B   **R3913**   **Pages: 3**

Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018
Course Code: EE201
Course Name: CIRCUITS AND NETWORKS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.   Marks

1   State and prove Maximum Power Transfer theorem as applied to ac circuits having variable load impedance.

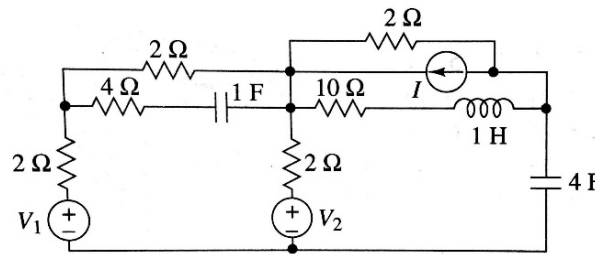2   For the network shown in Fig.1 draw the oriented graph and write the (i) Incidence Matrix (ii) Tie set Matrix

Fig. 1

3   In a series RLC circuit with R = 4Ω, L = 1H and C = 0.25F, a unit step voltage is applied at t = 0. Find the expression for the current in the circuit at t > 0.

4   The current through a 1Ω resistor in a circuit is given by the following s domain equation $I(s) = \dfrac{s+2}{(s^2+2s+2)}$. Find the voltage across the resistor.

5   List the necessary conditions for a driving point function.

6   What are h- parameters? Draw the equivalent circuit of a two port network with h- parameter representation.

7   Test whether the polynomial $F(s) = s^5+3s^3+2s$ is Hurwitz.

8   Determine whether the following functions represent driving point impedance of an RC network.

(i) $Z_1(s) = \dfrac{s^2+5s+4}{s^2+2s}$ (ii) $Z_2(s) = \dfrac{2s^2+8s+6}{s^2+8s+12}$

PART B
Answer any two full questions, each carries10 marks.

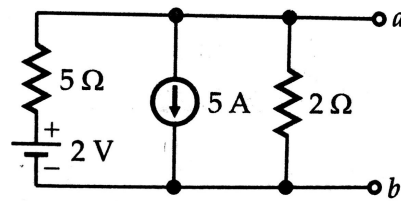9   Find the Norton's equivalent circuit across a-b for the network shown in Fig. 2   (10)

Fig.2

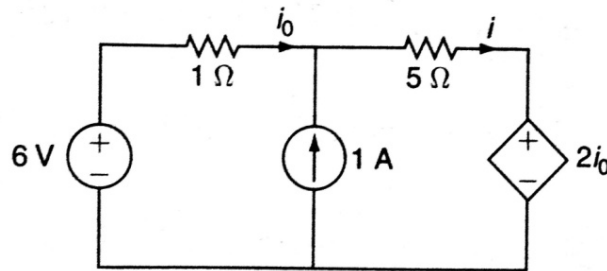10   a)   Find current, 'i' in the network shown in Fig.3 using super position theorem   (6)

Fig.3

     b)   List the properties of Incidence Matrix   (4)

11   For the network shown in Fig.4 write down the tieset matrix and obtain the   (10)
network equilibrium equations in matrix form using KVL. Calculate the loop
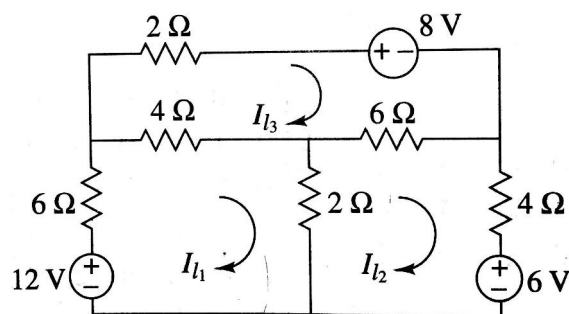currents.

Fig.4

PART C
Answer any two full questions, each carries10 marks.

12   The switch in the circuit of Fig.5 is moved from position 1 to position 2 at t = 0.   (10)
Determine $v_c(t)$.

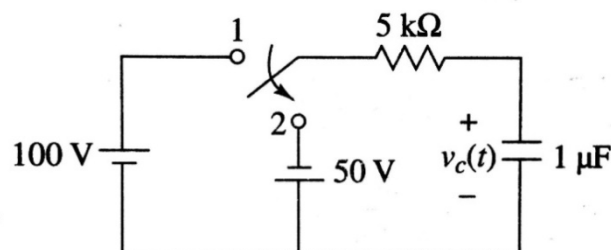

Fig.5

13   In the network shown in Fig.6 the switch is opened at t = 0. Find $i(t)$ (10)
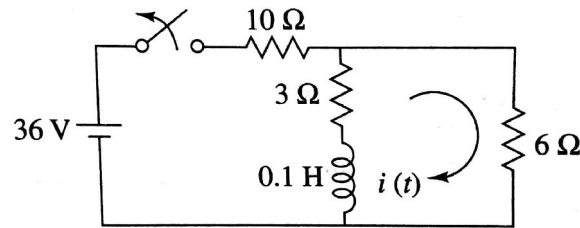

Fig.6

14   Figure.7 shows a network with mutual coupling. Find the current in the 10Ω   (10)
resistance.   Assume that inductors have negligible resistance
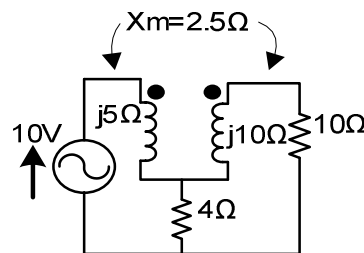

Fig.7

PART D
Answer any two full questions, each carries 10 marks.

15   a)   Derive the condition for reciprocity and symmetry of Z parameters   (5)

     b)   Find the transmission parameters for the network shown in Fig.8   (5)
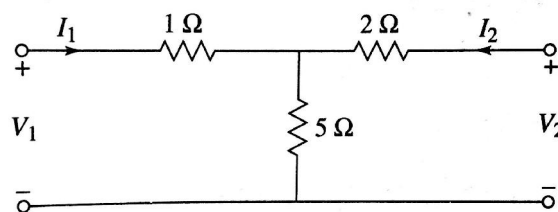
Fig.8

16   a)   Show that the overall admittance parameter matrix for parallel connected two   (5)
           port network is the sum of admittance parameters of each individual two port
           network in parallel

     b)   Synthesize the network function $Z(s) = \dfrac{(s^2 + 1)}{s(s^2 + 2)}$ in Foster I form.   (5)

17   Find the Cauer I and II forms of the RL impedance function $Z(s) =$ (10)
       $\dfrac{2(s+1)(s+3)}{(s+2)(s+6)}$

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019
Course Code: EE201

Course Name: CIRCUITS AND NETWORKS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.   Marks

1   Find the current flowing through the 5Ω resistor shown in figure 1 if all active   (5)
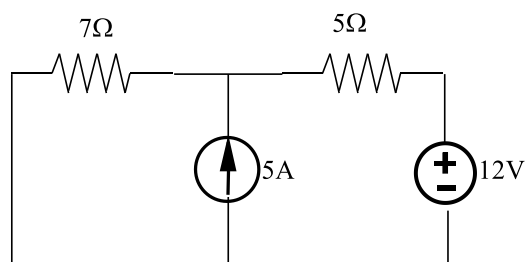   elements are ideal.

Fig. 1

2   Sketch the network graph if the incidence matrix is as represented below: (5)

Nodes	Branches				
	1	2	3	4	5
1	1	0	0	0	1
2	-1	1	0	1	0
3	0	-1	1	0	0
4	0	0	-1	-1	-1

3   A resistance R and 5µF capacitor are connected in series across a 100V dc   (5)
        supply. Calculate the value of R such that the voltage across the capacitor
        becomes 50V in 5s after the circuit is switched on.

4   In an RL series circuit, R=5 Ω, L=2.5mH and $i(0^-)$=2A. If a source of 50V is   (5)
        applied at t=0, find i(t) for t>0, using Laplace transformation.

5   For the network shown in figure 2, determine the transfer function $Z_{21}(s)$ and the   (5)
        driving point admittance function $Y_{11}(s)$.

5s

Fig. 2
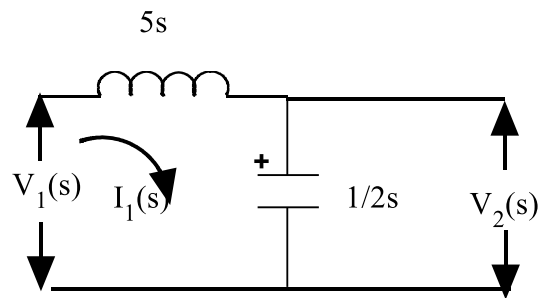
6   Derive the expression of z- parameters in terms of y- parameters.   (5)

7   Explain the differences between Cauer form and Foster form.   (5)

8   Check whether the polynomial $s^4 + 6s^3 + 2s^2 + s + 1$ is Hurwitz or not.   (5)

PART B
Answer any two full questions, each carries10 marks.

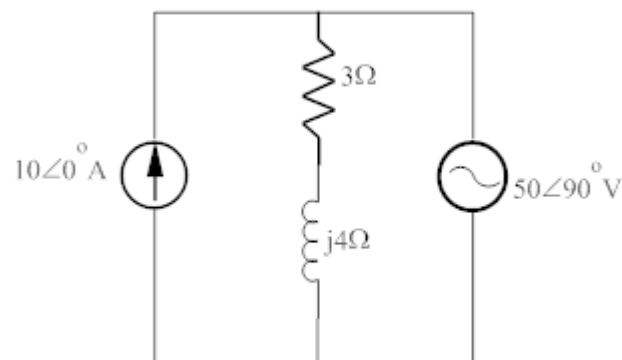9   Use superposition theorem to find the current, I in the circuit shown in fig. 3   (10)

Fig. 3

10   For the network shown in figure 4, draw the network graph. Select 2, 4, 5 as tree   (10)
        branches. Obtain tie-set matrix and hence find the loop currents.
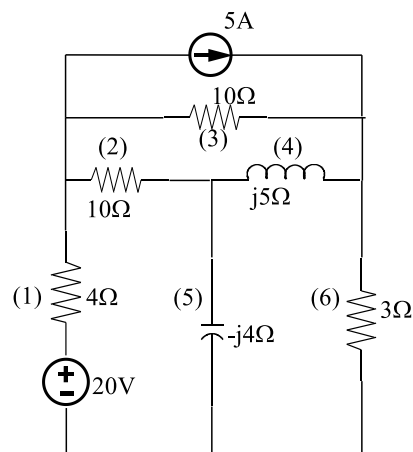

Fig. 4

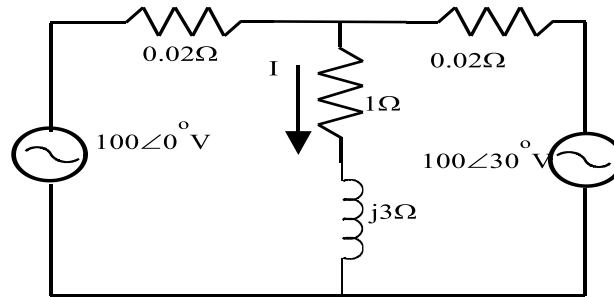11   Solve for the current I in the figure 5 using Norton's Theorem.   (10)

Fig. 5

PART C
Answer any two full questions, each carries 10 marks.

12   a)   A series RC circuit with R=10Ω and C=4μF has an initial charge Q_0=800μC on   (10)
       the capacitor. At t=0, the switch is closed to apply a constant dc voltage source of
       100V. Sketch the transformed circuit. Find the resulting current transient if the
       charge on the capacitor has the same polarity as deposited by the source.

13   a)   In the network shown in figure 6, the switch is opened at t= 0. Find out the   (10)
       current through the 1Ω resistor after opening the switch.
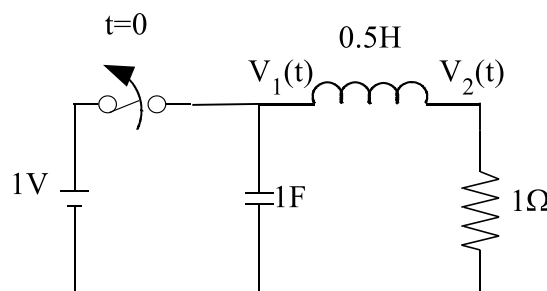
Fig. 6

14   a)   In the RL circuit shown in figure 7, the switch is in position 1 long enough to   (10)
       establish steady state conditions and at t=0, it is switched to position 2. Find the
       resulting current.
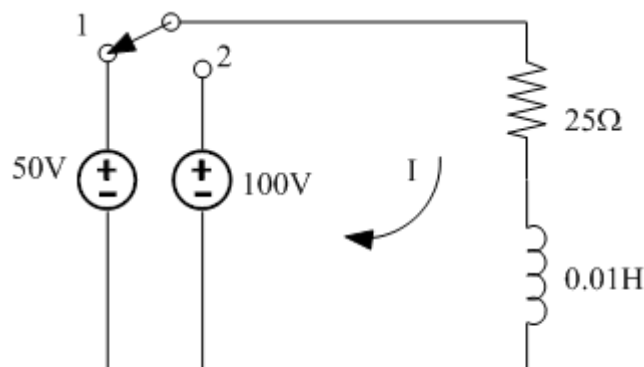
Fig. 7

PART D
Answer any two full questions, each carries 10 marks.

15 a) Find the Z and Y parameters of the given π- network.   (10)

Fig. 8

16   Find the first and second order Cauer forms of the function, $z(s) = \dfrac{2s^2 + 8s + 6}{s^2 + 2s}$ (10)

17   Find the two canonical Foster networks with elements for the impedance   (10)

function, Z(s) given by $Z(s) = \dfrac{(s+1)(s+3)}{s(s+2)}$

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
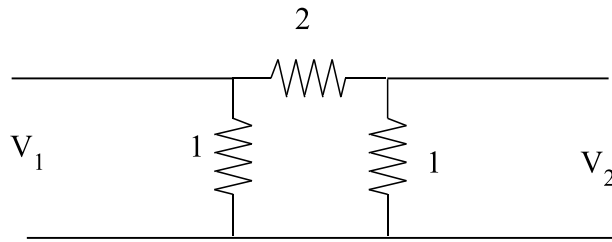THIRD SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

Course Code: EE201
Course Name: CIRCUITS AND NETWORKS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries5 marks.   Marks

1   State and prove maximum power transfer theorem as applied to ac circuits.   (5)

2   Find the possible number of trees of the given bus incidence. Also draw the   (5)
       oriented graph

$$A = \begin{bmatrix} 1 & 0 & 0 & 1 \\ -1 & 1 & 1 & 0 \end{bmatrix}$$

3   A series RL circuit has R = 25 Ω, and L = 5 H. A dc voltage of 100 V is applied   (5)
       at t = 0. Determine a) the time at which the voltage across resistor and inductor
       are equal and b) the current through the inductor at t = 0.5 s.

4   The current through 2 Ω resistor is $I(s) = \dfrac{5s+3}{s^2+5s+6}$. Find the voltage across the   (5)

       resistor, v(t).

5   Determine the transmission parameters of the network shown in figure.   (5)
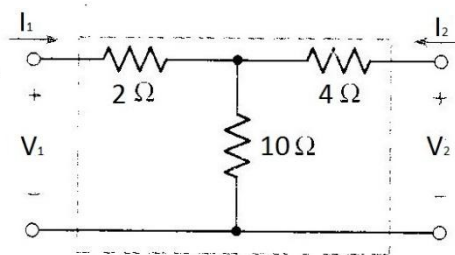
6   Check for symmetry and reciprocity of a two port network in z parameter   (5)
       representation shown in figure
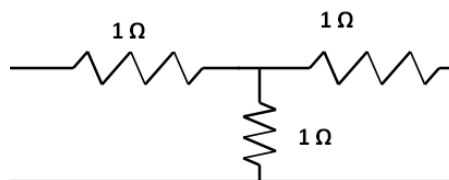
7   Explain the properties of a positive real function.   (5)

8   Check whether the polynomial $s^4 + 7s^3 + 4s^2 + 18s + 6$ is Hurwitz.   (5)

PART B

Answer any two full questions, each carries 10 marks.

9   For the circuit shown in figure, determine the current through the capacitor, using   (10) superposition theorem,
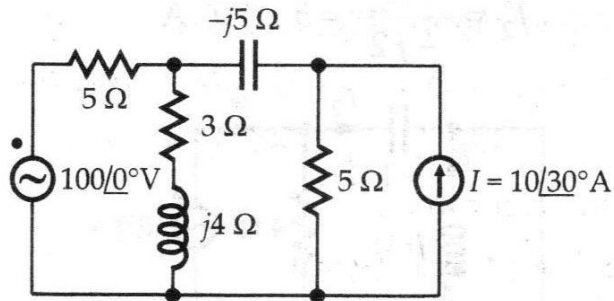
10   a)   Determine the Norton equivalent circuit for the network shown in figure   (5)
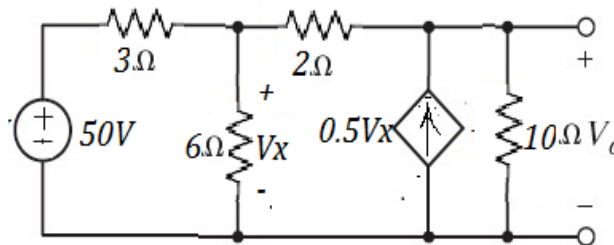
     b)   The oriented graph of a network is shown in Figure. Obtain bus incidence matrix   (5) and tie-set matrix with twigs (1-2, 2-3, and 3-4).
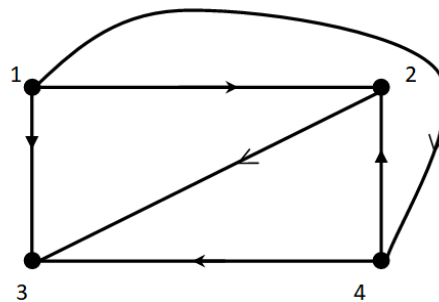
11   For the circuit shown in figure, determine all branch voltages, using cut set   (10) analysis.
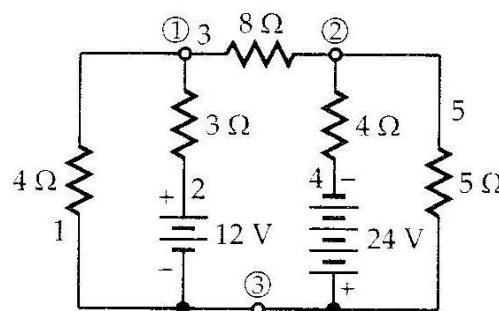
PART C

Answer any two full questions, each carries 10 marks.

12   In the circuit shown in figure, steady state is reached, while the switch is in   (10) position 1. At t=0, the switch is moved to position 2. Determine the energy stored in the capacitor at t = 0.1 ms.
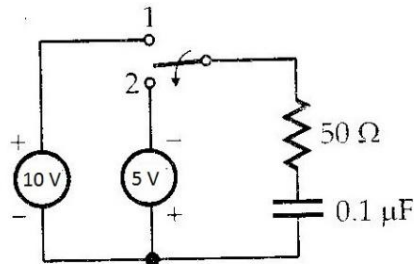
13   In the circuit shown in figure.(11) the switch S is in position 1 and the circuit   (10) attained its steady state .The switch S is transferred to position 2 at time t=0 .Determine the current through the inductor i(t) for t>0. Use s- domain approach
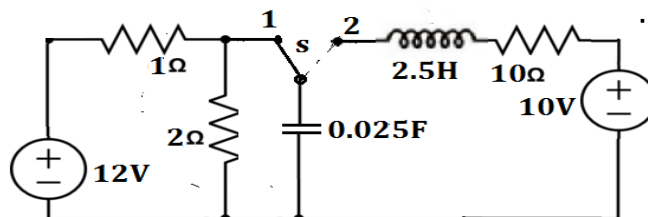
14   a)   For the circuit shown in figure, the switch was open for a long time. At t = 0, the   (5) switch is closed. Determine the current through the inductor for t > 0. Take E = 10 V, $R_1 = 1\Omega$, $R_2 = 2\Omega$, L = 1H.
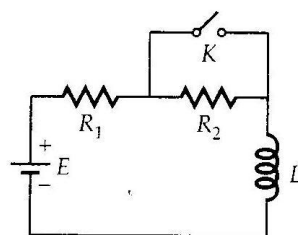
   b)   Obtain the dotted equivalent circuit of the network shown in figure and then   (5) determine the net inductive reactance.
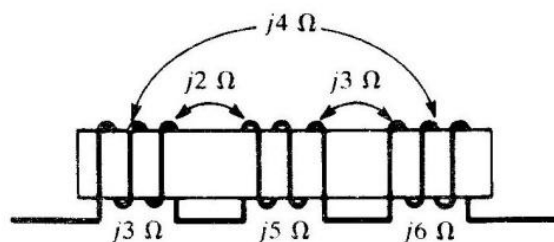
PART D

Answer any two full questions, each carries 10 marks.

15 a) Determine the h parameters of the two port network shown in figure.   (5)
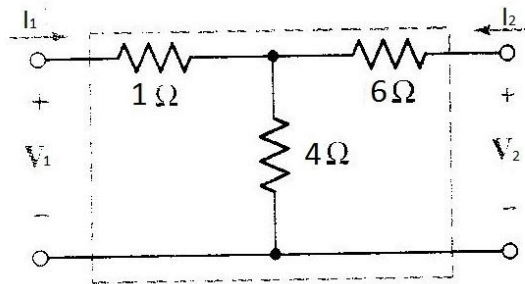
   b) The Z parameters of a two port net work are $Z_{11} = 10 \ \Omega$, $Z_{22} = 20 \ \Omega$, $Z_{12} = Z_{21} =$ (5)
       5Ω. Determine a) The ABCD parameters of this network and b) Its equivalent T
       network.

16 a) For a two port network, express a) z-parameters in terms of h-parameters and b)   (5)
       ABCD parameters in terms of y-parameters.

   b) Find the first Cauer form of RC network $Z(s) = \dfrac{(s+3)(s+6)}{(s+1)(s+5)}$ (5)

17 a) The driving point impedance of a one port LC network is given by Z(s) =   (10)
       $\dfrac{(s^2+4)(s^2+25)}{s(s^2+4)}$. Obtain the first and second Forster form of equivalent networks.

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third semester B.Tech examinations (S) September 2020

Course Code: EE201

Course Name: CIRCUITS AND NETWORKS

Max. Marks: 100   Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.   Marks

1   Compute the power dissipated in the 2Ω resistance in the network shown below,   (5)
     using superposition principle. Assume all the active sources as ideal.
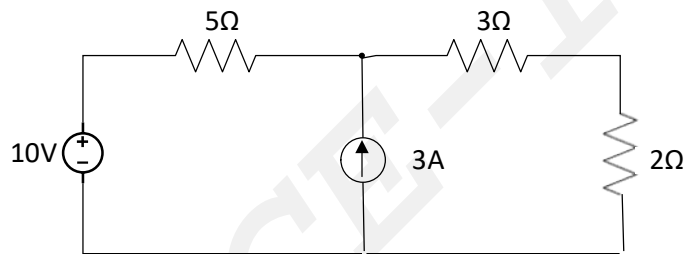
2   Define the following terms with an example: (i) Graph (ii) Directed graph   (5)
     (iii) tree (iv) link (v) twig

3   A series RC circuit has $R=10\Omega$ and $C=1F$. If the circuit is connected to a 10V   (5)
     DC supply at time t=0, determine (i) the time at which the voltage across the
     capacitor is 5V and (ii) the circuit current at that instant.

4   The switch K in the circuit given below has been at position 1 for a long time.   (5)
     At $t = 0$, the switch is moved to position 2. Determine the current flowing
     through the 1Ω resistance for $t \geq 0$ using Laplace transform technique.
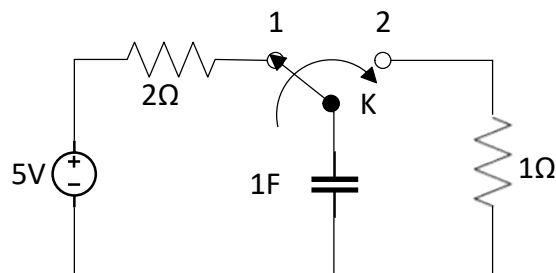
5   What is ABCD parameters? Why are they called transmission parameters?   (5)

6   Show that for a two-port network $[Y]=[Z]^{-1}$.   (5)

7   State the properties of Hurwitz polynomials.   (5)

8   Determine whether the following function is a positive real function.   (5)

$$F(s) = \frac{s + 2}{s + 1}$$

PART B
Answer any two full questions, each carries 10 marks.

9   Determine the voltage drop across the 8Ω resistance in the circuit given below,   (10) using Norton's theorem. Also calculate the power dissipated in the resistance.
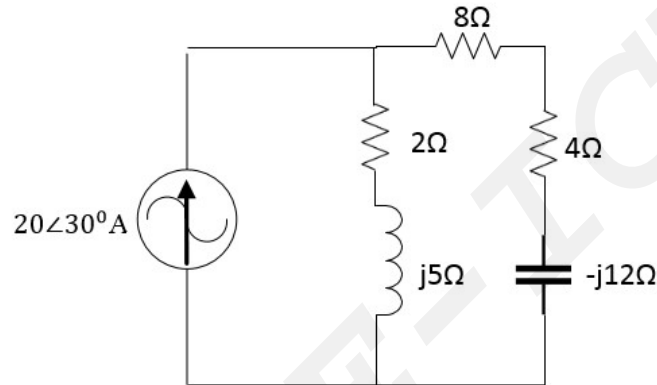
10 a)   State reciprocity theorem. Verify reciprocity theorem for the circuit given   (5) below.
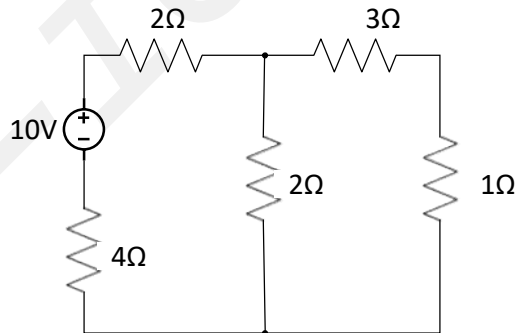
b)   Draw the oriented graph for the reduced Incidence matrix given below.   (5)

$$A = \begin{bmatrix} 1 & 1 & 0 & 0 & 0 \\ -1 & 0 & 1 & 0 & 1 \\ 0 & 0 & -1 & -1 & 0 \end{bmatrix}$$

11   For the network shown in the figure write down the cut-set matrix and   (10) determine all branch voltages.
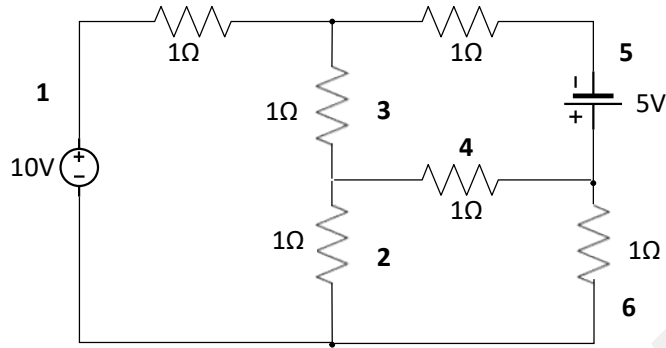
PART C
Answer any two full questions, each carries 10 marks.

12   The circuit shown in the figure is initially at steady state, with the switch K   (10)
      opened. If the switch is closed at time t = 0, determine the expression for the
      voltage across the capacitor for t ≥ 0. Also find its final steady state value.
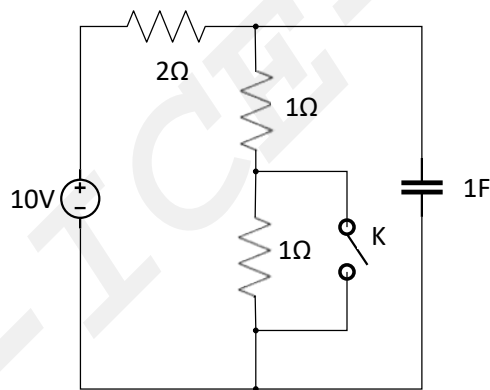
13 a) A series RL circuit with R = 10Ω and L = 2H is connected to a 20V DC supply   (5)
       at time $t = 0$. Plot the variation of inductor current and voltage across the
       resistor for t ≥ 0 by deriving the expression for the same.

    b) Determine the loop current I_2 in the circuit given below.   (5)
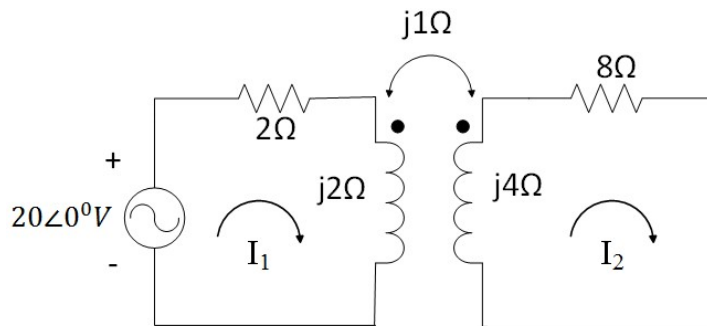
14   A series RLC circuit with R = 5Ω, L = 1H and C = 0.25F is connected to a   (10)
      10V DC supply at time $t = 0$. Determine the expression for (i) the current $i(t)$

through the circuit and (ii) voltage across the capacitor v(t). Use Laplace transform technique.

PART D

Answer any two full questions, each carries 10 marks.

15 a) The following measurements are taken while conducting an experiment on a two port network. If two such identical networks are connected in parallel, determine the Y parameters of the overall network. (5)

Input port terminals shorted	Input Port Current	Output Port Voltage	Output Port Current
	$-2A$	10V	5A
Output port terminals shorted	**Input Port Voltage**	**Input Port Current**	**Output Port Current**
	5V	2.5A	$-1A$

b) The port currents of a two port network are given by (5)

$$I_1 = 4V_1 - 2V_2$$
$$I_2 = -2V_1 + 5V_2$$

Find the equivalent π network.

16 a) Find the transmission parameters of the following network and hence determine whether the network is reciprocal. (5)
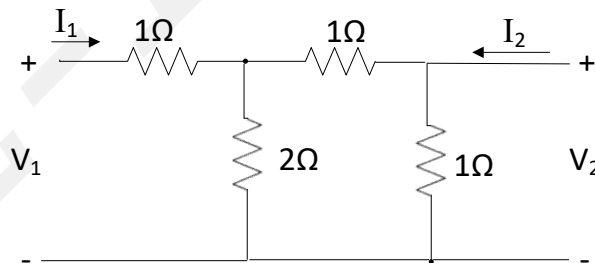
b) List any five properties of LC driving point immittance functions. (5)

17 Synthesize the Foster I and II forms of RC network with the following driving point function. (10)

$$Z(s) = \frac{(s + 1)(s + 6)}{s(s + 4)(s + 8)}$$

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018
Course Code: EE203
Course Name: ANALOG ELECTRONICS CIRCUITS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries5 marks.   Marks

1   Draw the circuit of a simple zener voltage regulator and design thevalue   (5)
     ofseries resistor R_S for a load voltage of 12V. Given R_L= 500 Ω, I_{zmax}= 80 mA,
     I_{zmin} = 10 mA,V_{inmin}= 15V, V_{inmax} =18 V.

2   Draw the frequency response characteristics of RC coupled amplifier and   (5)
     explain the reasons behind its shape.

3   List out the merits and demerits of negative feedback on amplifier performance   (5)

4   Compare the characteristics of ideal Op-Amps and practical Op-Amps.   (5)

5   Draw the circuit of an inverting amplifier and obtain the expression for its   (5)
     closed loop gain.

6   Draw the Schmitt trigger circuit and determine the threshold voltages V_{UT} and   (5)
     V_{LT}in a circuit with two resistors 18kΩ and 1kΩ,V_{ref} = 4V, and saturation
     voltage = ±15V

7   With necessary diagrams explain the operation of OP-Amp square wave   (5)
     generator.

8   Explain the operation of Op-Amp crystal oscillator.   (5)

PART B
Answer any two full questions, each carries 10 marks.

9   a) Draw and explain the h parameter small signal low frequency model for BJT.   (4)

     b) Derive the expressions for current gain, input impedance, voltage gain and   (6)
         output impedance using h parameters of BJT.

10   a) Draw and explain small signal model of FET.   (4)

     b) Obtain the operating point set by the voltage divider bias circuit for an NPN CE
         transistor with β = 50 and V_{BE} = 0.7 V. Given V_{CC} = 18 V, R_1 = 82kΩ, R_2 =   (6)
         22kΩ, R_C = 5.6kΩ and R_E = 1.2kΩ.

11   Explain the construction, biasing, operation and characteristics of JFET.   (10)

PART C
Answer any twofull questions, each carries10 marks.

12   a)   With necessary diagrams explain the working of class A transformer coupled amplifier and obtain the maximum overall efficiency.   (8)

     b)   What are its advantages and disadvantages   (2)

13   a)   Compare different types of multistage amplifiers.   (5)

     b)   With a neat circuit diagram explain the operation of Colpitt's oscillator using BJT.   (5)

14   a)   Define the following terms   (8)

        i) CMRR   ii) Slew rate   iii) Input bias current   (iv) Input offset voltage

     b)   Give the typical values of above parameters for 741 IC   (2)

PART D
Answer any twofull questions, each carries 10 marks.

15   a)   Explain the operation of Op-Amp integrator and differentiator circuits.   (6)

     b)   Explain the working and design of a triangular wave generator circuit with necessary diagrams.   (4)

16   a)   What are the features of instrumentation amplifier? Derive the expression for output voltage of an instrumentation amplifier.   (6)

     b)   Design the feedback circuit of a Wein Bridge oscillator with 2MHz output frequency.   (4)

17   With the help of internal circuit diagram of IC555 explain the operation of astable multivibrator.Derive the expression for frequency of oscillation.   (10)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B. TECH DEGREE EXAMINATION(S), MAY 2019
Course Code: EE203
Course Name: ANALOG ELECTRONIC CIRCUITS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.   Marks

1   Design a clamper circuit using diode to obtain sine wave output with its negative peak clamped to +2.6V. (Assume diode drop as 0.6V).   (5)

2   Why does the gain of a transistor amplifier vary with frequency? Sketch the frequency response of CE amplifier.   (5)

3   Why negative feedback is utilised in amplifiers? How various parameters of an amplifier gets modified by negative feedback?   (5)

4   The gain bandwidth product of an op-amp is given as 10MHz.Determine the bandwidth of a non inverting amplifier using op amp for a gain of 60dB.Also find the closed loop gain of the amplifier if the required bandwidth is 100kHz.   (5)

5   Draw the circuit diagram of an ideal differentiator using op-amp with corresponding input and output waveform. Why the circuit can not be recommended for practical use?   (5)

6   Design a comparator using Op Amp that compares a sinusoidal signal of 3V peak with a fixed dc voltage of 1.5V.Draw corresponding waveforms.   (5)

7   Design a Wein bridge oscillator with frequency of oscillation of 1kHz using op-amp.   (5)

8   Draw a monostable multivibrator circuit for a time period of 1msec with an amplitude of 10V using 555 timer.   (5)

PART B
Answer any two full questions, each carries 10 marks.

9   a)   Explain the construction and operation of Enhancement type MOSFET with neat diagrams.   (5)

   b)   Design a zener voltage regulator to provide regulated output voltage of 5.6 V for a variable load resistance that varies from 300Ω to 6kΩ. Zener diode parameters are I_{Zmin}= 0.25 mA and P_Z= 280mW .The input voltage is considered as constant at 15V.   (5)

10   a)   The data sheet of N channel JFET gives the following details. I_{DSS}=10mA and pinch off voltage of -4.8V.Determine (i) V_{GS} corresponding to drain current of 3.5 mA. (ii)Determine transconductance g_m at this drain current.   (5)

   b)   Draw the small signal AC equivalent circuit of a Common Drain FET amplifier. Derive the expression for voltage gain, input impedance and output impedance.   (5)

11   a)   Determine the following parameters for the fixed bias configuration of transistor amplifier. (i) I_B and I_C (ii)V_{CE} and (iii)V_B and V_C . Assume V_{BE}=0.7V.   (4)

Given β=100,V$_{cc}$=16V,R$_c$=2.2kΩ and R$_B$=240 kΩ.

b) Design a voltage divider bias circuit to obtain the following specifications and   (6)
   determine the stability factor. Assume the ratio of base current to the current
   through R$_{B2}$ is 1:10. Given V$_{CC}$=22V, β=100, V$_{CE}$=50% of V$_{CC}$,V$_{RE}$ =10% of
   V$_{CC}$, I$_C$=0.8mA and V$_{BE}$=0.7V.

PART C
Answer any two full questions, each carries10 marks.

12 a) Specify different schemes of coupling in multistage amplifiers. Compare their   (5)
       merits and demerits

    b) Why class AB power amplifiers are preferred over Class B operations?   (5)

13 a) Derive the expression for frequency of oscillation for RC phase shift oscillator (5)
       using BJT.

    b) The datasheet of Op Amp gives the following values.   (5)
       Open loop Gain= 175,000, common-mode gain =0.18 and slew rate= 0.5V/µs.
       Determine the CMRR in decibels. How long does it take the output voltage of
       an op-amp to go from -10V to +10V?

14 a) Derive the expression for output power and conversion efficiency of class B   (5)
       push pull power amplifier.

    b) How do the open-loop voltage gain and closed-loop voltage gain of an op-amp   (5)
       differ? What is the limiting value of output voltage of Op Amp Circuit? Justify
       with proper characteristics.

PART D
Answer any twofull questions, each carries 10 marks.

15 a) Design an Op Amp circuit to get the output according to the given expression.   (5)
       V$_O$ =-[0.3V$_1$+3V$_2$+V$_3$] where V$_1$,V$_2$ and V$_3$ are the inputs to op-amp.

    b) Analyze the circuit diagram of an Instrumentation amplifier using op-amp.   (5)
       Derive the expression for output voltage.

16 a) Draw and explain the operation of a triangular wave generator using op-amp.   (5)

    b) Design an astable multi vibrator using 555 timer for an output wave of 60%   (5)
       duty ratio at 2kHz frequency.

17 a) Draw the circuit diagram of a Precision rectifier using op-amp. What is the   (5)
       main advantage over a normal rectifier?

    b) Design an RC phase shift oscillator using op-amp for an output frequency of   (5)
       1kHz
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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

Course Code: EE203
Course Name: ANALOG ELECTRONICS CIRCUITS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.
Marks

1   Design a clamper circuit to create a dc offset of -3V to a sine wave input of   (5)
     amplitude 5V also draw the output waveform

2   Draw the frequency response of CE amplifier and explain why gain falls at very   (5)
     high frequencies & very low frequencies.

3   What is the concept of negative feedback in amplifiers? List out the advantages   (5)
     of negative feedback in amplifiers.

4   Show that the closed loop gain of opamp amplifier can be made independent of   (5)
     its open loop gain.

5   Draw the circuit diagram of a Schmitt trigger. Why it is called as a regenerative   (5)
     comparator?

6   Explain with neat circuit diagram, the operation of Logarithmic amplifier   (5)

7   How triangular wave can be generated using opamps?   (5)

8   Determine the output frequency of the 555 astable multivibrator for $C=0.01\mu F$,   (5)
     $R_A=2k\Omega$ & $R_B=200k\Omega$.

PART B
Answer any two full questions, each carries 10 marks.

9   Design a Voltage divider circuit for a silicon transistor with $h_{fe}=100$ and $S\leq8$.   (10)
     The desired Q-point is $V_{CE}=5V$, $I_C=1mA$. Assume $V_{CC}=10V$ and $R_E=1k\Omega$

10   Explain using neat sketches, the operation & characteristics of a n-channel JFET.   (10)

11 a) Illustrate with neat circuit diagram how the change in base emitter voltage is   (5)
     compensated in transistor amplifiers

   b) Draw the Hybrid-π model of BJT and explain significance of each parameters.   (5)

PART C
Answer any two full questions, each carries 10 marks.

12   Show that the maximum conversion efficiency of class A power amplifier can be   (10)
     increased using transformer coupling.

13   Draw the neat circuit diagram of RC phase shift oscillator and derive its   (10)

frequency of oscillations

14 a) List out the advantages and disadvantages of a transformer coupled multistage   (5)
        amplifier.

    b) How CMRR and Slew rate influence the performance of an opamp?   (5)

PART D
Answer any twofull questions, each carries 10 marks.

15   With neat circuit diagram, explain the operation of an Instrumentation amplifier   (10)
        and derive an expression for its voltage gain. What are its advantages?

16   Draw the internal circuit diagram of 555 IC and explain its operation as astable   (10)
        multivibrator.

17 a) Explain the working of half wave precision rectifier using neat circuit diagram   (5)

    b) With neat circuit diagram explain the operation of Wien bridge oscillator using   (5)
        opamp.

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third semester B.Tech examinations (S) September 2020

Course Code: EE203

Course Name: ANALOG ELECTRONICS CIRCUITS

Max. Marks: 100   Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.   Marks

1	Sketch the circuit of a biased positive clamper with a biasing voltage of +2V for a ±10V square wave input. Also plot its output voltage waveform and explain its operation.	(5)
2	State and explain Miller's theorem.	(5)
3	An amplifier having an input resistance 4kΩ has a voltage gain of 200. If a series negative feedback with β=0.01 is introduced, determine the value of input resistance of the feedback amplifier. If the amplifier in its open loop configuration had cut off frequencies f_1= 2kHz and f_2= 500kHz before the feedback path was added, what is the new bandwidth of the circuit?	(5)
4	Why op-amp is not used in open loop for most of the applications?	(5)
5	Deduce the expression for closed loop voltage gain of non-inverting amplifier.	(5)
6	Explain the operation of an op-amp comparator with circuit diagram and waveforms	(5)
7	Explain the operation of op-amp based crystal oscillator. Mention its advantage.	(5)
8	Design a Wien Bridge oscillator circuit using op-amp having an oscillating frequency of 10kHz.	(5)

PART B

Answer any two full questions, each carries 10 marks.

9	a)	Explain the operation of a two level clipper circuit.	(5)
	b)	Determine the minimum and maximum possible values of series resistance Rs of a zener voltage regulator circuit feeding a 1kΩ load from a supply voltage of 20V. Maximum value of zener current is 40mA and zener voltage is 10V.	(5)
10	a)	With the help of a neat diagram, explain the small signal model of FET.	(4)

b) Derive the expression for output impedance and voltage gain of a Common Source JFET Amplifier. (6)

11 a) Draw the circuit of a BJT in potential divider bias configuration. Derive the expression for Q point voltage and current. (5)

b) Explain the high frequency hybrid pi model of a common emitter transistor. (5)

PART C

Answer any two full questions, each carries 10 marks.

12 a) Explain the concept of virtual short in op-amps. (5)

b) Draw the circuit diagram of Colpitt's Oscillator and explain its principle of operation. (5)

13 a) What is the concept of negative feedback and draw the schematic diagrams of four basic negative feedback configurations. (5)

b) What is class A operation and derive the expression for conversion efficiency of a transformer coupled class A power amplifier. (5)

14 a) Draw the circuit diagram of a two stage direct coupled transistor amplifier. Mention its advantages and application. (5)

b) Derive the expression for frequency of oscillation of a wien bridge oscillator using BJT. (5)

PART D

Answer any two full questions, each carries 10 marks.

15 a) Analyse the operation of a precision rectifier using op-amp using circuit diagram and waveforms. (5)

b) Design an adder circuit using an op-amp to get the output expressions as $V_{out}= -(V_1+5V_2+25V_3)$, where V_1, V_2 and V_3 are the inputs. Given that $R_f=50$ kΩ. (5)

16 With the help of a neat diagram explain the operation of monostable multivibrator using 555 IC. (10)

17 a) Draw the circuit diagram and explain the working of a ramp generator using opamp. (5)

b) Explain the effect of slew rate of opamp on waveform generation. (5)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018
Course Code: EE205
Course Name: DC MACHINES AND TRANSFORMERS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.

Marks

1   The armature of a 250 V, 10kW, 4 pole lap connected generator was reconnected in wave. Find the new voltage, current and power ratings.   (5)

2   Derive the E M F equation of a DC generator.   (5)

3   Why a starter is required to start a DC motor? What is the essential element of a starter?   (5)

4   Draw the phasor diagram of a transformer on no load. Show the two components of the no load current and write their names.   (5)

5   What is meant by negative voltage regulation? For what type of load you may get negative voltage regulation?   (5)

6   A 1000/800V, 8kVA autotransformer supplies rated current to a load on low voltage side. Draw a schematic diagram and mark input current, output current and current in the section of the winding common to high voltage and low voltage sides.   (5)

7   Find the rated line currents on high voltage and low voltage sides of a 500kVA 11kV/400V delta-star transformer.   (5)

8   What is meant by vector group? What is Yd1 vector group?   (5)

PART B
Answer any two full questions, each carries 10 marks.

9   Draw the developed view of a double layer lap winding of a 4 pole 12 slot armature. Commutator and brushes need not be drawn.   (10)

10   Draw the developed view of mmf and flux distribution of a loaded 2 pole machine.   (10)

11   The table shows OCC of a dc shunt generator at a speed 1000 rpm. What is the residual voltage? Find the critical resistance. Also find the maximum voltage build up at 1000 rpm and critical speed for a field resistance of 300 Ω. (You can find the answers by carefully observing the table. If necessary you may draw a rough sketch. Graph sheet is not required)

I_f	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
E	10	50	100	150	190	220	245	260	275	285	300

(10)

PART C
Answer any two full questions, each carries 10 marks.

12   A 250 V shunt motor has resistances 0.2 Ω and 250 Ω. The motor is driving a   (10)

constant load torque and running at 1000 rpm drawing 10 A current from the supply. Calculate the new speed and armature current if an external armature resistance of value 10 Ω is inserted in the armature circuit. Also find the stalling current. Neglect armature reaction and saturation.

13 a) During Swinburne's test a 250V DC machine was drawing 3A from the 250V supply. The resistances are 250 Ω and 0.2 Ω. Find the constant loss of the machine. Also find the efficiency of the machine when it is delivering a 20A at 250V.   (5)

    b) Why transformers are rated in kVA not in KW?   (5)

14   Develop the equivalent circuit of a transformer.
                                                                                                        (10)

PART D
Answer any two full questions, each carries 10 marks.

15   Two standard tests were conducted on a 10kVA, 1000/200V transformer. Current in one test was 2A. Voltage in one test was 15V. Power factors were 0.8 and 0.2. Find the efficiency at 90% full load and 0.8 power factor.   (10)

16 a) What are the necessary and desirable conditions for successful parallel operation of two single phase transformers?   (5)

    b) Can a Yd transformer be operated in parallel with a Dy transformer? What additional condition is to be satisfied over and above the conditions listed in question 16 a).   (5)

17   In Scott connection prove that the 3-phase currents will be balanced if the 2-phase currents are balanced. Assume upf load.   (10)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019
Course Code: EE205
Course Name: DC MACHINES AND TRANSFORMERS

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries5 marks.   Marks

1   Name the parts of dc machine and state the functions of any two parts.   (5)

2   Derive the emf equation of dc generator.   (5)

3   With the help of speed-armature current characteristics, explain why the series   (5)
     motors should not be started without any load.

4   Why the rating of transformer in kVA?   (5)

5   List out the necessary and desirable conditions for parallel operation of two   (5)
     single phase transformers.

6   Define all day efficiency. How this efficiency of a transformer varies with load?   (5)

7   A 10 kVA, 1500/150 V, single phase transformer has following parameters: (5)
     HV side: $r_1 = 4.2\Omega$ $x_1 = 5.1\Omega$ *LV side*: $r_2 = 0.05\Omega$ $x_2 = 0.062\Omega$ Find
     the per unit values of equivalent resistance and inductive reactance.

8   What is the purpose of tertiary winding in three winding transformer?   (5)

PART B
Answer any two full questions, each carries10 marks.

9   a) Draw the winding diagram of a dc machine with 4 poles, 12 slots progressive   (7)
        double layer lap winding.

    b) Name the different losses occur in dc machine. How the magnetic losses are   (3)
        minimized in dc machine?

10 a) A 4 pole wave connected armature of a dc generator has 120 conductors and runs   (7)
        at 1200 rpm. If the flux per pole is 0.015 Wb, find the emf generated. Keeping
        the flux constant, suggest a change in the armature of the generator so that the
        generator is capable to generate half of the no load voltage when running at the
        same speed.

    b) What is self excitation? What are the conditions for building up of voltage in dc   (3)
        shunt generator?

11 a) A 10 KW shunt generator having resistances1Ω and 100Ω, delivers full load at a   (7)

terminal voltage of 230 V. Determine the efficiency of the generator at full load, assuming the iron, friction and windage losses amount to 500 W.

b) Write any three differences between wave winding and lap winding.   (3)

PART C
Answer any twofull questions, each carries10 marks.

12   What is the necessity of a starter for motor? With a suitable diagram, explain the   (10) working of 3 point starter.

13 a   With suitable diagram, how the Swinburne's test can be employed to   (6) predetermine the efficiency at full load condition when running as a generator

    b   Differentiate between core type and shell type transformers.   (4)

14   Explain the working of a transformer on no-load and load condition.   (10)

PART D
Answer any twofull questions, each carries 10 marks.

15 a) Derive the condition for maximum efficiency of transformer. How the efficiency   (5) of a transformer depends on load?

    b) Why the star delta three phase transformer is used to step down the voltage in   (5) transmission system

16   A 600W single phase transformer working at unity power factor has an   (10) efficiency of 95 percent at both half full load and full load. Determine the efficiency at 70 percent of full load.

17   With neat circuit diagram, explain how a two phase supply can be obtained from   (10) a three phase supply. Prove that three phase currents will be balanced, for a balanced upf load on 2-phase side.

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019
Course Code: EE205
Course Name: DC MACHINES AND TRANSFORMERS

Max. Marks: 100   Duration: 3 Hours

Graph sheets shall be provided
PART A
Answer all questions, each carries5 marks.

Marks

1	Dummy coils are not used in lap winding. Justify with suitable example	(5)
2	What is armature reaction? What are the effects of armature reaction on the performance of dc machine?	(5)
3	Derive the condition for gross mechanical power developed by motor is maximum?	(5)
4	Draw the phasor diagram of a practical transformer under no-load condition. Name the no-load components and write its equation.	(5)
5	A 11000/230V, 200kVA, 50Hz single phase transformer has core loss of 1200 W and copper loss of 1700 W at full load condition. Find the load in kVA at which maximum efficiency occurs?	(5)
6	What are the essential and desirable conditions to be satisfied for parallel operation of single phase transformers?	(5)
7	What is vector grouping? Name the vector groups commonly used in three phase transformers?	(5)
8	What is tertiary winding?	(5)

PART B
Answer any twofull questions, each carries10 marks.

9   a)   There are 60 conductors in a 4 pole dc machine. Whether lap winding or wave winding is preferred? What type of coil arrangements needed in this armature core?   (5)

     b)   i. Y_B and Y_F should be odd number for simplex winding. Why?   (2)

        ii. Find the back pitch and front pitch of a simplex 2-layer lap winding with 12 coils. Average pitch = 6, Resultant pitch = 2.   (3)

10   The open circuit characteristics of a dc shunt generator running at 850 rpm is given below.

I_f (A)	0	0.8	1.6	2.4	3.2	4
Emf (V)	0	28	57	76	90	100

Calculate

   i.   emf to which the machine will excite, when the shunt field resistance is 22Ω

   ii.   emf when an additional resistance of 8Ω is included in the shunt field circuit

   iii.   shunt field resistance for a normal voltage of 100V

   iv.   Critical speed with shunt field resistance for a voltage of 100V   (5)

11   a)   What is equalizer rings? Why it is generally used in lap windings instead of wave windings?   (5)

     b)   A long shunt compound generator supplies a load at 250V. The load consists of five motors each drawing 60A and a lighting load of 250 lamps at 100W each. The armature, series field and shunt field resistances are 0.01, 0.02 and 75Ω   (5)

respectively. Find (i) load current (ii) armature current (iii) emf generated.

PART C
Answer any two full questions, each carries10 marks.

12 a) Explain the characteristics curves of a dc series motor with the help of relevant equations?   (5)

   b) Why transformer rating is in kVA and not in KW?   (5)

13   A 250V dc shunt motor takes 5A on no-load. The armature and field resistances are 1Ω and 125Ω respectively. Find its efficiency when it takes a line current of 25A.   (10)

14   The OC and SC test results of a 5kVA, 200/400V, 50Hz single phase transformer is as follow.

OC Test			SC Test		
V_1 (V)	I_1 (A)	W_1 (W)	V_2 (V)	I_2 (A)	W_2 (W)
220	0.7	60	22	10	120

Draw the equivalent circuit of transformer as referred to low voltage side.   (10)

PART D
Answer any twofull questions, each carries 10 marks.

15 a) Draw the circuit diagram of Sumpner's test and derive the equation for efficiency of each transformer?   (5)

   b) Explain how the Scott connection can be used to obtain two phase supply from a three phase supply?   (5)

16 a) The primary and secondary voltages of an autotransformer are 1200V and 600V respectively. Calculate the economy of Cu when the secondary current is 120A. Draw the circuit and show the current distribution in the winding.   (5)

   b) Define all day efficiency of transformer. Why this efficiency is less than commercial efficiency?   (5)

17 a) A 10 kVA, 200/400V, 50Hz single phase transformer gave the following result.

O.C test: 200V, 1.3A, 120W ……………on L.V side

S.C test: 22V, 30A, 200W ……………on H.V side

Calculate (i) the magnetising current and the component corresponding to core loss at normal frequency (ii) the magnetising branch impedances.   (5)

   b) With the aid of three phase transformer connections and phasor diagram, explain the vector group Dy11.   (5)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third semester B.Tech examinations (S) September 2020

Course Code: EE205

Course Name: DC MACHINES AND TRANSFORMERS

Max. Marks: 100   Duration: 3 Hours

Graph sheets shall be provided

PART A

Answer all questions, each carries 5 marks.   Marks

1	Explain the phenomenon of electromechanical energy conversion in the case of a DC generator. What are the torques involved?	(5)
2	Derive the expression for generated emf in DC generator.	(5)
3	Explain significance of back emf?	(5)
4	Explain different methods of cooling of a transformer.	(5)
5	Derive the condition for maximum efficiency of a single-phase transformer.	(5)
6	What is the difference between commercial efficiency and all day efficiency?	(5)
7	What are the necessary conditions to be satisfied for parallel operation of a three phase transformer?	(5)
8	What are the advantages and disadvantages of delta-delta connection?	(5)

PART B

Answer any two full questions, each carries 10 marks.

9 a) Explain construction of DC machine with the help of neat diagram   (10)

10 a) Equalizer ring is not needed for wave winding of a dc machine. Give reason.   (5)

   b) An 8 pole lap wound armature having 40 slots with 12 conductors/ slot generates 500V. Determine speed at which machine is running if the flux per pole is 50 mWb.   (5)

11 A shunt generator gave the following open circuit characteristics: (10)

Field current (A)	0.5	1	1.5	2	2.5	3	3.5
OC emf (V)	54	107	152	185	210	230	245

The armature and field resistances are 0.1Ω and 80Ω respectively. Calculate :

   i)   The voltage to which the machine will excite when run as a generator at the same speed.

ii)   The voltage lost due to armature reaction when 100A are passing in the armature at terminal voltage of 175V.

iii)   The percentage reduction in speed for the machine to fail to excite on open circuit.

PART C
Answer any two full questions, each carries 10 marks.

12 a) A 460V dc series motor runs at 500 rpm taking a current of 40A. Calculate the speed and percentage change in torque if the load is reduced so that the motor is taking 30A. The total resistance of the armature and field circuits is 0.8Ω. Assume that flux is proportional to the field current.   (10)

13 a) Explain different methods of speed control of dc shunt motor.   (5)

    b) Distinguish between core and shell type transformer?   (5)

14 a) Draw the phasor diagram of an ideal transformer on no load. Also, draw a phasor diagram of a practical transformer supplying lagging power factor load.   (7)

    b) Why transformers are rated in KVA?   (3)

PART D
Answer any two full questions, each carries 10 marks.

15   The test results of 2.5kVA, 230/115V single-phase transformer are as follows: (10)

    OC Test : 115V, 1.2A, 60W

    SC Test : 12V, 10.86A. 120W

    Find   i. efficiency at 50% full load, 0.8 pf

            ii. regulation at 30% full load, 0.8 pf lag and lead

16 a) Derive an expression for the saving of copper in an autotransformer as compared to an equivalent two winding transformer.   (5)

    b) Explain the working of off-load tap changing transformer with help of neat diagram.   (5)

17 a) Draw the connection diagram for T-T connection of transformers and explain the formation of three-phase four wire system with two single phase transformers. Point out its advantages and disadvantages.   (10)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018
Course Code: EE207
Course Name: COMPUTER PROGRAMMING

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.   Marks

1   What is a compiler? How does it differ from an interpreter?   (5)

2   An electricity company charges people based on the number of units used.   (5)
Input **the number of units and calculate the bill amount** and print using C
program

No. of units	Rate/amount
Up to 100 units	Rs. 1.80/-unit
Otherwise	Rs. 3.50/- extra per unit

3   Write a short note on array declaration and array initialization   (5)

4   Write a C program to find factorial of given number using recursive function.   (5)

5   Differentiate between structure and union with example.   (5)

6   Write a C program to swap the values of two variables using pointer.   (5)

7   Write a C program to read data from the keyboard, write it to a file, read the   (5)
same data from the file and display on the screen.

8   Write a Python program to check whether a number is prime or not   (5)

PART B
Answer any two full questions, each carries 10 marks.

9   a)   Differentiate between ++ i and i ++ with the help of examples.   (4)

    b)   Explain different data types in C with examples.   (6)

10   Write a C program to print prime numbers up to N. Draw flow chart also.   (10)

11   To initiate a group activity, a teacher decided to group the whole class of   (10)
strength 60 into 6 groups according to the following rule

Reminder (R)	Group
0	I
1	II
2	III
3	IV
4	V
5	Vi

Where R is the reminder when a student divides his/her Roll No. by 6. Write a C program to list group members of each group.

PART C
Answer any two full questions, each carries 10 marks.

12		Write a C program to multiply two matrices	(10)
13	a)	What is meant by recursive function? Give example?	(5)
	b)	Explain different string handling function in C with examples?	(5)
14		What is storage classes in C and explain different storage classes in C with example?	(10)

PART D
Answer any twofull questions, each carries 10 marks.

15	a)	Write a C program to find factorial of a number using pointer	(6)
	b)	What are the advantages of using pointers in C	(4)
16	a)	How does a structure differ from an array in C?	(5)
	b)	How is append mode different from write mode regarding files in C?	(5)
17	a)	Write a Python program to read time in sec and convert that to hr:min:sec.	(5)
	b)	Write a Python program to check whether the given year is leap year or not.	(5)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: EE207

Course Name: COMPUTER PROGRAMMING

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.   Marks

1   Which are the logical operators used in C language. Explain with example.   (5)

2   With suitable example explain the syntax of switch -case statement in C language.   (5)

3   Write a C program to read an array of integers and search for the occurrence of a given value.   (5)

4   What is the use of a static variable? Explain with example.   (5)

5   Define a structure and union with following as members - an integer variable, a character array having 20 characters, and a floating point variable. How many bytes are allotted for each? Illustrate and explain.   (5)

6   Write a C program to swap two variables using pointers.   (5)

7   Which are the different options for opening a file in C. Explain any four with example.   (5)

8   What are the advantages of Python as a programming language? Write a Python program to find the larger of two numbers.   (5)

PART B
Answer any two full questions, each carries 10 marks.

9   a)   Write an algorithm and draw flow chart for finding the number of numbers divisible by 3 between 100 and 200.   (10)

10   a)   Which are the basic data types in C language? How the memory allocation is done for each data type.   (5)

    b)   Write a C program to swap two numbers without using third variable   (5)

11   a)   Write a C program to find the sum of the digits of a number.   (5)

    b)   Write a C program to print first 10 numbers of Fibonacci series.   (5)

PART C
Answer any two full questions, each carries 10 marks.

12   a)   Give the syntax and example for two methods of reading a string.   (4)

    b)   Write a C program for multiplication of two matrices.   (6)

13   a)   Write a C program to read a string and check whether it is palindrome or not.   (5)

    b)   What are the advantages of recursive function? Write a recursive function using C to find the factorial of a number.   (5)

14 a) What are the advantages of functions? Explain how it is implemented in C Language. (4)

b) Write a C program to prepare a rank list based on marks for five subjects, using three separate functions to read the marks, prepare rank list and print the same. (6)

PART D
Answer any two full questions, each carries 10 marks.

15 a) Differentiate between '&' operator and '*' operator in C with help of a suitable example. (3)

b) Write a C program to sort an array of integers using pointers. (7)

16 a) Write a C program to accept a string using pointers and print the third character of the same. (3)

b) Write a C program to read and write 10 integers to a file *number.txt*, open the file and copy the odd numbers to *odd.txt* and even numbers to *even.txt*. (7)

17 a) Write a Python program to print the sum and product of two real numbers. (5)

b) Write a Python program to concatenate two strings. (5)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019
Course Code: EE207
Course Name: COMPUTER PROGRAMMING

Max. Marks: 100   Duration: 3 Hours

PART A
Answer all questions, each carries 5 marks.
<div align="right">Marks</div>

1   Write an algorithm for printing all odd numbers between 10 and 50.   (5)

2   With the help of an example, explain the use of continue statement.   (5)

3   Write a C program to find the median of *n* integers stored in an array   (5)

4   Using an example, explain the concept of recursion.   (5)

5   Using pointers, write a C program to arrange the letters of a word in alphabetic   (5)
    order.

6   What are unions? How are they different from structures?   (5)

7   Write a C program to append the contents of one file to another file.   (5)

8   Write a Python program to check if the given string is a palindrome or not.   (5)

PART B
Answer any two full questions, each carries 10 marks.

9   a)   What are pre-processor directives? Give examples.   (4)

    b)   Draw a flow chart to determine sum of digits of an integer.   (6)

10 a)   Differentiate between relational and logical operators in C   (4)

    b)   Write a C program to find the age of a person in years, months and days if his   (6)
         date of birth is entered.

11 a)   What is the purpose of go to statement? Give an example.   (4)

    b)   Write a program to compute the sum of the series $1+ x^2+ x^3+x^4+.....+ x^n$ (6)

PART C
Answer any two full questions, each carries 10 marks.

12 a)   What are arrays? How are they advantageous when compared with normal   (4)
         variables?

    b)   Write a C program to find the product of two matrices.   (6)

13 a)   Write a C program to count the number of words, vowels and consonants in a   (5)
         sentence entered by the user.

    b)   Using a function write a C program to find the binary equivalent of an integer. (5)

14 a)   Describe the various storage classes in C.   (4)

    b)   Write a C program to find the largest element of each row of an *m* x *n* matrix and (6)
         place it in the 1st column of the corresponding row. Use function.

PART D
Answer any two full questions, each carries 10 marks.

15 a) What is chain of pointers? Illustrate using an example.   (4)

    b) Define a structure Employee with employee number, name and experience as   (6)
        members. Write a C program to print a list of all employees (from amongst 100
        employees) having more than 3 years of experience.

16 a) Write a C program using pointers to find the difference of two matrices A and   (5)
        B.

    b) A file contains students' records with roll number, name and mark. Write a   (5)
        program to read the contents of the file and display them .

17 a) Differentiate between fscanf( ) and scanf ( ) functions   (2)

    b) Describe the fopen(), fclose(), fseek() and ftell() functions   (4)

    c) Write a Python program using function to search for an element in an array.   (4)

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Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third semester B.Tech degree examinations (S) September 2020

Course Code: EE207

Course Name: COMPUTER PROGRAMMING

Max. Marks: 100   Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks.   Marks

1	How does x++ differ from ++x? Explain with suitable example.	(5)
2	Explain go to and label statements with an example.	(5)
3	Write a C program to find length of a string without using string handling function.	(5)
4	Discuss the auto and static storage class with example.	(5)
5	Explain following terms associated with pointer (i) Chain of pointers (ii) Pointer expression (iii) Scale factor.	(5)
6	Write a C program to find the largest element in array using pointer.	(5)
7	Distinguish between following functions (i) getc and getchar (ii)printf and fprintf (iii)feof and ferror	(5)
8	Explain the following control statements in python. (i) *for* loop (ii) *if elif else.* Also write their syntax.	(5)

PART B

Answer any two full questions, each carries 10 marks.

9	a)	List the different operators in C. Discuss about conditional operator.	(5)
	b)	Draw a flow chart to check given number is palindrome or not.	(5)
10	a)	Railway Department Charges are given below:	(6)

Distance(kms)   Rate/km

Upto 30   Rs. 5/-

31-50   Rs. 8.25/-

>50   Rs. 10/-

Senior citizens (age>=60) are given a concession of 30% on the fare. Write a program to print the details of a passenger's name, age, distance traveled and the ticket fare.

b) What is the difference between compiler and interpreter? (4)

11 Write a C program to find the solution of a quadratic equation (real and distinct, equal or complex roots) using switch construct. Draw the flow chart also. (10)

PART C

Answer any two full questions, each carries 10 marks.

12 a) Write a C program to read a matrix A and find the product $A * A^T$. (8)

b) Discuss any two string handling function. (2)

13 a) Write a C program to print first n Fibonacci numbers using recursive function. (5)

b) Explain the differences between pass by value and pass by reference with the help of example. (5)

14 Write a C program to read the array elements and to sort them in ascending order. Use functions to read, sort, and print the array. (10)

PART D

Answer any two full questions, each carries 10 marks.

15 A student database stores following information about students in a class: Roll number, name, gender and CGPA. Write a program to prepare a rank list based on CGPA. Also prepare a list of students having CGPA less than 7. (10)

16 a) What is the output of the program: (5)

```
main()
{
  int m[2]={100,200};
  int a,b,c,*p=m;
  a=*p;
  b=*(p+1);
  c=(*p+1);
  printf("%d %d  %d", a,b,c);
}
```

b) Write a program to read integer numbers from one file and then save into another file. (5)

17 a) Write a python program to check the largest among the three numbers. (4)

b) Explain user defined functions in python with syntax. Write your own function to print "Hello Python". (6)

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