Hall Ticket Number :										

R-14

Code: 4G132

II B.Tech. I Semester Supplementary Examinations May 2018

Digital Logic Design

(Computer Science & Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

****

UNIT–I

1. a) Perf he follc erat plement form: 6M

$(i) +6-3\ (ii) -2-6\ (iii) +4-7$

b) List the truth table of the function 8M

$(i)\ F = xy + xy' + y'z$

$(ii) F = y'z + wxy' + wxz' + w'x'z$

OR

2. a) Given the tw 1010100 11, perform the subtraction $(i) X - Y \quad (ii)\ Y - X$ using 2's com 7M

b) F 7M

UNIT–II

3. a) Show that the dual of the exclusive-Or is also its complement 7M

b) Derive the circuits for a three-bit parity generator and four-bit parity checker using odd parity bit. 7M

OR

4. owing boolean functions by first finding the essential prime 14M

$(i)\ F(w,x,y,z) = \sum(0,2,4,5,6,7,8,10,13,15)$

$(ii)\ F(A,B,C,D) = \sum(1,3,4,5,10,11,12,13,14,15)$

UNIT–III

5. a) Design a combinational circuit that generates the 9's complement of a BCD digit 7M

b) Design a half-subtractor with inputs x and y and outputs D and B. The circuit subtractor x-y and places the difference in D and the borrow in B. 7M

OR

6. a) Implement a full adder with two 4 X 1 multiplexers 8M

b) Construct a 4-to-16 line decode with five 2-to-4 line decoders with enable 6M

UNIT–IV

7. a) Write short notes on
   (i) JK flip-flop
   (ii) D flip-flop
   (iii) T flip-flop 6M

   b) Construct a JK flip-flop using a D flipflop ,a 2-to-1 line multiplexer and an inverter 8M

OR

8. a) Design a serial 2's complement with a shift register and a flip-flop. The binary number is shifted out from one side and it's 2's complement shifted into other side of the shift register. 6M

   b) Explain universal shift register with neat diagram 8M

UNIT–V

9. a) Given a 32 X 8 ROM chip with an enable input, show the external connections necessary to construct a 128 X 8 ROM with four chips and a decoder. 7M

   b) Write short notes on Programmable Array Logic with example 7M

OR

10. a) Write short notes on
   (i) SR latch with NAND gates
   (ii) Debounce circuits 8M

   b) Distinguish between hazards in combinational and sequential circuits 6M

***

Hall Ticket Number :										

R-14

Code: 4G236

II B.Tech. I Semester Supplementary Examinations May 2018

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)

****

UNIT–I

1. a) State and explain the Kichhoff's laws 6M

   b) Three resistances 2Ω, 5Ω and 10Ω are connected in series across a supply voltage of 25 Volts. Calculate
      (i) Total current supplied (ii) Voltage across each resistor 8M

OR

2. a) Derive expression for equivalent capacitance when three capacitors of capacitances of C_1,C_2 and C_3 are connected in series 7M

   b) Three inductances 10Ω, 20Ω and 30Ω are connected in a delta connection. Find the equivalent star connection 7M

UNIT–II

3. a) Derive the EMF equation of DC generator 6M

   b) A 4 pole generator having 51 slots with each slot containing 20 conductors. The machine is driven at 1500 rpm and assuming the flux per pole to be 7.0mWb. What will be the voltage generated in machine when the armature winding is (i) Lap connected (ii) Wave connected. 8M

OR

4. a) What is meant by starter and explain the principle of operation of three point starter 7M

   b) What are the different types of speed control methods and explain any one of the speed control methods in detail 7M

UNIT–III

5. a) Explain the principle of operation of single phase transformer with a neat diagram 6M

   b) A 250KVA single phase transformer has iron losses of 1.8KW and full load copper losses is 200 watts. Calculate
      (i) Efficiency at full load at 0.8 p.f lagging
      (ii) Efficiency at half load at 0.8 p.f leading
      (iii) Maximum efficiency at 0.8 p.f lagging 8M

OR

6. a) Explain the principle of operation of alternator with a neat sketch 7M

   b) Draw and explain the slip-torque characteristics of three phase induction motor 7M

UNIT–IV

7. a) With a neat circuit diagram explain the principle of operation of full wave diode bridge rectifier along with its input and output waveforms 8M

   b) What is meant by rectifier and list it's applications 6M

OR

8. a) Explain the following

   (i) PNP transistor (ii) NPN transistor 7M

   b) Draw the frequency response of CE amplifier and explain 7M

UNIT–V

9. Explain about different types of electric heating and mention its industrial applications 14M

OR

10. a) Draw and explain the principle of CRT 7M

    b) Explain the following

    (i) Voltage measurement of CRO

    (ii) Frequency measurement of CRO 7M

***

Hall Ticket Number :										

Code: 4GC33

R-14

II B.Tech. I Semester Supplementary Examinations May 2018

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)

*****

UNIT–I

1. a) Companies B_1, B_2, B_3 produce 30%, 45% and 25% of the cars respectively. It is known that 2%, 3% and 2% of the cars produced from B_1, B_2 and B_3 are defective. (**i**) What is the probability that a car purchased is defective. (**ii**) If a car purchased is found to be defective, what is the probability that this car is produced by the company B_3? 7M

   b) what is the p... A continuous random variable has the probability density function $f(x) = \begin{cases} kxe^{-\lambda x}, x \geq 0, \lambda > 0 \\ 0, \quad Otherwise \end{cases}$ Determine (**i**) k (**ii**) mean (**iii**) Variance 7M

OR

2. a) In a bolt factory machines *A, B, C* manufactures 20%, 30%, 50% of the total of their output and 6%, 3% and 2% are defective. A bolt is drawn at random and found to be defective then find the probability that it is manufactured by **(i)** machine *A* **(ii)** machine *B*. 7M

   b) A sample of 4 items is selected at random from a box containing 12 items out of which 5 are defective. Find the expected number *E* of the defective items. 7M

UNIT–II

3. a) When the mean of the marks is 50% & σ is 5%. Then 60% of the students failed in an examination. Determine the grace marks to be awarded/pass mark should be reduced in order to show that 70% of the students passed. Assume that the marks are normally distributed. 7M

   b) On an average **six** bad cheques per day are received by a bank. Find the probability that the bank will receive four bad cheques on any given day. 7M

OR

4. a) 10% of the bolts produced by a certain machine turn out to be defective. Find the probability that in a sample of 10 tools selected at random exactly two will be defective using (i) binomial distribution (ii) Poisson distribution and comment upon the result? 7M

   b) X is normally distributed with mean 12 and S.D = 4then find (i) P(0≤ X≤12) (ii) P(X≤20) (iii) $P(X \geq 20)$ (iv) if $P(X > C) = 0.24$ then find *C.* 7M

UNIT–III

5. a) Determine the mean and standard deviation of the sampling distribution of means of 300 random samples each of size n=36 are drawn from a population of N=1500 which is normally distributed with mean μ=22.4 and standard deviation σ of 0.048, if sampling is done (i) with replacement (ii) without replacement. 7M

   b) Using the mean of a random sample of size 150 to estimate the mean mechanical aptitude of mechanics of a large workshop and assuming σ=6.2, what can we assert with 0.99 probability about the maximum size of the error. 7M

OR

6. a) Assuming that the population standard deviation is 0.3, calculate the (i) 95% and (ii) 99% confidence intervals for the mean lead concentration in a river if the mean lead concentration recovered from a sample of measurements in 36 different locations is 2.6gms/ml. 7M

b) A producer of TV's blelives from past experience that the mean length of life of TV's μ is a normal variable with mean μ_0=800hours and standard deviation σ_0=10hours. It is known that TV's have mean length of life that is approximately normally distributed with a standard deviation of 100 hours. Construct a 95% Bayesian interval for μ if a random sample of 25 TV's has an average life of 780hours. 7M

Code: 4GC33

UNIT–IV

7. a) Mice with an average lifespan of 32 months will live upto 40 months when fed by a certain nutritious food. If 64 mice fed on this diet have an average lifespan of 38 months and standard deviation of 5.8 months, is there any reason to believe that average lifespan is less than 40 months. 7M

b) If 6 out of 20 cigarette smokers randomly chosen preferred 'Charminar' cigarettes test the claim at 0.05 L.O.S., that 20% of the smokers prefer 'Charminar'. 7M

OR

8. a) A machine runs on an average of 125 hours/year. A random sample of 49 machines has an annual average use of 126.9 hours with standard deviation 8.4hours. Does this suggest to believe that machines are used on the average more than 125hours annually at 0.05level of significance? 7M

b) In a random sample of 10 bolts produced by a machine the mean length of bolt is 0.53mm and standard deviation 0.03mm. Can we claim from this that the machine is in power working order if in the past it produced bolts of length 0.5mm? Use 0.05 L.O.S. 7M

UNIT–V

9. a) Test whether there is significant difference at 0.05 level in the quality of teaching among four engineering colleges A, B, C, D of technological universities if the number of failures are 26,23,15,32 respectively. Assume that each college has strength of 200 students. 7M

b) Test the hypothesis at 0.05 L.O.S that the presence or absence of hypertension (HT) is independent of smoking habits from the following experiments data on 180 persons.

	Non smokers	Moderate smokers	Heavy Smokers
HT	21	36	30
No HT	48	26	19

7M

OR

10. a) Test for goodness of fit of a person distributed at 0.05 L.O.S. to the following frequency distribution.

Number of patients arriving/ hour: (x)	0	1	2	3	4	5	6	7	8
Frequency	52	151	130	102	45	12	5	1	2

7M

b) Can we conclude that the population variances are equal for the following data of post graduates passed out from a 'state' and 'private' university?

State	8350	8260	8130	8340	8070	
Private	7890	8140	7900	7950	7840	7920

7M

****

Hall Ticket Number :										

Substitute Subject

R-14

Code: 4G133

III B.Tech. I Semester Supplementary Examinations May 2018

Principles of Programming Languages

(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)

*****

UNIT–I

1. a) List the potential benefits of studying programming language concept? 7M
   b) Discuss about the various programming domains and their associative languages? 7M

OR

2. a) Explain different aspects of the costs of a programming language? 7M
   b) Explain syntax of a “for” statement in PASCAL using BNF Notation and syntax graphs? 7M

UNIT–II

3. a) Define a variable and what the attributes of a variable are? Elaborate on address of a variable? 8M
   b) List and explain the design issues of pointers? 6M

OR

4. a) Write a note on Boolean and relational expressions? 7M
   b) Discuss the advantages and disadvantages of mixed mode arithmetic expressions? 7M

UNIT–III

5. a) List what advantages does java’s break statement have over C’s and C++’s break statement? 7M
   b) Explain about Unconditional Statements and guarded commands with suitable examples? 7M

OR

6. a) Explain the design issues of subprograms? 8M
   b) Describe about Co routines? 6M

UNIT–IV

7. a) List the design issues for abstract data types? 7M
   b) Explain the object-oriented programming support in java? 7M

OR

8. a) Describe briefly about Monitors? 7M
   b) Describe how exception is handled in ADA with an example? 7M

UNIT–V

9. a) Analyze the importance of logic programming languages over functional programming languages? 7M
   b) Explain about the applications of logic programming? 7M

OR

10. a) Write about data types and structures of LISP and LISP interpreter? 7M
    b) List the ways in which ML is significantly different from scheme? 7M

***