Duration – 3 Hours　　　　　　　**Total Marks assigned to the paper- 80**

N.B.:-　(1) Question No.**1** is compulsory.
　　　　(2) **Attempt** any **Three** questions out of remaining **five** questions.
　　　　(3) Assume suitable data if necessary and justify the same.

Q 1.	Answer the following questions.	
	A) Discuss the disadvantages of corona	05
	B) What is the significance of surge impedance loading?	05
	C) What is the rate of tower footing resistance?	05
	D) What are the various factors affecting the selection of circuit breaker?	05
Q 2 a)	Discuss the short circuit of synchronous machine at loaded condition.	10
Q 2 b)	Discuss the z-bus formation technique.	10
Q 3 a)	Discuss L-L fault in detail.	10
Q 3 b)	Determine the symmetrical component of currents in a 3 phase system , the original phasor of which are Ia = 12 +j6 , Ib = 12-j12 , Ic = -15+j10.	10
Q 4 a)	Discuss the reflection and refraction of voltage and current wave on an short circuit transmission line.	10
Q 4 b)	Explain the terms Protective characteristics, Dynamic voltage rise and rating in case of lightening arrester.	10
Q 5 a)	Explain the terms critical voltage, Visual critical voltage and corona ring.	10
Q 5 b)	Discuss the surge protection of transformer and rotating machine.	10
Q 6 a)	Discuss the corona Q-V diagram.	10
Q 6 b)	Discuss the effect of length and load power on reactive power requirement of a line.	10

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TE - Sem-VI - Elec hical

Q.1 is compulsory.

Solve **ANY THREE** questions out of remaining.

ASSUME SUITABLE DATA wherever necessary.

Q.1)   (20Marks)

  a) List down advantages of modeling of electrical machines.

  b) Draw phasor diagram for salient pole alternator for leading power factor.

  c) Derive the condition for maximum output power in case of an alternator.

  d) Why short circuit characteristics for an alternator is a straight line?

Q.2)   (20Marks)

  a) Write a short note on 'Synchronising Power'.

  b) A 3 phase;star connected; $11kV$ 12pole $50Hz$ synchronous motor has d-axis and q-axis reactances as 5Ω and 3Ω per phase respectively. At certain load the motor draws $20MW$ at unity power factor. Compute (i) Excitation e.m.f. (ii) Synchronising power coefficient in watts per ^0E and (iii)Synchronising power coefficient in watts per ^0M. Neglect armature resistance.

Q.3)   (20Marks)

  a) Write a short note on 'Synchronous Impedance'.

  b) A 3 phase; $440V$; $50Hz$ delta connected alternator with negligible armature resistance has d-axis synchronous reactance as 0.12Ω and q-axis reactance as 0.09Ω per phase. If the alternator supplies $900A$ at 0.8 lagging power factor calculate (i) Excitation e.m.f. neglecting effect of saliency, assuming $X_s = X_d$ and (ii) Excitation e.m.f. considering saliency.

Q.4)   (20Marks)

  a) Derive the conditions for maximum power input and maximum power output of synchronous generator.

  b) A 3 phase; delta connected synchronous motor takes $50kW$ at 0.8 power factor lagging from a $415V$ bus bar. The induced e.m.f. is increased by 40%, the real power taken remaining the same.Find new current and power factor if synchronous impedance is $(0.2 + j3)\Omega$ per phase.

Q.5)   (20Marks)

  a) Explain the effect of change in excitation on two alternators connected in parallel operating under loaded condition.

  b) Two identical $3000KVA$ alternators operate in parallel. The governors of alternator 1 is so adjusted that its frequency drops uniformly from 50 Hz at no load to 48 Hz at full load while the change in frequencies for alternator 2 is from 50 Hz to 47.5 Hz. Determine the maximum load that can be shared at unity p.f. without overloading either machine.

Q.6) Write short note on   (20Marks)

  a) Derive basic machine relation in 'd-q'variables for an induction machine.

  b) Explain the concept of 'power circle'for synchronous motor and prove that efficiency at maximum output is 50% .

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Duration – 3 Hours   **Total Marks assigned to the paper- 80**

N.B.:- (1) Question No.**1** is compulsory.
         (2) **Attempt** any **three** questions out of remaining **five** questions.
         (3) Assume suitable data if necessary and justify the same.

Q1   Solve any four   **20**

   A) What are the two principles of light control?
   B) Explain single catenary and compound catenary construction of overhead equipment
      system.
   C) Compare gasoline vehicle and electric vehicle.
   D) Define refrigeration and air conditioning.
   E) Draw tree pattern for classification of electric heating methods.
   F) Explain terms dead weight and adhesive weight.

Q2

   A) Explain how to measure candle power by simply using light source and graduated
      scale?   **10**
   B) What are the laws used for illumination?   **10**

Q3

   A) Give classification of electric welding and explain butt welding and spot welding in
      brief.   **10**
   B) What are the requirements for traction motor control? Explain open circuit transition
      and shunt transition in series parallel control method.   **10**

Q4

   A) A train runs with average speed of 73 kmph. Distance between the stops is 6 km. the
      train accelerates at 2kmphps and retards at 3 kmphps. Find maximum speed and
      schedule speed. Duration of stop is 60 sec. assume trapezoidal speed time curve.**10**
   B) What are the types of refrigeration system? Describe vapour absorption system in
      detail.   **10**

Q5

   A) A hall 30*12 meter is to be illuminated with 50 meter candle. DF=1.3 and UF= 0.5.
      calculate space to height ratio and workout the number of lamps from following table
      and select wattage lamp for uniform light disposition.   **10**

Watts	100	200	300	500	1000
lumens	1615	3650	4700	9950	21500

   B) What is feeding post and feeding and sectioning arrangement in traction system? **10**

Q6

   A) What are different lighting schemes, explain each one in brief.   **10**
   B) What are hybrid electric vehicles? Explain series and parallel hybrid vehicles   **10**

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TE-sem-VI – CBSGS – Electrical

Time : 3 Hours

MAX. MARKS: 80

Note:

1) Question No. **1** is **compulsory**.
2) Attempt any **three** questions from remaining **five** questions.
3) Make suitable **assumption** wherever **necessary** and mention the same.
4) Use graph paper and semilog paper wherever necessary.
5) **Figures** to the **right** indicate **full** marks.

Q.1) A) State the difference between open loop system and closed loop system. **05 Marks**

B) What are the advantages of using state space analysis over classical control approaches? **05 Marks**

C) Write a short note on transient response specifications. **05 Marks**

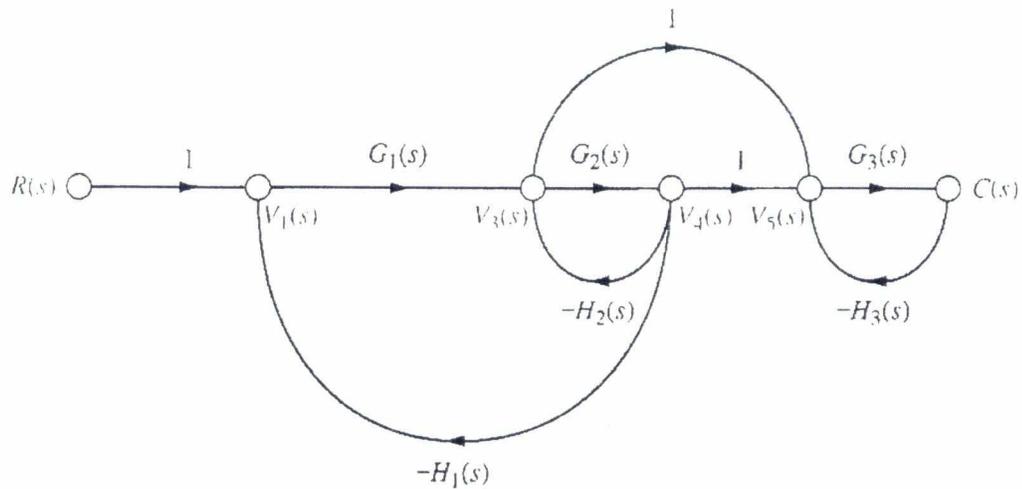D) Calculate the value of gain K at point 'P' for root loci in figure. **05 Marks**
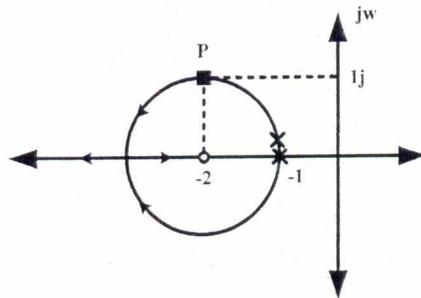
Q.2) A) Find overall transfer function of the given system using block diagram reduction method. **10 Marks**

Turn Over

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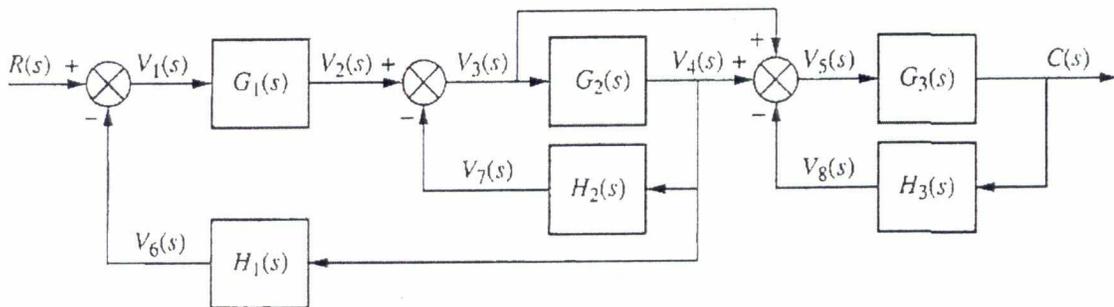
B) Find overall transfer function for the given signal-flow graph using mason's gain formula. **10 Marks**

Q.3) A) A system is given by differential equation, $\dfrac{d^2 y}{dt^2} + 4\dfrac{dy}{dt} + 8y = 8x$ where y is the output

and x is the input. Determine all time domain specifications for unit step input. **10 Marks**

B) Sketch the complete root locus for the system having **10 Marks**

$$G(s)H(s) = \frac{K}{s(s+3)(s^2+3s+11.25)}$$

Q.4) A) Determine the poles and zeros of the following system. **10 Marks**
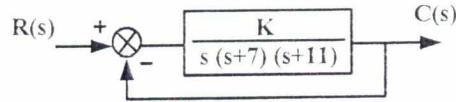
$$\dot{x} = \begin{bmatrix} 0 & 1 \\ -20 & -9 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u$$

$$y = \begin{bmatrix} -17 & -5 \end{bmatrix} x + [1]u$$

B) Given a system $\dfrac{C(s)}{R(s)} = \dfrac{(s+3)}{(s^2+10s+24)}$ represent in parallel form and controller canonical form of

state space representation. **05 Marks**

Turn Over

C) Find the value of K_{marg} by using Routh - Hurwitz criterion for the system shown below. **05 Marks**


Q.5) A) Draw the bode plot and determine gain margin and phase margin for the system having   **10 Marks**

$$G(s)H(s) = \frac{e^{-0.2s}}{s(s+1)}$$

B) Draw the nyquist plot and comment on stability for the system having   **10 Marks**

$$G(s)H(s) = \frac{4(s-1)}{(s+2)}$$

Q.6) A) Determine the steady state error for system given below, where R(s) is the ramp input of   **07 Marks**
magnitude **2**. If it is desired to reduce existing error by 5% find new value of gain of the system.
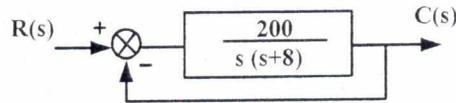
B) Explain how to calculate static error constants from Bode magnitude plot.   **07 Marks**

C) Write a short note on AC servomotor.   **06 Marks**

T2926 / T0854 MICROCONTROLLER AND ITS APPLICATION

8/6/17

TE-Sem-VI - Electrical - CBSGS

Q. P. Code : 16497

[Time : 3 Hours]   [Total Marks : 80

Please check whether you have got the right question paper.

N.B: 1. Question No.1 is **compulsory**.
          2. Attempt **any THREE** from the remaining questions.
          3. **Figures** to the **right** indicate **full marks**.

1.   Attempt **any Four** questions :   20
      a)   Explain the pipelining feature of PIC architecture?
      b)   Write the difference between Microcontroller and Microprocessor.
      c)   Draw and explain generic block diagram of Microcontroller.
      d)   What are the different interrupt sources?
      e)   Explain the following memory pointers :
            1)   Program Counter
            2)   File select Register
            3)   Stack Pointer

2.   (a)   Which are the different addressing modes of PIC18 microcontroller?   10
      (b)   Explain the given two SFRs called Table Pointer (TBLPTR) and Table Latch   10
            (TABLAT). In association with them explain the following instructions :
            1) TBLRD*+
            2) TBLRD*-
            3) TBLRD+*

3.   (a)   How the baud rate for serial communication is decided? Explain TXSTA and   10
            RCSTA registers used in serial communication.
      (b)   Draw and explain the simple IO device interface (switches and LEDs) with PIC 10
            microcontroller and hence explain IO addressing.

4.   (a)   Write a program in C18 using Timer0 to generate a square wave of 1000Hz   10
            frequency on PORTB pin RB7.Use16 bit programming technique with 8 pre-
            scalar. The internal frequency of microcontroller is 10Mhz.
      (b)   Explain the different types of instruction sets and mention two examples of each 10
            set.

5.   (a)   Explain stack and subroutine. Also explain the instruction associated with them. 10
      (b)   Explain in detail the LCD interfacing with PIC18 microcontroller.   10

6.   Write short notes on :   20
      (a)   Global Interrupt Enable (GIE) and Peripheral Interrupt Enable (PEIE).
      (b)   Stepper Motor interfacing with microcontroller.

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Q.P. Code :18321

[Time: Three Hours]   [Marks:80]

Please check whether you have got the right question paper.

N.B: 1) Question No. 1 is **Compulsory.**
        2) **Attempt** any **three** questions out of remaining six questions.
        3) **Assume** suitable **data** if **necessary** and justify the same.

Q.1   Answer the following questions.   20
   a) What is project appraisal?
   b) Explain Funding methods of project.
   c) Explain work break down structure (WBS).
   d) For the following project, state the problem in terms of events and draw the event oriented network.
      PROJECT-HOLDING A CONFERENCE
      By mail ask persons for suitable dates   - 6 days
      Inform date to members   - 2 days
      Prepare agenda   - 3 days
      Send agenda and relevant materials   - 4 days
      to members by e-mail
      Arrange conference room   - 2 days
      Arrange refreshment   - 1 day

Q.2 a) Discuss the five broad phases of capital budgeting.   10
         b) What is NPV? Discuss general formula of NPV and how modified NPV is calculated?   10

Q.3 a) Explain SWOT analysis with the help of suitable examples.   10
         b) Explain why material planning is important? How the project material planning is done.   10

Q.4 a) Describe risk management and how it applies to projets.   10
         b) How do financial institutions define cash outflows and cash inflows for a project?   10

Q.5 a) Discuss the pre-requisites for successful project implementation.   10
         b) Explain different types of contracts between buyer and seller.   10

Q.6 a) Discuss various contents of a project report.   10
         b) Explain Market-Demand analysis in detail with one example.   10

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