(3 Hours) (Total Marks : 80)

N.B. : 1) **Question No.1** is **compulsory**.
2) Attempt **any three** questions from the rest.
3) Make **any suitable** assumption wherever **required**.

1		Answer any four.	
	(a)	Explain the construction and working of Schottky diode.	5M
	(b)	What do you understand by 'Pinch off voltage' and 'cut off voltage' as applied to FET.	5M
	(c)	Explain in brief the r_e model in BJT.	5M
	(d)	What is the effect of Negative feedback on bandwidth and overall gain?	5M
	(e)	Find frequency of oscillations for Colpitt's oscillator with $C_1 = 0.01\mu F$, $C_2 = 0.001\mu F$ & $L = 5$ mH	5M
2	(a)	Derive the expression for ripple factor for Full Wave Bridge Rectifier with LC filter.	10M
	(b)	Compare different biasing methods of BJT and calculate the values of I_{BQ}, I_{CQ} & V_{CEQ} for the following fig. 1 shown of silicon transistor with $\beta = 100$.	10M

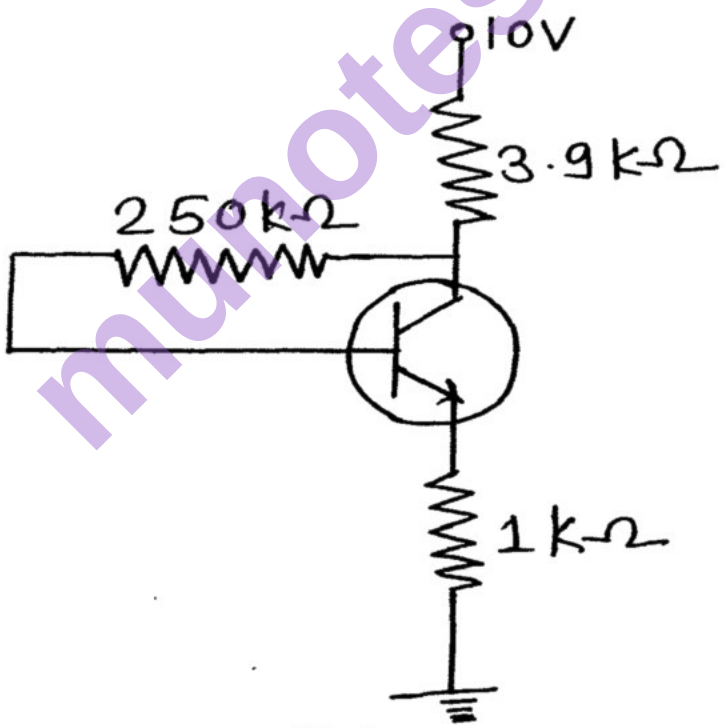

Fig .1

TURN OVER

3 (a) Draw & explain E-type MOSFET in detail with its input & output characteristic. 10M

(b) For the circuit shown in fig.2 determine voltage gain, input impedance and output impedance. FET has $I_{DSS} = 10mA$ and $V_P = -4.5V$.

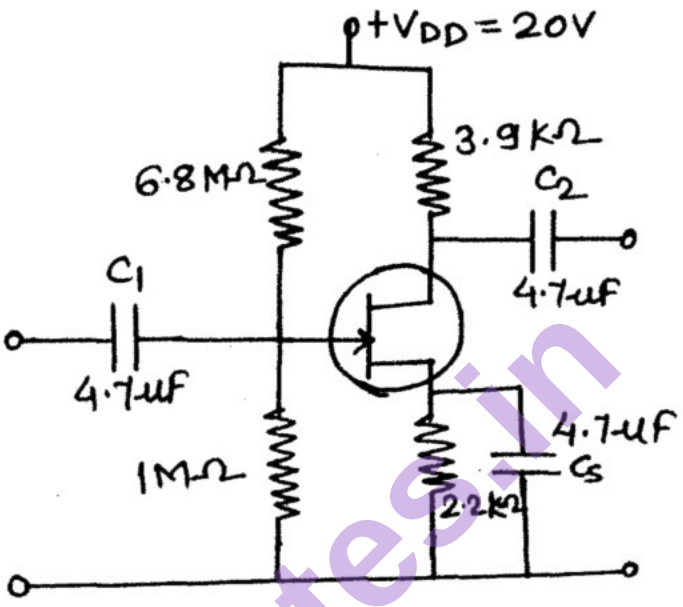

Fig. 2

4 (a) Draw and explain Hartley oscillator and derive an expression for its frequency of oscillation. 10M

(b) What are the advantages of negative feedback? 5M

(c) Explain in brief various types of negative feedback amplifiers. 5M

5 (a) Explain the features of multistage RC coupled amplifier. Draw and explain two stage RC coupled transistor amplifier 10M

(b) Derive the expression for stability factor (S) for voltage divider biasing in transistor. 10M

6 (a) Write short note on frequency response of BJT amplifier. 10M

(b) Write short note on different types of filter circuits used to remove the ripple in rectifier output. Derive the ripple factors for each. 10M