of voltage gain, input impedance & output impedance for CS self biased   10
JFET amplifier.

Q.3 a) What is a need of multistage amplifier, derive the equation of overall voltage gain, Input resistance   12
& output resistance.

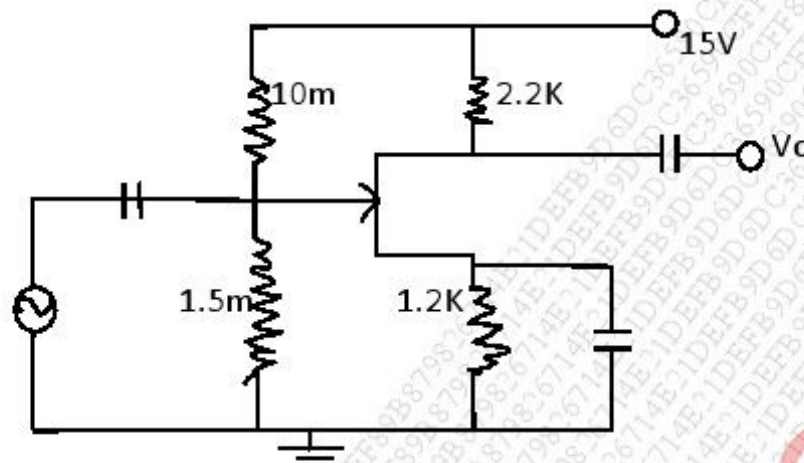b) Explain the Hartley oscillator with proper circuit diagram.   08

Q.4 a) Derive an expression for Ad, Ac & CMRR for dual input balanced output differential amplifier. 10

b) Determine Av, Zi & Zo for given circuit   10
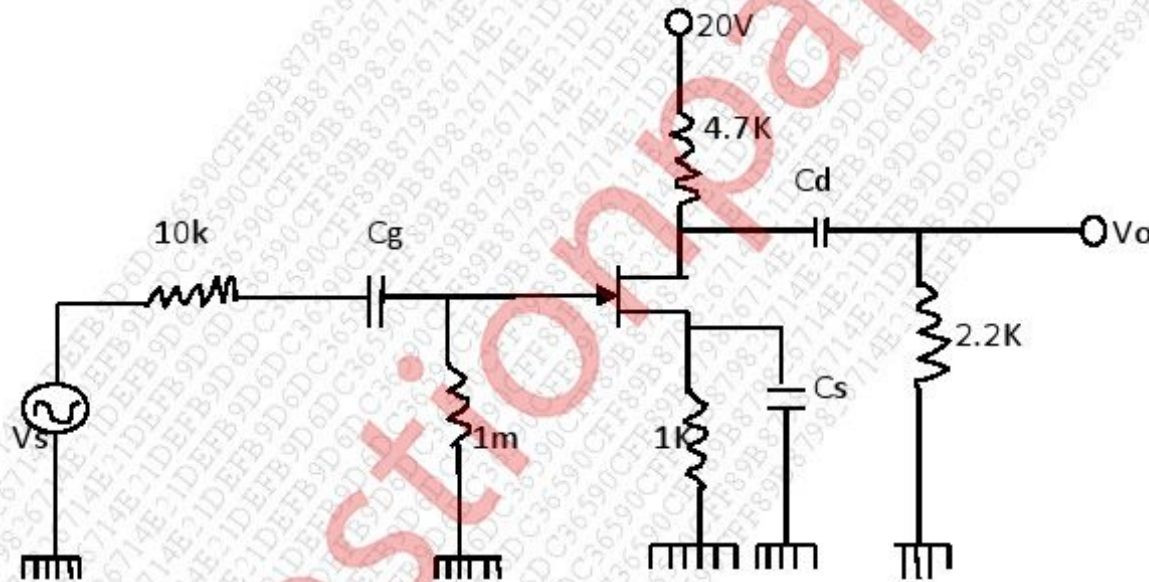

$I_{DSS}=8mA$
$Vp=3V$
$Rd=50k$

Q.5   a) Draw the circuit diagram of Class AB push-pull amplifier & explain the working principle.   10

b) Determine higher cut off frequency for a given circuit   10

$I_{DSS}=8mA$, $Vp=-4V$, $r_d==\infty\Omega$

$c_{gd}=2PF$, $c_{gs}=4PF$, $c_{ds}=0.5PF$, $cwi=5PF$, $cwo=6PF$

cwi & cwo are wiring capacitance (Input & Output respectively)

Q.6   Write short notes (any four)   20

1) Comparison of CB, CE & CC amplifier

2) Voltage shunt negative feedback amplifier

3) Wilson current source

4) Cascode amplifier

5) Cross over distortion in class B power amplifier