Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2017 **Common for CSE & IT**

Fourth Semester **Probability & Statistics**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. a) Define a continuous random variable.
   b) Explain Normal approximation to binomial distribution.
   c) Write any two properties of Normal distribution.
   d) Define Point estimation.
   e) Define Null hypothesis.
   f) Define type I and type II errors.
   g) Define degrees of freedom
   h) Write the test statistics for several proportions.
   i) Write about Randomized Block design.
   j) What are various control charts for attributes.
   k) Define Reliability.
   l) Define a series system.

UNIT I

2. a) A certain drug is effective in 72% of cases. Given 2000 people are treated with the drug, what is the probability that it will be effective for a) at least 1400 patients b) less than 1390 patients **(6M)**

   b) In a certain city, the daily consumption of electric power (in millions of kilowatt-hours) can be treated as a random variable having Gamma distribution with $\alpha=3$ and $\beta=2$. If the power plant of this city has a daily capacity of 12 million kilowatt-hours, what is the probability that the power supply will be inadequate on any given day? **(6M)**

(OR)

3. a) Suppose that the service life (in hours) of a semi conductor is a random variable having the Weibull distribution with $\alpha=0.025$ and $\beta=0.5$. What is the probability that such a semiconductor will still be in operating condition after 4000 hours? **(6M)**

   b) A random sample of size 100 is taken from a population having the mean $\mu=76$ and variance $\sigma^2=256$. What is the probability that sample mean $\overline{x}$ will be between 75 and 78? **(6M)**

UNIT II

4. a) The mean weight loss of n=16 grinding balls after certain length of time in a mill slurry is 34.2 gms with a standard deviation of 0.68 gms. Construct a 99% confidence interval for the true mean loss of such grinding balls. **(6M)**

   b) The following random samples are measurements of heat producing capacity in millions of calories per ton of specimens of coal from two mines.

Mine 1	8260	8130	8350	8070	8340	
Mine 2	7950	7890	7900	8140	7920	7840

   Use 0.01 level of significance to test whether the difference between the means of these two samples is significant? **(6M)**

(OR)

5. a) The lapping process which is used to grind certain silicon wafers to the proper thickness is acceptable only if σ, the population standard deviation is at most 0.5mil. Use 0.05 level of significance to test the null hypothesis $\sigma=0.5$ mil against the alternative hypothesis $\sigma>0.5$ mil, if the thickness of 15 wafers have a standard deviation of 0.64 mil. **(6M)**

b) Two independent random samples of 8 and 7 items respectively have the following values

Sample 1	9	11	13	11	15	9	12	14
Sample 2	10	12	10	14	9	8	10	

Test whether the difference between the variances is significant at 1% level of significance? **(6M)**

UNIT III

6. a) A manufacturer of submersible pumps claims that at most 30% of the pumps require repairs within the first 5 years of operation. If a random sample of 120 of these pumps includes 47 which require repairs within first 5 years, Test the null hypothesis p=0.30 against the alternative hypothesis p>0.30 at 0.05 level of significance. **(6M)**

b) To determine whether there is really a relationship between employee's performance in the company's training program and his success in the job, a sample of 400 cases were taken and the following results were obtained. Test at 1% level of significance whether the performance in the training program and success in the job are independent and the table is as given below: **(6M)**

	Performance in training program		
	Below Avg.	Avg.	Above Avg.
Poor	23	60	29
Average	28	79	60
Very good	9	49	63

(OR)

7. a) Suppose 3 drying formulae for curing a glue are studied and the following times are observed. Carry out ANOVA one-way classification at 1% level of significance and comment **(6M)**

Formula A	13	10	8	11	8	
Formula B	13	11	14	14		
Formula C	4	1	3	4	2	4

b) In city A, 20% of random sample of 900 students have a physical defect. In another city B, 18.5% of a random sample of 1600 students have the same defect. Is the difference between the proportions significant at 0.05 level of significance. **(6M)**

UNIT IV

8. a) Sample means and the sample ranges for 10 samples of size 5 each are given . Draw $\bar{x}$ and R chart and comment on the process **(6M)**

$\bar{x}$	15	17	15	18	17	14	18	15	17	16
R	7	7	4	9	8	7	12	4	11	5

b) 15 assemblers are put on accelerated life test without replacement and the test is then truncated after 4 failures. If the first 4 failures occurred at 16.5,19.2,20.8 and 37.3 hours, assuming an exponential model

i) Find a 90% confidence interval for the failure rate of such assemblies under these accelerated conditions.

ii) Test the null hypothesis that the failure rate is 0.004 failure per hour against the alternative that it is less than 0.004 using the 0.01 level of significance. **(6M)**

(OR)

9. a) A system consists of 5 identical components connected in parallel. What must be the reliability of each component if the overall reliability of the system is given to be 0.96. **(6M)**

b) A sample of 300 switches was placed on life test for 3000 on-off cycles and there were no failures, the test was then truncated. Find a 95% confidence limits for the mean life, in number of cycles of the switches. **(6M)**

CS/IT 222

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2017 — **Common for CSE & IT**

Fourth Semester — **Electronic Devices & Circuits**

Time: Three Hours — **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1. Answer all questions (1X12=12 Marks)
   a) What do you mean by cut in voltage in a diode?
   b) What are the applications of UJT?
   c) What is Zener mechanism?
   d) Draw the pin diagram of 741 IC.
   e) Define PIV. What is PIV of a halfwave rectifier?
   f) For a JFET, I_{DSS} = 15mA, V_p= -5V, determine I_D for V_{GS} = -3V.
   g) What are the characteristics of JFET?
   h) What are the characteristics of a trans-conductance amplifier?
   i) Give the expression for frequency of operation for (i) RC Phase shift oscillator (ii) Hartley Oscillator.
   j) What are the ideal characteristics of an op-amp?
   k) Define Slew rate.
   l) Draw the circuit of differentiator using op-amp and write the expression for output voltage.

UNIT I

2. a) Explain the working principle of a centre tapped full wave rectifier with neat waveforms. 6M
   b) Derive the expressions for input resistance, output resistance, voltage gain and current gain of a CE transistor amplifier using h-parameters. 6M

(OR)

3. a) Derive the stability factor S for an (i) Emitter stabilized bias circuit (ii) Fixed Bias circuit for a BJT. 8M
   b) What is Early effect? What are its consequences? 4M

UNIT II

4. a) Explain the operation of Enhancement type MOSFET. 6M
   b) A self-biased p-channel JFET has a pinch off voltage V_p = 5V, I_{DSS} = -12mA, V_{DD} = -12V. Determine the values of R_D and R_S so that the drain current I_D=-5mA and V_{DS} = 6V. 6M

(OR)

5. a) Explain the operation of UJT and also plot emitter characteristics indicating various regions. 6M
   b) Explain the operation of n-channel JFET indicating its regions of operation. 6M

UNIT III

6. a) Explain the concept of feedback. Derive an expression for transfer gain with feedback. 8M
   b) What are the general characteristics of negative feedback amplifier? 4M

(OR)

7. a) State and explain Barkhausen criteria. 4M
   b) Derive the expression for the frequency of oscillations of a Wien Bridge oscillator. 8M

UNIT IV

8. a) Derive an expression for Common Mode Rejection Ratio for a differential amplifier using BJT. 6M
   b) Explain the operation of the following circuits built using op-amp (i) Summing Amplifier (ii) Subtractor. 6M

(OR)

9. a) Explain the operation of Voltage Controlled Oscillator with a neat block diagram. 6M
   b) Design a differentiator circuit that will differentiate an input signal with f_{max} = 200Hz. Also, draw the output waveform for a sine wave of 1V at 200Hz applied to the differentiator. 6M

CS/IT 223

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

November, 2016 **Common for CSE & IT**

Fourth Semester **Electrical Technology**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

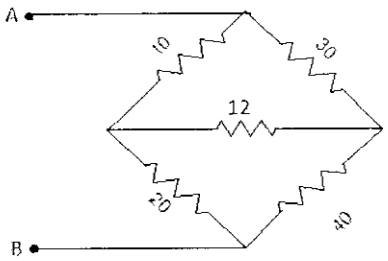
Answer ONE question from each unit. (4X12=48 Marks)

1 Answer all questions (1X12=12 Marks)

a) State Kirchhoff's laws.
b) Define average and RMS value.
c) Give the relation between line and phase voltages, line and phase currents in a delta connected balanced system.
d) State Thevenin's theorem.
e) What is two port network?
f) Write the relation between Z and Y parameters of a two port network.
g) What is the function of commutator in DC generator?
h) Draw the torque versus armature current characteristics of a DC motor.
i) What is the condition for maximum efficiency of a transformer?
j) Define slip.
k) A 415V, 6 pole induction motor is energized at 50Hz frequency. What is the speed of the rotating magnetic field?
l) Write different types of starting methods for single phase induction motor.

UNIT I

2 a) Determine the equivalent resistance across terminals A and B

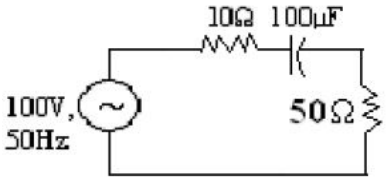


6M

b) Define the following i) RMS value, ii) Average value and iii) Form factor of an alternating quantity. 6M

(OR)

3 a) For the circuit shown, determine the total impedance, total current and phase angle.



6M

b) Explain the relationship between line and phase quantities in a star and delta connected three phase systems. 6M

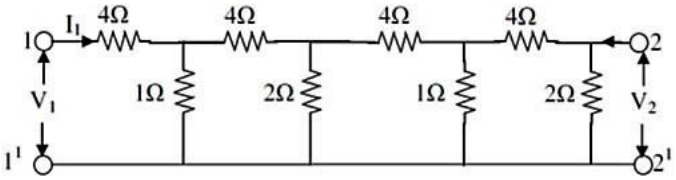
UNIT II

4 a) Derive the star-delta transformation for a resistive network. 6M

b) State and explain Maximum power transfer theorem. Obtain an expression for condition for maximum efficiency 6M

(OR)

5 a) Determine the Y parameters of the network shown in fig. 6M



b) Express *y*-parameters in terms of *z*-parameters and *h*-parameters 6M

UNIT III

6 a) Briefly explain the principle and operation of dc generator 6M

b) With a neat sketch explain the operation of three point starter. Also mention the applications of it. 6M

(OR)

7 a) Describe briefly the various losses in a transformer and explain how each loss varies with the current? 6M

b) A 40 kVA, 2200/200V transformers has iron loss of 450 and a full load copper loss of 800W. Determine the percentage efficiency of the transformer at 0.8 p.f at half full load. 6M

UNIT IV

8 a) Explain the slip-torque characteristics of three phase induction motor. 6M

b) Explain the principle of operation of a single phase induction motor. 6M

(OR)

9 a) Obtain an expression for E.M.F of a synchronous generator. 6M

b) Mention the applications of synchronous motors. 6M

CS/IT224

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

APRIL , 2017 — **GUI Programming**

FOURTH SEMESTER — **Common for CSE & IT**

Time: Three Hours — **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1 Answer all questions (1X12=12 Marks)

a) Explain this keyword.
b) Write the syntax of creation of multidimensional array of Strings.
c) Define interface.
d) Differentiate String and String buffer class.
e) Define Thread and Process.
f) What is event?
g) Write the syntax of try ... catch block.
h) Define stream?
i) Write the syntax of creation of radio buttons in Swings.
j) What is adapter class?
k) Differentiate AWT and Swings.
l) What is IP Address?

UNIT I

2	a)	Write a simple java program to sort given names	6M
	b)	Explain object oriented concepts	6M

(OR)

3	a)	Define Method overriding? Explain the concept of dynamic method dispatch with an example	8M
	b)	Explain about command line arguments with an example program.	4M

UNIT II

4	a)	Explain the concept of Exception handling.	6M
	b)	Write a simple JAVA program using built-in exceptions.	6M

(OR)

5	a)	Explain the concept of inter thread communication in java with an example program.	12M

UNIT III

6	a)	Write a simple Event driven program to create a Registration form using applets.	12M

(OR)

7	a)	Write some File manipulation functions in java.	6M
	b)	Explain the life cycle of an Applet.	6M

UNIT IV

8	a)	Explain four JDBC drivers in detail.	6M
	b)	Write a Java program to read records from the data base and print them on the console.	6M

(OR)

9	a)	Explain the creation of JTabbedPane in Swings with an example program	6M
	b)	Explain Datagram sockets.	6M

CS/IT 226

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

March, 2017 **Common for CSE & IT**

Fourth Semester **Microprocessors and Microcontrollers**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1 Answer all questions (1X12=12 Marks)

a) How the physical address is formated in 8086 microprocessor.
b) What is SEGMENT directive?
c) What is the use of LOOP instruction?
d) Define Interrupt. List hardware and software interrupts of 8086 microprocessor.
e) After RESET from which address the 8086 microprocessor starts execution?
f) Differentiate Maskable and Nonmaskable interrupts.
g) Draw the format of ICW1.
h) What is the block data transfer mode of 8237?
i) List the features of 8051 microcontroller.
j) Write about logical instructions XRL & RRC.
k) Draw the register structure of TCON.
l) List the ports of 8051 microcontroller with their use.

UNIT I

2 a) Draw and explain the architecture of 8086 microprocessor. 8M
b) Differentiate Procedures and Macros. 4M

(OR)

3 a) Explain string instructions with examples. 6M
b) Write a programme to add series of n, 8-bit numbers. 6M

UNIT II

4 a) Explain maximum mode memory read machine cycle with a neat timing diagram. 6M
b) Explain about Interrupt Vector Table of 8086 microprocessor. 6M

(OR)

5 a) Explain the function of 8086 microprocessor pins with a neat diagram. 8M
b) Explain the interrupt response sequence of 8086 microprocessor. 4M

UNIT III

6 a) Explain how the interrupt is handled by Programmable Interrupt Controller 8259. 6M
b) Explain the following instructions. 6M
i. SJMP ii. LJMP iii. ACALL iv. LCALL

(OR)

7 a) Draw and explain block diagram of 8237. 6M
b) Write a program to interface 7, seven segment displays with 8086 microprocessor. 6M

UNIT IV

8 a) Explain various addressing modes of 8051 microcontroller. 6M
b) Write a programme to transfer data serially through ports 0, 1, 2 of 8051 microcontroller. 6M

(OR)

9 a) Explain the architecture of 8051 microcontroller with a neat diagram. 8M
b) Write a program to generate a square wave of 66% duty cycle on bit 0 of port 1. 4M