

5E5041

Roll No. _____

Total No of Pages: 4

5E5041

B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015

Electrical Engineering

5EE1A Power Electronics

Common with EX (Electrical & Electronics)

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal marks**. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

Q.1 (a) Explain the working & characteristic of power transistor. [8]

(b) Explain switching characteristics of an IGBT. [8]

OR

Q.1 (a) Describe the basic structure of MOS controlled thyristor (MCT). Give its equivalent circuit & explain the turn on & turn off processes. [12]

(b) Compare power MOSFETs with BJTs. [4]

UNIT-II

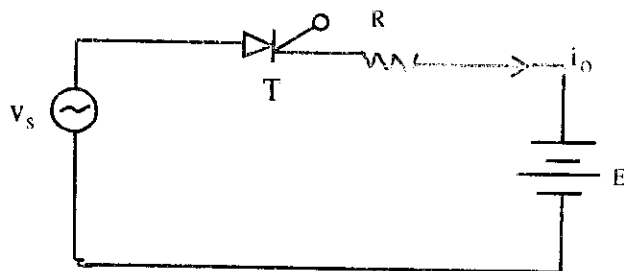
- Q.2 (a) The specification sheet for an SCR gives maximum rms on state current as 35 A. If this SCR is used in a resistive circuit, compute average on state current rating for half sine wave current for conduction angles of [12]
- (i) 180°
 - (ii) 90°
 - (iii) 30°
- (b) Discuss thyristor protection. [4]

OR

- Q.2 (a) How can we improve thyristor characteristics? [8]
- (b) Explain the construction & working of relaxation oscillator. Give necessary diagrams. [8]

UNIT-III

- Q.3 (a) A dc batty is charged though a resistor R as shown in fig. Derive an expression for the average value of charging current in terms of V_m , E, R etc on the assumption that SCR is fired continuously. [12]
- (i) For an ac source voltage of 230V, 50HZ, find the value of average charging current for $R = 8\Omega$ & $E = 150V$.
 - (ii) Find the power supplied to battery & that dissipated in the resistor.
 - (iii) Calculate the supply pf



- (b) List out the application of phase controlled rectifiers. [4]

OR

- Q.3 (a) A single phase full converter delivers power to a resistive load R for ac source voltage V_s . Show that average output V_o is given by-

$$\left[V_o = \frac{\sqrt{2}V_s}{\pi} (1 + \cos\alpha) \right]$$

Sketch the time variations of source voltage, output voltage, output current & voltage across one pair of SCRs. Find the circuit turn off time. [8]

- (b) For the converter of part (a), show that rms value of output current is given by

$$I_{or} = \frac{V_s}{R} \left[\frac{1}{\pi} \left\{ (\pi - \alpha) + \frac{1}{2} \sin 2\alpha \right\} \right]^{1/2} \quad [8]$$

UNIT-IV

- Q.4 (a) Discuss the effect of source impedance on the performance of converters. [8]
 (b) Discuss the mechanism of pulse width modulation control. [8]

OR

- Q.4 Write short note on- [8×2=16]

- (a) Extinction angle control.
 (b) Symmetrical angle control.

UNIT-V

- Q.5 (a) Explain principle of chopper operation. Give its control strategies. [8]
 (b) For type A chopper, dc source voltage = 230V, load resistance is 10Ω. Take a voltage drop of 2V across chopper when it is on. For a duty cycle of 0.4, calculate – [8]
 (i) Average & rms values of output voltage.
 (ii) Chopper efficiency.

OR

- Q.5 (a) Draw the circuit diagram & current wave form of multiphase chopper for phase shifted operation for $\alpha = 0.50$ and $\alpha = 0.60$ [8]
- (b) Explain the working & circuit of Load Commutated Chopper. Give its merits & demerits. [8]

5E5042

Roll No. _____

Total No of Pages: 3

5E5042

B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015

Electrical Engineering

5EE2A Microprocessor & Computer Architecture

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

- Q.1 (a) Name the various types of buses in 8085 microprocessor. Explain the function of each in brief. [4+4=8]
- (b) Draw pin diagram of 8085 microprocessor and explain its various pins. [4+4=8]

OR

- Q.1 (a) What is program status word in 8085? Explain in detail. [4+4=8]
- (b) What are various interrupts available with 8085? Distinguish between markable and nonmarkable interrupts. [4+4=8]

UNIT-II

- Q.2 (a) Explain the following instructions using suitable examples - [2×4=8]
(i) XCHG
(ii) DAD
(iii) DAA
(iv) LHL
- (b) Explain various addressing modes of 8085 using suitable examples. [8]

OR

- Q.2 (a) Write an assembly language program to add two 16 bit numbers 22A3H and 1060H using ADC instruction. Store the result in memory. [12]
(b) Name the various machine cycles of 8085. [4]

UNIT-III

- Q.3 (a) Explain 8259 chip with the help of block diagram. [8]
(b) Name various modes of operation in 8253. [8]

OR

- Q.3 (a) Explain interfacing of 8257 with 8085 using block diagram. [8]
(b) Define working of A/D converter with the help of diagram. [8]

UNIT-IV

- Q.4 (a) Draw architecture of 8086. Explain the function of various registers. [4+4=8]
(b) Differentiate between 8085 and 8086. [8]

OR

- Q.4 (a) What are various addressing modes of 8086? [8]
(b) What do following instructions do? Explain using suitable examples. [2×4=8]
(i) DIV
(ii) JG
(iii) NEG
(iv) MUL

272

UNIT-V

- Q.5 (a) Define memory and its various types in detail. [8]
(b) What do you understand by terms memory latency, memory seektime and memory bandwidth? [8]

OR

- Q.5 (a) Differentiate between: [4+4=8]
(i) Flash and Cache memory.
(ii) Static and Dynamic memory.
(b) Define PAL and PLA using suitable diagram. [4+4=8]
-

5E5043

Roll No. _____

Total No of Pages: 4

5E5043

B. Tech V Sem. (Main) Exam. Nov-Dec. 2015

Electrical Engineering

5EE3A Control Systems

Common with EX (Electrical & Electronics Engg.)

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

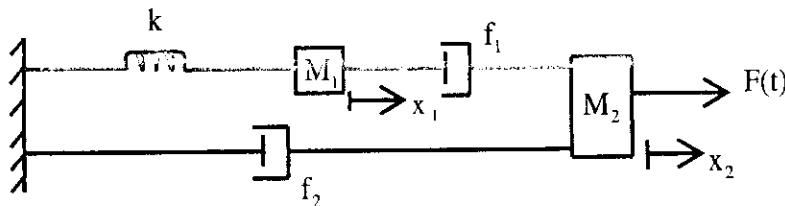
1. Simple Graph paper

2. Semi-log Graph paper

UNIT-I

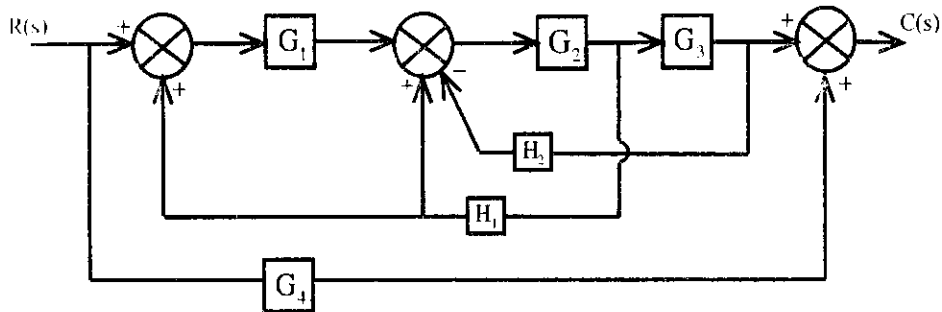
Q.1 (a) Differentiate between open loop and closed loop system with examples. [4]

(b) Determine system equations of the system shown in fig below. Also draw F-V analogy. [12]

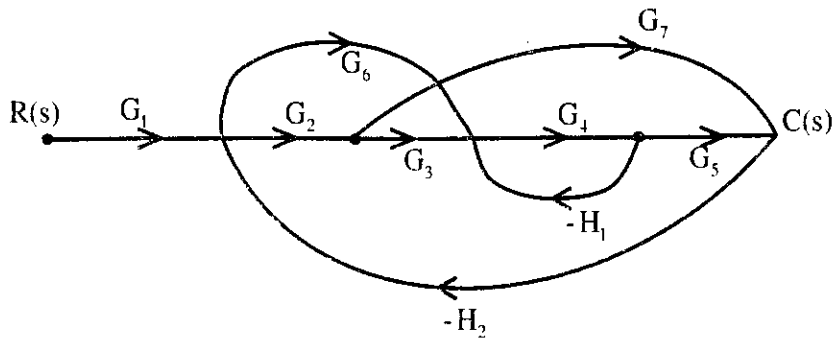


OR

Q.1 (a) Obtain the transfer function of the block diagram shown below. [10]



(b) Obtain the overall gain of the SFG shown using Mason's gain formula. [6]



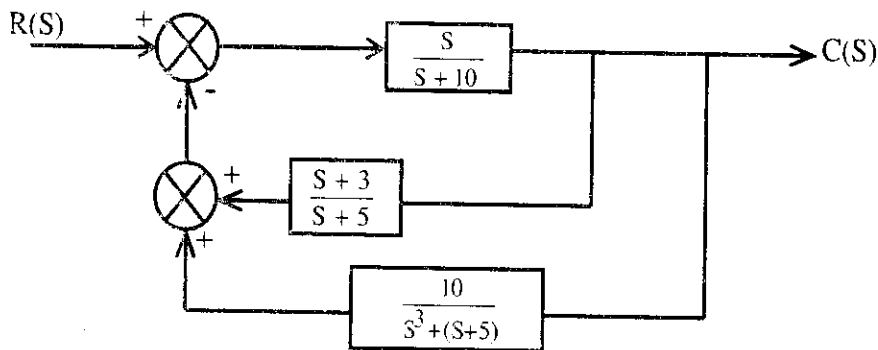
UNIT-II

Q.2 (a) Derive the output expression of a second order under damped system [10]

(b) A system has $G(s) = 20/(s^2+5s+5)$ with unity feedback. Find ω_n , ϵ_v , ω_d , t_d , t_r , t_p , M_p and t_s . [6]

OR

Q.2 (a) Find error coefficients of the given system. [10]



(b) Explain the effect of ϵ_v on pole location. [6]

UNIT-III

Q.3 (a) Determine using Routh's stability criteria the range of K for stability and the frequency of oscillation when system is marginally stable for unity feedback system having.

$$G(s) = K / [(s+1)^3(s+3)] \quad [10]$$

(b) Explain construction and working of AC servo motor. [6]

OR

Q.3 (a) Sketch the root locus for: $1 + G(s)H(s) = 1 + K(s+2) / [s^2 + 2s + 2]$ [12]

(b) Explain the effect of adding poles and zeros on the root locus. [4]

UNIT-IV

Q.4 Draw the Bode plot for the transfer function given below. Find gain crossover frequency, phase crossover frequency, GM and PM of the system and comment on the stability of the system. [16]

$$G(s)H(s) = 3(s+1)(s+700) / [s^2(s^2+18s+400)]$$

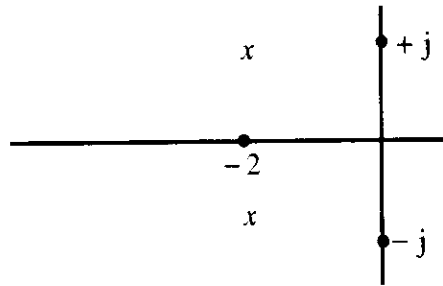
OR

Q.4 (a) Draw the Nyquist plot for a system having -

$$G(s)H(s) = 10(s+4)/[s(s-2)] \quad [10]$$

(b) The pole zero configuration of a closed loop transfer function is shown below.

Determine ω_b , ω_r , M_r , ϕ_r .



[6]

UNIT-V

Q.5 Compensate the system given below so that $K_v = 5 \text{sec}^{-1}$, $PM = 40^\circ$ and $GM=10 \text{ db}$.

$$G(s) = K / [s(s+1)(0.5s+1)] \quad [16]$$

OR

Q.5 (a) Explain the effect of P, PI and PID controllers on the response of a second order system with the help of diagram. [10]

(b) Describe briefly the dynamic characteristics of PI, PD and PID controllers. How these are related to the different compensators? [6]

Roll No. _____

Total No of Pages: 4

5E5044

5E5044

B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015

Electrical Engineering

5EE4A Database Management System

Common with EX (Electrical & Electronics)

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

- Q.1 (a) What are the advantages of using DBMS in comparison to the traditional file Approach? Explain. [8]
- (b) The Honest Bank Ltd receives Fixed Deposit from customers. The minimum amount that can be deposited is ₹ 1000/-. Additional amount may be deposited in the multiples of ₹ 500/-. Minimum duration is 6months. After that, duration must be in multiples of 3 months. Interest rates change from time to time & depend only on duration. Interest is compounded on quarterly basis. If the amount is withdrawn prematurely then interest is given at a lower rate that is fixed & changes from time to time for amounts over ₹ 50,000/-. PAN is supplied by customers. Loans may be taken against FD for 80% of the deposited amount and the interest charged will be 0.5% more than the interest received by the customers. The Bank would like to keep deposit & loan information for decision making & usual report printings. Develop an ERD for above requirement. Also reduce the ERD into a set of tables. [8]

OR

- Q.1 (a) Explain the following: [4×2=8]
- (i) Key and its types
 - (ii) Database users
 - (iii) Aggregation and Ternary Relationships
 - (iv) Specialization and Generalization
- (b) You are required to design the database for an institute. The database should cover the following information -- students enroll for courses at the institute and the courses are conducted in batches. A batch has one or more modules conducted in it. A student may register for one or modules in one or more batches. Course material is distributed to the students depending on the batch they have enrolled in i.e., course material for a module is specific to a batch. Books are purchased from suppliers by placing orders. A bill from the supplier may include books from one or more orders. Develop an ERD for the institute. Also reduce the ERD into a set of tables. [8]

UNIT-II

- Q.2 (a) Consider the following schemas- [2×4=8]
- employee (person – name, street, city)
 - works (person – name, company – name, salary)
 - company (company – name, city)
 - managers (person – name, manager – name)
- Write the following queries in Relational Algebra-
- (i) Find the names of all employees who live in the same city and on the same street as do their managers.
 - (ii) Find the names of all employees who do not work for “First Bank Corporation”.
 - (iii) Find the names of all employees who earn more than every employee of “Small Bank Corporation”.
 - (iv) Assume the companies may be located in several cities. Find all companies located in every city in which “Small Bank Corporation” is located.
- (b) Explain various anomalies of a bad database design. Define Normalization and its need with examples. [8]

OR

- Q.2 (a) Explain the following- [4×2=8]
- (i) Relational Calculus
 - (ii) Safety of expressions in Relational Calculus
- (b) What is meant by Dependency Preservation Property of a Decomposition? Differentiate between 3NF and BCNF with examples. [8]

UNIT-III

- Q.3 (a) Write a note on Embedded SQL and its need. [8]
- (b) What are Integrity Constraints? Explain various types of Integrity Constraints that can be applied on a database. [8]

OR

- Q.3 (a) Differentiate between a Correlated and a Nested Query with examples. What is a view? Give syntax of creating a view in SQL. [8]
- (b) Discuss the following: [2×4=8]
- (i) Triggers
 - (ii) Assertions
 - (iii) Stored Procedure
 - (iv) JDBC.

UNIT-IV

- Q.4 (a) (i) Construct a B tree the following set of key values (3, 9, 11, 13, 26, 35, 41, 50, 52) under the assumption that the number of search key values that fit in one node is 3. [4]
- (ii) Show steps involved in the following tasks: [4]
- 1. Insert 10
 - 2. Insert 10
 - 3. Delete 41
 - 4. Insert 43
- (b) Explain what is an index and its need. What are the various type of indexes? [8]

OR

- Q.4 (a) Consider a B⁺ tree with 3 pointers to form a primary index structure.
- (i) Show the tree after insertion of the following key items in the order given-
12, 2, 15, 4, 123, 45, 6, 7, 9, 1, 3 [4]
 - (ii) Show the structure of the tree after deleting items with key value = 7 and then deleting items with key value = 6. [4]
- (b) What is Hashing? Give an example of a Hash function. Compare Hashing and Indexing. [8]

UNIT-V

- Q.5 (a) Explain Serializability and its need. What are its types? Discuss. [8]
- (b) What is meant by Recovery? Explain Log-based Recovery Techniques. [8]

OR

- Q.5 (a) (i) Examine whether the following schedule is view serializable or not: [4]

| T ₁ | T ₂ | T ₃ |
|----------------|----------------|----------------|
| | | write (y) |
| read (y) | | |
| | | read (x) |
| | read (z) | |
| write (y) | | |
| read (x) | | |
| | | write (z) |
| write (x) | | |
| | write (y) | |

- (ii) Show that the Two-Phase Locking Protocol ensures conflict serializability. [4]
- (b) What is a Deadlock? Explain the reasons of Deadlock and various techniques to handle Deadlocks. [8]

5E5045

Roll No. _____

Total No of Pages: 4

5E5045

B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015

Electrical Engineering

5EE5A Transmission & Distribution of Electrical Power

Common with EX (Electrical & Electronics)

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

*Attempt any **five** questions, selecting **one** question from **each** unit. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

- Q.1 (a) (i) State & explain Kelvin's Law. Discuss its limitations. [4]
- (ii) What are the basic considerations which influence the design of distribution system? [4]
- (b) What is meant by the terms feeders, distribution & service mains? Why the distribution by A.C. is considered superior to that by D.C. [8]

OR

- Q.1 (a) What is the effect of transmission voltage on line performance? Explain how transmission voltage affects the power loss, voltage drop, weight of the conductor material and transmission efficiency during power transmission. [8]

- (b) An existing single phase AC system comprising of two overhead conductors is to be converted into a 3-phase, 3-wire system by providing an additional conductor of same size. Calculate the percentage of additional load that can be transmitted by the three phase system, if the operating line voltage & percentage line loss remains the same in both the system. [8]

UNIT-II

- Q.2 (a) What are the sources of vibrations in a transmission line? Explain the methods used to dampout these vibrations. [8]
- (b) Write short notes on: [4+4=8]
- (i) String chart
 - (ii) Factor affecting the sag in overhead line

OR

- Q.2 (a) Deduce an approximate expression for calculating sag in overhead line with conductors suspended between level supports. Show also how the effect of wind & ice can be taken in to account when making calculating for sag. [8]
- (b) An overhead transmission line at a river crossing is supported from two towers at height of 40m & 90m above water level, the horizontal distance between the towers being 400m. If the maximum allowable tension is 2000kg, find the clearance between the conductor & water at a point mid-way between the towers. Weight of conductor is 1kg/m [8]

UNIT III

- Q.3 (a) Write short note on: [4+4=8]
- (i) proximity effect
 - (ii) Transposition of conductors
- (b) Calculate the inductance of single-phase two wire system, if the distance between conductors is 2m & radius of each conductor is 1.2 cm. [8]

OR

- Q.3 (a) Discuss the concept of geometric mean distance. How is the concept used to find inductance of composite conductor line? [8]
- (b) Calculate the capacitance of single-phase overhead line consisting of a pair of parallel wire 12mm in diameter & spaced uniformly 2.5 m apart. If the line is 30km long & its one end is connected to 50kV, 50Hz system, what will be the charging current when the other end is open-circuited? [8]

UNIT-IV

- Q.4 (a) Draw equivalent π network for transmission line which has transformer at both ends. Also find the ABCD parameter of the transmission line. [8]
- (b) A 3-phase, 220 kV, 50Hz transmission line consists of 1.2 cm radius conductors spaced 2m at the corners of an equilateral triangle. Calculate the disruptive critical voltage between lines. Irregularity factor = 0.96, Temperature 20°C, Barometric pressure 72.2 cm of mercury and Dielectric Strength of air = 21.1kv rpm/cm [8]

OR

- Q.4 (a) Explain the phenomenon of corona. What are the factors affecting corona? [8]
- (b) A certain 3-phase equilateral transmission line has a total corona loss of 53kW at 106kV & a loss of 98kW at 110.9 kV. What is the disruptive critical voltage between line? What is the corona loss at 113kV? [8]

UNIT-V

- Q.5 (a) Explain why the voltage across the units of string of suspension type insulator are not equal. Also define string efficiency. [8]

(b) Write short notes on: [4+4=8]

- (i) Classification of the underground cable
- (ii) Capacitance grading

OR

Q.5 (a) Explain the different types of insulators used in power system. [8]

(b) Derive a formula for electric stress in single core cable. Where is stress maximum & where is it minimum? [8]

| | | |
|---------------|---|--|
| 5E5047 | Roll No. _____ | Total No of Pages: 4 |
| | <p>5E5047</p> <p>B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015</p> <p>Electrical Engineering</p> <p>5EE6.2A Principle of Communication Systems</p> <p>Common with EX (Electrical & Electronics Engineering)</p> | |

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

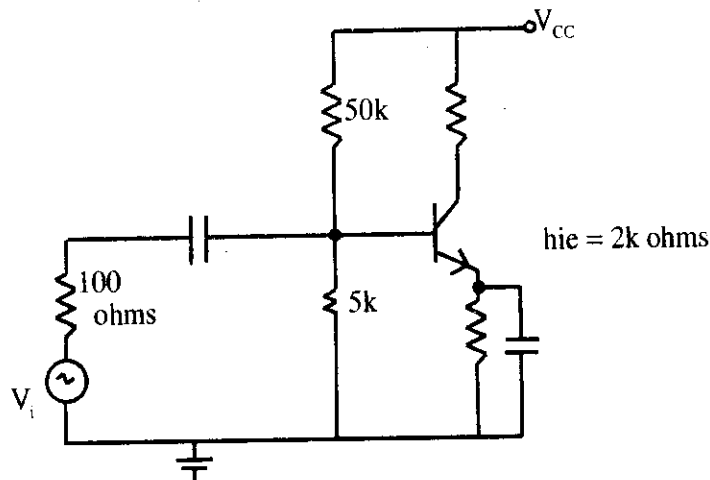
Q.1 (a) Explain the concept of equivalent noise temperature and equivalent noise bandwidth. [8]

(b) A parallel tuned circuit has a resonant frequency $f=10\text{MHz}$, its $Q=20$ and the value of capacitor is 10pf . If the ambient temperature is 17°C , Calculate the noise voltage across the parallel tuned circuit. [8]

OR

Q.1 (a) Derive an expression of noise figure of cascaded amplifier. [8]

(b) The amplifier shown in the figure has an effective B.w of 4MHz , and a voltage gain of 100. Determine the r.m.s. noise voltage at the output. The operating temperature is 27°C . The noise is contributed by the input resistance. [8]



UNIT-II

- Q.2 (a) With the help of block diagram explain phase shift method for generating SSB signals. What are the benefits of SSB modulation? Sketch the SSB AM waveform for a single-tone modulating signal. What are the advantages and disadvantages of phase shift method. [10]
- (b) The baseband signal is a voice signal which extends over a frequency range from 300Hz to 3400Hz. It is transmitted by amplified modulation process using 1 MHz carrier frequency signal. Compare the signal transmission B.w by DSB-SC AM and SSB AM techniques. Draw the DSB-SC, SSB (USB), SSB (LSB) spectrum. [6]

OR

- Q.2 (a) Explain the working of diode ring modulator for generation of DSB-SC signal. [10]
- (b) A carrier wave of frequency 20 kHz is amplified modulated by a modulating signal - [6]

$$m(t) = \cos 2\pi \times 10^3 t + \cos 4\pi \times 10^3 t$$

Find the corresponding DSB-SC signal.

257

UNIT-III

- Q.3 (a) Explain the Armstrong method for FM generation. Compare the narrowband FM and Broadband FM. [10]
- (b) A 101MHz carrier is modulated by a 500 Hz audio signal. If the carrier Voltage is 10V and the max deviation is 75 kHz, write the equation of this modulated wave. [6]

OR

- Q.3 (a) What is the PLL capture range? Compare it with PLL lock range. What are the advantages in using PLL versus traditional FM detectors? Explain how a PLL is used as FM demodulator. [10]
- (b) The maximum deviation allowed in an FM broadcast system is 75 kHz. If the modulating signal is a single-tone sinusoid of 10 kHz, find the B.w of the FM signal. What will be the change in B.w if modulating frequency is doubled? Determine the B.w when modulating signal's amplitude is also doubled. [6]

UNIT-IV

- Q.4 (a) Calculate the figure of merit for single tone modulation in FM receiver. Take suitable assumption if required. [10]
- (b) What is the significance of Pre-emphasis and De- emphasis in Communication system? [6]

OR

- Q.4 (a) Calculate Signal to Noise ratio for a double sideband with carrier and obtain its figure of merit. [10]

- (b) Derive an expression for the figure of merit when the modulating signal $f(t)$ is a single sinusoid given by

$f(t) = m_a A \cos w_m t$, where m_a is the modulation index, and A is the carrier amplitude.

Find the value of figure of merit when the depth of modulation is -

- (a) 100% (b) 50%. [6]

UNIT-V

- Q.5 Compare PAM, PWM and PPM. Draw the circuit diagram of PAM modulation and demodulation and explain this. [16]

OR

- Q.5 (a) Compare natural and flat top sampling. Why is flat-top sampling preferred over natural sampling. [10]

- (b) The signal $X(t) = \cos 5\pi t + \cos 10\pi t$ is instantaneously sampled. The interval between the samples is T_s . [6]

- (i) Find the maximum allowable value of T_s
- (ii) To reconstruct, the signal is passed through a low-pass filter. Find the minimum filter B.W to reconstruct the signal without distortion.
-

| | | |
|---------------|--|-----------------------------|
| 5E3126 | Roll No. _____ | Total No of Pages: 3 |
| | 5E3126 B. Tech V Sem. (Old Back) Exam. Nov-Dec. 2015 Electrical Engineering 5EE4 (O) Generation of Electrical Power | |

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Back: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT-I

- Q.1 (a) Explain the basic schemes and working principle of Gas Power Plant with open cycle. [8]
- (b) Discuss the advantages and disadvantages of using pulverized coal in steam power plants. [8]

OR

- Q.1 (a) Explain the concept of Fissile and Fertile materials in Nuclear Power Plant. [8]
- (b) Write short notes on:- [8]
- (1) Boiling water reactor
 - (2) Heavy water reactor
 - (3) Fast breeder reactor

UNIT-II

- Q.2 (a) Explain the impact of (i) thermal (ii) gas type Power Plants on environment. [8]
(b) Briefly explain Renewable Non-renewable energy sources. [8]

OR

- Q.2 (a) What prohibits large-scale utilization of Solar Power for electricity generation?[8]
(b) Discuss the role of natural resources and sustainable energy system in present context. [8]

UNIT-III

- Q.3 (a) Explain the types of Load and Chronological Load Curves. [8]
(b) Explain following - [8]
(1) Maximum demand
(2) Load factor
(3) Diversity factor

OR

- Q.3 (a) Describe causes and effects of low Power Factor and also explain the advantages of Power Factor improvement. [8]
(b) Explain the role of shunt capacitors and synchronous condensers in Power Factor improvement. [8]

UNIT-IV

- Q.4 (a) Explain the capital cost of plant and annual fixed and operating costs of plants.[8]
(b) Describe the role of load diversity in power system economics [8]

OR

- Q.4 (a) Explain the method for calculating most economic power factor when KW demand is constant. [8]
(b) Explain the concept of co-generation and energy conservation in terms of power plant economics. [8]

UNIT-V

- Q.5 (a) Explain Flat demand rate and Straight meter rate in terms of Electrical tariff. [8]
- (b) For selection of power plant, explain comparative study of thermal power plant. [8]

OR

- Q.5 (a) Describe in detail methods of selection and location of various power plants. [8]
- (b) What consideration governs the selection of power plant size? [8]
-