SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING AND TECHNOLOGY

ELECTRONIC CIRCUITS

MODEL QUESTION PAPER – SET-1

Time: 3 hours   Maximum Marks: 75

PART A

I.   Answer all the following questions in one word or sentence.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1	Define operating point.	M1.01	R
2	Which coupling scheme has the best impedance matching property?	M1.04	R
3	Name the most efficient class of power amplifier.	M2.04	R
4	How the quality factor and the bandwidth related?	M2.01	R
5	What are the functions of a tuned amplifier?	M2.01	R
6	Which feedback method improves the gain stability of an amplifier?	M3.02	R
7	State Barkhausen criterion for oscillation.	M3.04	R
8	Name the multivibrator circuit that has two quasi-stable states.	M4.02	R
9	Give an application of Schmitt trigger.	M4.04	R

PART B

II.   Answer any Eight questions from the following

(8 x 3= 24 Marks)

		Module Outcome	Cognitive level
1	Draw the fixed bias circuit and explain its drawbacks.	M1.01	U
2	Compare voltage amplifier and power amplifier.	M2.03	R
3	List the disadvantages of single ended power amplifier.	M2.05	R
4	Find out the resonant frequency of a parallel resonant circuit formed by a 200μH inductor and a 1μF capacitor.	M2.01	A
5	What should be the quality factor of a tuned circuit to obtain a 10kHz bandwidth at 455kHz?	M2.01	A
6	Draw the circuit diagram of an amplifier with current series feedback.	M3.03	U
7	The base resistors of an astable multivibrator circuit are 220kΩ each. What are the values of the capacitors to generate a square wave signal of 2kHz?	M4.02	A

8	The RC network used in a UJT relaxation oscillator consists of 15kΩ resistor and 0.01µF capacitor. Find out the frequency of oscillation. Given η = 0.5	M4.05	A
9	Define U_{TP} and L_{TP} of a Schmitt trigger.	M4.04	R
10	Give any six applications of astable multivibrator.	M4.02	R

PART C

III.   Answer all questions from the following   (6x 7 = 42 Marks)

Module Outcome   Cognitive level

1	With a neat sketch, explain the frequency response of an RC coupled amplifier.	M1.04	U
	OR		
2	Draw the circuit diagram of emitter follower. List the features and applications.	M1.03	R
3	Draw the circuit diagram and explain the working of a transformer coupled amplifier.	M1.04	U
	OR		
4	Find out a) the input impedance b) output impedance c) voltage gain and d) power gain of the amplifier. Given that the transistor used has β = 200 and input impedance R_i= 4kΩ	M1.02	A
5	With a neat circuit diagram, explain the working of class B push-pull power amplifier.	M2.03	U
	OR		
6	With the help of a circuit diagram, explain the working of a single tuned amplifier.	M2.01	U
7	Define positive and negative feedback. List the effect of negative feedback in amplifiers.	M3.01	R
	OR		
8	Draw the block diagram of an amplifier with negative feedback and derive the expression for gain.	M3.01	U
9	Draw the circuit diagram of Wien bridge oscillator. Design the value of R and C in the feedback network to generate a sine wave of frequency 2kHz..	M3.04	A
	OR		
10	Explain the working of Hartley oscillator with a neat circuit diagram.	M3.04	U

11	With a neat circuit diagram, explain the working of Schmitt trigger.	M4.04	U
OR			
12	Explain the working of a bistablemultivibrator with a neat circuit diagram.	M4.05	U

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING
AND TECHNOLOGY

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MODEL QUESTION PAPER – SET-2

Time: 3 hours   Maximum Marks: 75

PART A

IV.   Answer all the following questions in one word or sentence.

(9 x 1 = 9 Marks)

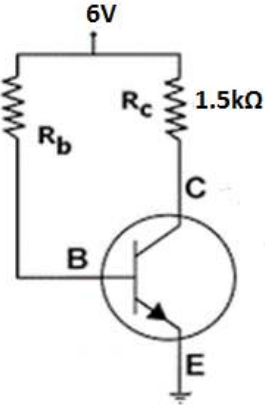|		Module Outcome	Cognitive level
1	What is the need of biasing?	M1.01	R
2	Define frequency response.	M1.02	R
3	Give the expression for resonant frequency.	M2.01	R
4	Define efficiency of a power amplifier.	M2.03	R
5	What is current feedback?	M3.01	R
6	What is loop gain?	M3.04	R
7	Name the multivibrator circuit that can be used as a memory element.	M4.03	R
8	Define LTP of a Schmitt trigger.	M4.04	R
9	Give an application of UJT relaxation oscillator.	M4.05	R

PART B

V.   Answer any Eight questions from the following

(8 x 3= 24 Marks)

		Module Outcome	Cognitive level
1	Draw the frequency response curve of an RC coupled amplifier.	M1.05	R
2	What are the requirements of a coupling network?	M1.04	R

3	 Find out the value of R_b so that the Q-point is fixed at the centre of the active region. Given that $\beta = 200$	M1.01	A
4	The individual voltage gains of the amplifier stages in a three stage amplifier are 50, 100 and 80. Find out the overall voltage gain. Also express the overall gain in dB.	M1.04	A
5	Why Class B power amplifier is more efficient than Class A?	M2.04	U
6	Draw an amplifier circuit with series voltage feedback.	M3.03	U
7	List the applications of Schmitt trigger.	M4.04	R
8	Draw the collector and base waveforms of astablemultivibrator.	M4.02	R
9	The base resistors of an astablemultivibrator Rb_1 and Rb_2 are of the same value 330kΩ. Design the value of the capacitors C_1 and C_2 to generate a 1kHz output with 30% duty cycle.	M4.02	A
10	Design the RC network for a UJT relaxation oscillator to generate a sweep waveform of 5kHz. Given, $\eta = 0.6$	M4.05	A

PART C

VI. Answer all questions from the following   **(6x 7 = 42 Marks)**

Module Outcome   Cognitive level

1	Explain the working of a single stage CE amplifier with circuit diagram and waveform.	M1.02	U
	OR		
2	With the help of a neat sketch, explain the frequency response of a transformer coupled amplifier.	M1.05	U
3	Explain the working of a single tuned amplifier with circuit diagram.	M2.01	U
	OR		
4	List the advantages and disadvantages of single ended power amplifier.	M2.05	R
5	Explain the classification of power amplifiers.	M2.04	U

	OR		
6	A 100µH coil having a resistance of 10Ω, is connected in parallel with a 0.001µF capacitor. Find out a) the resonant frequency b) impedance of the circuit at resonance and c) the quality factor of the circuit.	M2.01	A
7	Summarize the positive effects of negative feedback in amplifiers.	M3.02	U
	OR		
8	Draw the circuit diagram and waveform of Wien bridge oscillator. List the applications.	M3.04	R
9	Explain the working of Colpitts oscillator with circuit diagram and waveform.	M3.04	U
	OR		
10	Design the feedback network of an RC phase shift oscillator to generate a sign wave of 10kHz. Draw the circuit diagram and mark the feedback network.	M3.04	A
11	Explain the working of monostablemultivibrator with a neat circuit diagram.	M4.03	U
	OR		
12	With circuit diagram and waveform, explain the working of UJT relaxation oscillator.	M4.05	U