Code No: 114CV

**R13** 

## JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD B.Tech II Year II Semester Examinations, May - 2016 ELECTRONIC CIRCUIT ANALYSIS

			CE, EIE, ETM)	SIS		
Time	: 3 Hours	age-e system	(E., E.E., E.T.VI)	M	ax. Marks: 75	
Note:	This question paper co Part A is compulsory v Part B consists of 5 Each question carries 1	vhich carries 2 Units. Answe	5 marks. Answer	all questions	in Part A.	
* * * * * * * * * * * * * * * * * * *	XXV XXV XXX XXX XXX XXX XXX XXX XXX XXX	PA	RT-A	X	25 Marks)	***
1.a) b) c) d) e) f) g) h) i)	What is the main applice What are the conditions. What is base-spreading What is the bypass capa. What is the effect of ne What is Barkhausen cri What are the advantage What is harmonic distort What are the properties What is the effect of case.	s for approximate resistance? acitor and why gative feedbacterion? s of class-B operation? of Q of a tune	ate h-parameter r it is connected in k on stability? peration? d circuit?	nodel?	[2] [3] [2] [3] [2] [3] [2] [3] [2] [3] [2] [3]	
	1445 DE V	PAR	Т-В	*****	(50 Marks)	
2.a) b)	Draw the CC amplifier at A CE amplifier is drawn and load impedance is $h_{ie} = 1.0$ K ohms, $h_{re} = 2$ $R_o$ using exact analysis.	h by a voltage a resistance $2 \times 10^{-4}$ , $h_{fe} = 5$	source of interna $R_L = 1000$ ohr $50$ and $h_{oe} = 25$	l resistance R	rom others	
3.a)	Derive the expression fo	<b>OF</b> or the bandwide	th of multistage a	mulifian		
4.a)	Derive the equation for emitter bypass capacitor.	ormer coupling the lower 30	g in the output of IB frequency of	multistage ar CE configur	ration due to	
,	Given the following transat room temperature. $h_{ie}$ Find $f_{\beta}$ , $f_{T}$ , $C_{b'e}$ , $r_{b'e}$ and $r_{\beta}$	= 600 ohms.	$h_{fe}=100$ . $C_{b'e}=3P$	F and $\Delta = 10$	at 10 MHz	
× × × × ×			***		[5+5]	
4	Derive the expression found without source resist.	ance included	of a common se			
b) I	n the CS amplifier $R_L=5$	$K, R_G=10 Mo$	hms, $\mu$ =50 and r.	$_{\rm d}$ = 35 K. Eva	luate voltage	
£	gain, input impedance an	d output imped	dance.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	[5+5]	***

6(a) b)	An amplifier has feedback introduce	a input resistanted in the above verall gain is fo	ce of 200 K of amplifier the injunct to be 1000.	out resistance is	found to be	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
**************************************	Draw the circuit diagram of RC-Phase shift oscillator using BJT and derive the expressions for frequency of oscillations and condition on gain. [10]									
8.a)	Derive the expres	sion for maximo	ım conversion e	fficiency for a	Transformer-					
b)	List out the advant configuration.	ages of complem	*****	configuration o	ver push pull [7+3]	2 × 3 × 3 × 3 × 3 × 3 × 3 × 3 × 3 × 3 ×				
9.a)				ne idealized clas	s B push-pull					
b)	For an ideal class	B transistor amp stance $R_L = (N_1/N_1)$	olifier the collected $(R_2)^2$ $(R_1)^2$ Repare fixed	or supply voltag as the base curr	e V <sub>cc</sub> and the ent excitation					
0 % % X V6V 4V64 2 % 6 %	is varied. Show th	at the collector	dissipation P <sub>c</sub> is	zero at no signa	l, rises as $V_m$ [5+5]	****				
10.a) b)	Derive an expressi Discuss the necess	on for the bandwity of stabilization	ridth of a synchro n circuits in tune	nous tuned circud amplifiers.	it. [7+3]					
	Draw the equivale	ent circuit of dou	OR	****	he expression [10]	* X Y Y X X X X X X X X X X X X X X X X				
		0	oOoo							
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*** A***	* ************************************	944 F480	was gras	**** ****	. N. F. W. S. W.	***				
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AND AND A			5855 Y587 5 5 5 5 6 5 5 5 5 2 6 6 5 5 5 2 6 6 5 6 7	5.5		6 % 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8				
	8.a) b) 9.a) b) 10.a) b)	An amplifier has feedback introduce 20 M ohms and of feedback factor.  7 Draw the circuit dexpressions for free expressions for free expressions for free for the expressions for free expressions for free expressions for free feedback factor.  8.a) Derive the expression coupled Class A position of the expression for free feedback factor.  9.a) Show that the maximal circuit is 78.5%.  b) For an ideal class effective load resist is varied. Show the increases and passion depends on the expression because of the expression of the expression for free feedback factor.  10.a) Derive an expression depends on the expression of the expression for free feedback factor.  11. Derive an expression depends on the expression of the expression for free feedback factor.  12. Derive the expression for free feedback factor.  13. Derive an expression depends on the expression for free feedback factor.  14. Derive an expression depends on the expression for free feedback factor.  15. Derive an expression depends on the expression for free feedback factor.  16. Derive an expression for free feedback factor.  17. Derive the expression for free feedback factor.  18. Derive an expression for free feedback factor.  19. Derive an expression for free feedback factor.  10. Derive an expression for free feedback factor.	h) An amplifier has a input resistant feedback introduced in the above 20 M ohms and overall gain is for feedback factor.  The provided of the expression of the expressions for frequency of oscilla and coupled Class A power amplifier.  List out the advantages of complement configuration.  9.a) Show that the maximum conversion circuit is 78.5%.  b) For an ideal class B transistor amplifier effective load resistance R <sub>L</sub> = (N <sub>1</sub> /N is varied. Show that the collector of increases and passes through a max.  10.a) Derive an expression for the bandwe b) Discuss the necessity of stabilization.  11. Draw the equivalent circuit of dour for gain at resonance.	An amplifier has a input resistance of 200 K of feedback introduced in the above amplifier the in 20 M ohms and overall gain is found to be 1000. feedback factor.  OR  Draw the circuit diagram of RC-Phase shift oscilla expressions for frequency of oscillations and conditions.  8.a) Derive the expression for maximum conversion expressions for frequency of oscillations and conditions.  OR  9.a) Show that the advantages of complementary symmetry configuration.  OR  9.a) Show that the maximum conversion efficiency of the circuit is 78.5%.  b) For an ideal class B transistor amplifier the collection effective load resistance R <sub>E</sub> = (N <sub>1</sub> /N <sub>2</sub> ) <sup>2</sup> R <sub>E</sub> are fixed is varied. Show that the collector dissipation P <sub>e</sub> is increases and passes through a maximum at V <sub>m</sub> = 2V 10.a) Derive an expression for the bandwidth of a synchrophic bigory of the equivalent circuit of double tuned amplified for gain at resonance.  OR  Draw the equivalent circuit of double tuned amplified for gain at resonance. ooOoo	An amplifier has a input resistance of 200 K ohms, with a cerfeedback introduced in the above amplifier the input resistance is 20 M ohms and overall gain is found to be 1000. Calculate the lefedback factor.  OR  Draw the circuit diagram of RC-Phase shift oscillator using BJT are expressions for frequency of oscillations and condition on gain.  8.a) Derive the expression for maximum conversion efficiency for a coupled Class A power amplifier.  List out the advantages of complementary symmetry configuration of configuration.  OR  9.a) Show that the maximum conversion efficiency of the idealized class circuit is 78.5%.  b) For an ideal class B transistor amplifier the collector supply voltage effective load resistance R <sub>k</sub> = (N <sub>1</sub> /N <sub>2</sub> ) <sup>2</sup> R <sub>L</sub> are fixed as the base curred is varied. Show that the collector dissipation P <sub>c</sub> is zero at no signal increases and passes through a maximum at V <sub>m</sub> = 2Vcc/π.  10.a) Derive an expression for the bandwidth of a synchronous tuned circuit Discuss the necessity of stabilization circuits in tuned amplifiers.  OR  Draw the equivalent circuit of double tuned amplifier and derive the for gain at resonance.	h) An amplifier has a input resistance of 200 K ohms, with a certain negative feedback introduced in the above amplifier the input resistance is found to be 20 M ohms and overall gain is found to be 1000. Calculate the loop gain and feedback factor.  OR  Draw the circuit diagram of RC-Phase shift oscillator using BJT and derive the expressions for frequency of oscillations and condition on gain.  [10]  8.a) Derive the expression for maximum conversion efficiency for a Transformer-coupled Class A power amplifier.  b) List out the advantages of complementary symmetry configuration over push pull configuration.  OR  9.a) Show that the maximum conversion efficiency of the idealized class B push-pull circuit is 78.5%.  b) For an ideal class B transistor amplifier the collector supply voltage V <sub>cc</sub> and the effective load resistance R <sub>b</sub> = (N <sub>1</sub> /N <sub>2</sub> ) <sup>2</sup> R <sub>b</sub> are fixed as the base current excitation is varied. Show that the collector dissipation P <sub>c</sub> is zero at no signal, rises as V <sub>m</sub> increases and passes through a maximum at V <sub>m</sub> = 2Vcc/π.  10.a) Derive an expression for the bandwidth of a synchronous tuned circuit.  b) Discuss the necessity of stabilization circuits in tuned amplifiers.  [7+3]  OR  Draw the equivalent circuit of double tuned amplifier and derive the expression for gain at resonance.  [10] ooOoo  11. The properties of the				