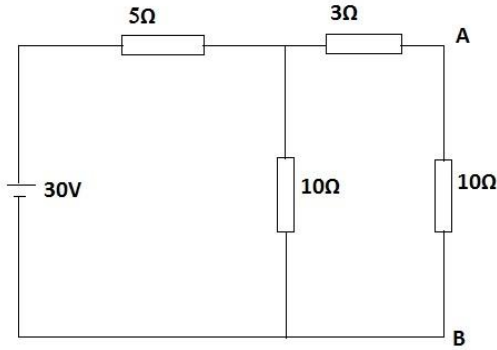




13.	An oscillator converts _____ a) ac power into dc power b) dc power into ac power c) mechanical power into ac power d) none of the above	1	1
14.	In Colpitts's oscillator, feedback is obtained ____ a) by magnetic induction b) by a tickler coil c) from the centre of split capacitors d) none of the above	1	1
15.	In a phase shift oscillator, frequency is determined by ____ a) L and C                      b) R, L and C c) R and C                      d) none of the above	1	1
16.	How many capacitors are there in the tank circuit of Hartley oscillator? a) 1                      b) 2                      c) 3                      d) 0	1	1
17.	A solar cell is a _____ a) P-type semiconductor                      b) N-type semiconductor c) Intrinsic semiconductor                      d) P-N Junction device	1	1
18.	Which of the following converts light energy to electric current? a) LED    b) Zener diode    c) Photodiode    d) varactor diode	1	1
19.	The capacitance of a varactor diode increases when reverse voltage across it _____ a) increases                      b) decreases c) breaks down    d) stores charge	1	1
20.	A PN junction that radiates energy as light instead of as heat is called a _____ a) LED    b) Photo-diode    c) Photo-cell    d) Zener diode	1	1
<b>Q. No.</b>	<b>SECTION B</b> <b>Answer ALL the questions</b> <b>10 x 2 = 20 marks</b>	<b>CO</b>	<b>KL</b>
21.	What is the purpose of a rectifier? List the types of crystal diode rectifiers.	2	2
22.	What is the difference between a short circuit and an open circuit?	2	2
23.	What is faithful amplification?	2	2
24.	Illustrate the circuit of a transistor amplifier.	2	2
25.	Write the Barkhausen condition for oscillation.	2	2
26.	Distinguish between damped and undamped oscillations.	2	2
27.	What are the differences between a JFET and a Bipolar transistor?	2	2
28.	What are the terminals of the uni-junction transistor? Draw its basic structure.	2	2
29.	What is a tunnel diode?	2	2
30.	What is the difference between a solar cell and a photodiode?	2	2
<b>Q. No.</b>	<b>SECTION C</b> <b>Answer any TWO questions</b> <b>2 x 10 = 20 marks</b>	<b>CO</b>	<b>KL</b>
31.	With a neat sketch, explain the circuit and operation of a crystal diode half-wave rectifier.	3	3
32.	Explain in detail the working of a transistor RC coupled amplifier with special reference to frequency response, advantages, and disadvantages.	3	3
33.	Explain the action of an Hartley's oscillator.	3	3

34.	Describe the construction and IV characteristics of an UJT.		
<b>Q. No.</b>	<b>SECTION D</b> <b>Answer any TWO questions</b> <b>2 × 10 = 20 marks</b>	<b>CO</b>	<b>KL</b>
35.	Elucidate the principle and working of a Varactor diode.	4	4
36.	Mention the essentials of transistor biasing. Describe the potential divider biasing method in detail.	4	4
37.	Explain the design, principle and working of a Junction Field Effect transistor.	4	4
38.	Illustrate the construction and working of phase shift oscillator.		
<b>Q. No.</b>	<b>SECTION E</b> <b>Answer any FOUR questions</b> <b>4 x 5 = 20 marks</b>	<b>CO</b>	<b>KL</b>
39.	A single stage amplifier has a voltage gain of 60. The collector load $R_c = 500\Omega$ and the input impedance is $1\text{ k}\Omega$ . Calculate the overall gain when two such stages are cascaded through RC coupling.	5	5
40.	Using Thevenin's theorem find the current and voltage across the resistor in the A-B terminals of the circuit shown in figure 	5	5
41.	A full wave rectifier uses two diodes; the internal resistance of each diode may be assumed constant at $20\Omega$ . The transformer r.m.s secondary voltage from centre tap to each end of secondary is $50\text{ V}$ and load resistance is $980\Omega$ , find i) the mean load current ii) the r.m.s value of load current	5	5
42.	Design the tank circuit of a Colpitts oscillator to generate a resonant frequency of $1\text{ MHz}$ . An inductor of $1\text{ mH}$ is available. Calculate the required values for the two capacitors $C_1$ and $C_2$ is specified as $0.25$	5	5
43.	The intrinsic standoff ratio for a UJT is determined to be $0.6$ . If the inter-base resistance is $10\text{K}$ , find the values of $R_{B1}$ and $R_{B2}$ .	5	5
44.	A transistor uses voltage divider method of biasing. $R_1 = 50\text{k}\Omega$ $R_2 = 10\text{ k}\Omega$ and $R_E = 1\text{k}\Omega$ . If $V_{CC} = 12\text{V}$ find: a) the value of $I_C$ given $V_{BE} = 0.1\text{V}$ b) the value of $I_C$ given $V_{BE} = 0.3\text{V}$	5	5