COUR COD		YEAR INTRODU	
EC20		2016	
Prerequi	isite: Nil		
Course o	bjectives:		
• T	o develop the skill of analysis and design of various analog	circuits using	discrete
el	ectronic devices as per the specifications.		
Syllabus		A & A	
small sig frequency amplifier and mult equivaler MOSFET Expected • A el Text Boo • N Referend 1. N 2. R	edra A. S. and K. C. Smith, Microelectronic Circuits, 6/e, Oxford F fillman J. and C. Halkias, Integrated Electronics, 2/e, McGraw-Hil ces: Feamen D., Electronic Circuits - Analysis and Design, 3/e, TMH, 2 ashid M. H., Microelectronic Circuits - Analysis and Design, Ceng	hybrid π mo mplifiers, Wi plifiers, Sweep circuits, sma Analysis of m d design the University Pre 1, 2010	del, low de band o circuits ill signal ultistage different ss, 2013
3. S	011 pencer R. R. and M. S. Ghausi, Introduction to Electronic Circuit I azavi B., Fundamentals of Microelectronics, Wiley, 2015	Design, Pearso	on, 2003
	Course Plan		
Module	Course content (48 hrs)	Hours	Sem. Exam Marks
	RC Circuits: Response of high pass and low pass RC circuits to	5	
Ι	sine, step, pulse and square wave inputs, Differentiator, Integrate		15
	BJT biasing circuits: Types, Q point, Bias stability, Stability factors, RC coupled amplifier and effect of various components, Concept of DC and AC load lines, Fixing of operating point, Classification of amplifiers	5	
II	Small signal analysis of CE, CB and CC configurations using sm signal hybrid π model (gain, input and output impedance). Small signal analysis of BJT amplifier circuits, Cascade amplifier		15
	FIRST INTERNAL EXAM		
III	High frequency equivalent circuits of BJT, Short circuit current gain, cutoff frequency, Miller effect, Analysis of high frequency response of CE, CB and CC amplifiers	4	15
	Wide band amplifier: Broad banding techniques, low frequer and high frequency compensation, Cascode amplifier.		
IV	Feedback amplifiers: Effect of positive and negative feedback gain, frequency response and distortion, Feedback topologies a		15

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	its effect on input and output impedance, Feedback amplifier			
	circuits in each feedback topologies (no analysis required)			
	Oscillators & Tuned Amplifiers: Classification of oscillators,	6		
	Barkhausen criterion, Analysis of RC phase shift and Wien bridge			
	oscillators, Working of Hartley, Colpitts and Crystal oscillators;			
	Tuned amplifiers, synchronous and stagger tuning			
	SECOND INTERNAL EXAM			
V	Power amplifiers: Classification, Transformer coupled class A	6	20	
	power amplifier, push pull class B and class AB power amplifiers,	N A		
	efficiency and distortion, Transformer-less class B and Class AB	$1 \vee 1$		
	power amplifiers, Class C power amplifier (no analysis required)	(T)		
	Switching Circuits: Simple sweep circuit, Bootstrap sweep circuit,	5		
	Astable, Bistable, and Monostable multivibrators, Schmitt Trigger	A Aust		
VI	Transistor based voltage regulator: Design and analysis of shunt and	4	20	
	series voltage regulator, load and line regulation, Short circuit	_		
	protection			
	MOSFET amplifiers: Biasing of MOSFET amplifier, DC analysis of	5		
	single stage MOSFET amplifier, small signal equivalent circuit.			
	Small signal voltage and current gain, input and output impedances			
	of CS configuration, MOSFETCascade amplifier			
END SEMESTER EXAM				

Question Paper Pattern

The question paper consists of three parts. Part A covers modules I and II, Part B covers modules III and IV and Part C covers modules V and VI. Each part has three questions. Each question can have a maximum of four subparts. Among the three questions one will be a compulsory question covering both the modules and the remaining two questions will be as one question from each module, of which one is to be answered. Mark pattern is according to the syllabus with maximum 60 % for theory, derivation, proof and 40% for logical/numerical problems.

