Code: 4G132

R-14

II B.Tech. I Semester Supplementary Examinations May 2017
Digital Logic Design
(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours
Answer all five units by choosing one question from each unit (5 x 14 = 70Marks)
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UNIT–I

1. a) Explain the following
        i)   BCD   2M
        ii)   Excess-3-code   2M
        iii) Gray code   2M
        iv) Binary code   2M

    b) Perform the subtraction with the following binary numbers using 2's complement.
        i)   11010 – 11011
        ii)   1010 – 10000
        iii) 10010 - 10011   6M

OR

2. a) What is Canonical form? Explain different Canonical forms with an example.   7M

    b) Draw the logic diagram for the given Boolean expression
        F = AB'+C'D+ABC   7M

UNIT–II

3. a) Simplify the following Boolean function using k-Map.
        F(xyz) = (0,2,4,7,10,12,15)   6M

    b) Obtain the Simplified expression in sum of products the following Boolean function.
        i)   xy + x'y'z' + x'yz'   2M
        ii)   a'b + bc' + b'c'   2M
        iii) a'b' + bc + a'bc'   2M
        iv) xy'z + xyz' + x'yz + xyz   2M

OR

4.   Obtained the Simplified Expression In sum of products for the following
        i)   F(x,y,z) = (2,3,6,7)
        ii)   F(w,x,y,z) = (2,3,12,13,14,15)
        iii) F(A,B,C,D)= (4,6,7,15)   14M

UNIT–III

5. a) Design half adder combinational circuit.   7M

    b) Implement the Boolean function
        F=AB'CD' + A'BCD' + AB'C'D + A'BC'D with Exclusive-OR and AND gates   7M

OR

6   Explain the following with an example.
        i)   Decoders
        ii)   Multiplexers   14M

UNIT–IV

7. a) Implement a 3-bit binary Counter.   7M

    b) Design a 4-bit shift register.   7M

OR

8. a) Implement JK Flip-Flop with NAND Gate   7M

    b) Compare combinational circuit and sequential circuit   7M

UNIT–V

9. a) By considering an example explain the working of programmable array logic circuit 7M

    b) Differentiate static and Dynamic RAM.   7M

OR

10. a) Write a brief notes on memory decoding.   7M

    b) Explain the functioning of any two sequential programmable devices.   7M

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Code: 4G236

R-14

II B.Tech. I Semester Supplementary Examinations May 2017
Electrical Engineering and Electronics Engineering
(Common to ME, CSE & IT)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Derive the relation between phase and line values of 3 phase balanced star connected system.   7M
   b) A current of 10 A flows in a circuit with a 30 degree angle of lag when the applied voltage is 100 V. Find the impedance, reactance and resistance of the circuit.   7M

OR

2. a) State and explain Kirchoff's laws with the help of neat diagram   7M
   b) Two resistances of 1.5   and 3.5   are connected in parallel and their combination is connected is series with a resistance of 1.95   . Find the equivalent resistance of the circuit. What current will it draw if connected to a 30V supply?   7M

UNIT–II

3. The resistance of the field circuit of a shunt wound dc generator is 200 ohms. When the output of the generator is 100 kW, the terminal voltage is 500 V and the generated emf is 525 V. Calculate: (a) the armature resistance, and (b) the value of the generated emf when the output is 60 kW, with a terminal voltage of 520 V.   14M

OR

4. a) A 240V,dc shunt motor takes 32 A of line current of the armature and field resistances are 1.2   and 240   respectively of the load torque remains constant, find the resistance inserted in series with the armature to have the speed.   7M
   b) Explain Swinburne's test for the determination of efficiency of a dc machine   7M

UNIT–III

5. a) Explain the principle of operation of 3 phase induction motor   7M
   b) Discuss the synchronous impedance method of calculating voltage regulation of an alternator   7M

OR

6. a) List out different types of losses present in transformer   6M
   b) A 1- transformer has 500 primary and 100 secondary terms. The net cross-sectional area of the core is 50 cm^2. if the primary winding is connected to a 50 H_2 supply at 400V. Calculate (i) Peak value of the flux density in the core (ii) The voltage induced in the secondary winding.   8M

UNIT–IV

7. Explain the working of P-N-P transistor and mention its input-output characteristics   14M

OR

8. a) Explain in detail about frequency response of CE amplifier.   7M
   b) With a neat circuit explain the operation of half wave rectifier circuit   7M

UNIT–V

9. a) Derive the expression for the electrostatic deflection of CRO   7M
   b) Explain the principle of dielectric heating   7M

OR

10. Explain the concept of induction heating and also discuss about various industrial applications of induction heating   14M

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Hall Ticket Number :

Code: 4GC33

II B.Tech. I Semester Supplementary Examinations May 2017
Probability & Statistics
(Computer Science and Engineering)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1. a) Two dice are thrown and their sum is 7. Find the probability that at least one of the dice shows up 2?

    b) A University bought 45%, 25% and 30% of computers from HCL, WIPRO and IBM respectively and 2%, 3% and 1% of these were found to be defective. Find the probability of a computer selected at random is found to be defective?

OR

2. a) Let a pair of dice be thrown. If X is the sum of the numbers that appear on the two dice, find the mean μ of X?

    b) If the probability density of a random variable is given by

    $$f(x) = \begin{cases} K(1 - x^2) & ,0 < x < 1 \\ 0 & elsewhere \end{cases}$$

    Find the value of K and the probabilities that a random variable will take on a value
    i. Between 0.1 and 0.2
    ii. Greater than 0.5

UNIT–II

3. a) Find the mean and variance of a Poisson distribution.

    b) In a binomial distribution the sum and the difference of the mean and the variance are 1.8 and 0.2 respectively. Find the parameters.

OR

4. The mean of the height of students in a class is 158 cm with the standard deviation 20cm. find how many students heights are between 150 and 170 cm, if there are 100 students in the class.

UNIT–III

5. A population consists of the five numbers 2, 3, 6, 8 and 11. Consider all possible sample of size 2 that can be drawn with replacement from this population. Find
    a) The mean of the population
    b) The standard deviation of the population
    c) The mean of the sampling distribution of means and
    d) The standard deviation of the sampling distribution of means.

OR

6. a) The mean weight loss of n=16 grinding balls after a certain length of time in mills slurry is 3.42 grams with a standard deviation of 0.68 gram. Construct a 99% confidence interval for the true mean weight loss of such grinding balls under the stated conditions.

    b) A sample survey at a market showed that 204 of 300 shoppers regularly use cents-off coupons. Use the large sample confidence interval to construct a 95% confidence interval for the corresponding true proportion.

UNIT–IV

7. a) The mean life time of a sample of 100 bulbs produced by a company is computer as 1570h with a standard deviation of 120h. If μ is the mean lifetime of all the bulbs produced by the company, test the hypothesis μ = 1600 h against the alternative hypothesis μ   1600 h using 0.05 level of significance.

   b) A company claims that the light bulbs are superior to those of its main competitor. If a study showed that a sample of $n_1=40$ of its bulbs has a mean lifetime of 647 h of continuous use with a standard deviation of 27h, while a sample of $n_2=40$ bulbs made by the competitor had a mean lifetime of 638h of continuous use with a standard deviation of 31h. does this support the claim at 0.05 level of significance.

OR

8. a) The specifications for a certain kind of ribbon call for a mean breaking strength of 185 pounds. If five pieces randomly selected from different rolls have breaking strengths of 171.6, 191.8, 178.3, 184.9 and 189.1 pounds, test the null hypothesis μ=185 pounds against the alternative hypothesis μ < 185 pounds at the 0.05 level of significance.

   b) In the comparison of two kind of paints, a consumer testing service finds that four 1-gallon cans of one brand cover on the average 546 sq ft with s.d of 31 sq ft where as four 1-gallon cans of another brand cover on the average 492 sq ft with a standard deviation of 26 sq ft. Assuming that the two populations sampled are normal and have equal variances test the null hypothesis $μ_1 – μ_2 > 0$ at the 0.05 level of significance.

UNIT–V

9. To determine the effectiveness of drugs against a disease, three types of drugs (from three different drug manufacturing companies) were tested on 50 persons with the following results.

		Drug type			
		Drug A	Drug B	Drug C	Total
	No relief	11	13	9	33
	Some relief	32	28	27	87
Effectiveness	Total relief	7	9	14	30
	Total	50	50	50	150

OR

10. The following data are for the number of rail road switch men who had various numbers of accidents on the job over a given period of time. The expected frequencies are those based on fitting a Poisson model to the data with μ = $\bar{x}$ use a χ^2 test to determine whether the Poisson model may be considered to be satisfactory here.

Accidents per man : x	0	1	2	3	4	5	6
Number having this many accidents	121	85	19	1	0	0	1
Expected Number of such men	127	74	21	4	1	0	0

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Hall Ticket Number :

R-14

Code: 4G133

III B.Tech. I Semester Supplementary Examinations May 2017
Principles of Programming Languages
(Common to CSE & IT)

Max. Marks: 70   Time: 3 Hours
Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)
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UNIT–I

1.	a)	Outline the compilation process in programming languages.	7M
	b)	Identify any two examples of syntactic design choices that affect readability?	7M

OR

2.	a)	Define left recursive grammar rules.	6M
	b)	Mention the differences between denotational and axiomatic semantics.	8M

UNIT–II

3.	a)	Mention the advantages and disadvantages of static and dynamic scoping.	7M
	b)	Explain the design issues of character string types.	7M

OR

4.	a)	With the help of an example, illustrate how short circuit evaluation is done.	7M
	b)	Explain operator precedence and operator associativity.	7M

UNIT–III

5.	a)	Explain the design issues of multiple selection statements.	7M
	b)	How is break statement implemented in C, C++ and Java?	7M

OR

6.		Illustrate subprogram implementation with stack dynamic local variables.	14M

UNIT–IV

7.	a)	How is exception handling implemented in Ada?	7M
	b)	Illustrate the implementation of message passing.	7M

OR

8.	a)	How does monitors differ from semaphores?	7M
	b)	Explain parameterized Abstract data Types.	7M

UNIT–V

9.	a)	Explain the different data types used in LISP.	7M
	b)	Mention the differences between a depth first and a breadth first search when discussing how multiple goals are satisfied.	7M

OR

10		Write a short notes on	
	a)	Logic Programming languages	7M
	b)	Functional Programming languages	7M

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