Academic Year:2025-26   Semester: III

Subject: COMPUTER ORIENTED STATISTICAL METHODS

Course Code**:**   22MA301BS

Faculty Name: B. MEENA

PART-A

Q. No	Questions	Marks	BL	CO	Unit No
1	Define random variable and types of random variable with example	2	L1	CO1	I
2	If x is a discrete Random variable , Show that $E(ax+b) = a E (x) +b$	2	L1	CO1	I
3	If x is a discrete Random variable , Show that $V(aX+b)=a^2V(X)$	2	L1	CO1	I
4	If $f(x)=kx^2, 0<x<3$ is probability density function. Find k	2	L1	CO1	I
5	If X is a continuous Random variable and K is a constant. Show that $Var(KX)=K^2Var(X)$	2	L1	CO1	I
6	Define covariance of random variables.	2	L2	CO1	I
7	If X & Y are independent random variables with means 2,3 then find the mean of the random variable Z=2X-5Y	2	L1	C01	I
8	If X is a discrete random variable having probability distribution , find $p(x\leq 2)$ if <table><tr><td>X=x</td><td>1</td><td>2</td><td>3</td></tr><tr><td>P(X=x)</td><td>a</td><td>2a</td><td>a</td></tr></table>	2	L1	CO1	Ii
9	Explain binomial distribution , Poisson distribution	2	L2	CO2	II
10	Determine the binomial distribution for which the mean is 4 and variance 3.find $p(X\geq 1)$.	2	L1	CO2	II
11	Find the value of n and p of the binomial	2	L1	CO2	II

	distribution for which mean is 4 and variance3				
12	If the probability of a defective bolt is 0.2 ,find mean for the distribution of bolts in a total of 400.	2	L1	CO2	II
13	Derive the mean of Poisson distribution	2	L1	CO2	II
14	Classify properties of normal distribution	2	L1	CO2	II
15	Write applications of Normal distribution?	2	L1	CO2	II
16	Define population, sample, parameter & statistics.	2	L1	CO3	III
17	(i)Define small sample, large sample. (ii) What is the value of the correction factor if n=5, N=200.	2	L1	CO3	III
18	How many different samples of size two can be chosen, from a finite population of size 25.	2	L1	C03	III
	UPTO MID1				
19	Explain about Central limit theorem.	2	L1	CO2	III
20	Demonstrate Properties of t- distribution.	2	L2	CO3	III
21	Define (i) F – test (ii) chi-square test	2	L1	CO1	III
22	Define degrees of Freedom.Find t values at level of significance 0.05 (one tail test) i) degree of freedom v = 16 ii) degree of freedom v = 10 .	2	L1	CO1	III
23	Define Estimate and Estimator. Give example.	2	L1	CO4	IV
24	Explain Types of Estimation and properties of Estimation	2	L2	CO4	IV
25	Define Correlation and Types of Correlation.	2	L1	CO4	IV
26	Define Rank Correlation Coefficient and Properties.	2	L1	CO1	IV
27	Explain regression,	2	L2	CO2	IV
28	Explain correlation coefficient.	2	L2	CO2	IV
29	Define One tail and Two Tail Test	2	L1	CO1	V

30	Explain null hypothesis and alternative hypothesis.	2	L2	CO2	V
31	Define type I and type II errors.	2	L1	CO1	V
32	Define Critical Region and Level of significance.	2	L1	CO1	V
33	Define Student's t –test, F-Test	2	L1	CO1	V
34	Explain Chi -Square Test as a Goodness of Fit and Conditions	2	L1	CO2	V

PART-B

Q .No	Questions	Marks	BL	CO	Unit No
1	A random variable X has the following probability function: 	X	0	1	2	3	4	5	6	7
---	---	---	---	---	---	---	---	---
P(x)	0	K	2k	2k	3k	k^2	$2k^2$	$7k^2+k$ | Evaluate (i) k (ii) P(X<6),P(X≥6), P(0<X<5) and p(0≤X≤4) (iii) mean (iv) variance(v)Determine the Distribution Function of X	8	L5	CO1	I
2	A random variable X has the following probability function: 	X	0	1	2	3	4	5	6
---	---	---	---	---	---	---	---
P(X)	k	3k	5k	7k	9k	11k	13k	 (i) Determine k,(ii) Evaluate P(X<4), (ii) P(X≥5),P(3<X≤6), (iii) what will be the minimum value of k so that P(X≤2) > 0.3, (iv) Determine the Distribution function of X, (v) Mean ,(vi) Variance.	8	L5	CO1	I
3	Let X denote the maximum of the two numbers that appear when a pair of fair dice is thrown once. Determine the (i) Discrete probability distribution (ii) Expectation (iii) variance.	4	L5	CO1	I
4	A sample of 4 items is selected at random from a box containing 12 items of which 5 are defective. Find the expected number E of defective items.	4	L1	CO1	I
5	A random variable X is defined as the sum of the numbers on the faces when two dice are thrown. Find the mean and variance of X.	4	L1	CO1	I
6	A fair die is tossed. Let the Random Variable X denote	4	L1	CO1	I

	the twice the number appearing on the die.(i) Write the Probability distribution of X.(ii) The mean (iii) The Variance.				
7	If a random variable has the probability density function $f(x) = \begin{cases} k(x^2 - 1), & -1 \le x \le 3. \\ 0, & elsewhere \end{cases}$ Find value of k and $p(\frac{1}{2} \le x \le \frac{5}{2})$.	4	L2	CO1	I
8	Suppose a continuous random variable x has the probability density $f(x) = kx^2e^{-x}$, for x>0 , Find (i) K (ii) Mean (iii) variance.	8	L2	CO1	I
9	If a continuous random variable has the probability density function $f(x) = \begin{cases} kxe^{-\lambda x} ; x \ge 0 ; \ \lambda > 0 ; \\ 0 \quad ; otherwise \end{cases}$ Determine (i) k (ii) Mean (iii) Variance	8	L2	CO1	I
10	Probability density function of random variable x is $f(x) = \begin{cases} \frac{1}{2} sinx, for \ 0 < x < \pi \\ 0, for x \le 0 \end{cases}$ Evaluate mean, mode and median of the distribution and Find the probability between 0 and $\frac{\pi}{2}$.	8	L5	CO1	I
11	Is the function defined a density function $f(x) = \begin{cases} e^{-x} , x \ge 0 \\ 0, x < 0 \end{cases}$ If so determine the probability that the variate this density will fall in the interval (1,2)?find the cumulative probability F(2)	4	L5	CO1	I
12	The probability of a defective bolt is 1/8, find (i) the mean (ii) The variance for the distribution of defective bolts of 640.	4	L1	CO2	II
13	Out of 800 families with 5 children each, how many would you expect to have (i)3 boys (ii) 5 girls (iii) either 2 or 3 boys (iv) atleast one boy? Assume equal probability for Boys and Girls.	4	L1	CO2	II
14	20 % of items produced from a factory are defective. Evaluate the probability that in a sample of 5 chooser at random (i) none is defective (ii) one is defective (iii) P (1<x<4).	4	L5	CO2	II

15	Derive the mean and variance of a Binomial distribution.	8	L6	CO2	II
16	The probabilities of a man hitting a target is 1/3 .If he fires 6 times, find the probability that he fires (i) at the most 5 times (ii) exactly once (iii) At least two times.	8	L1	CO2	II
17	The mean of B.D is 3 and variance is $\frac{9}{4}$. (i) Find the value of n (ii) P(X≥ 7) $(iii)\ P(1 \le x \le 6)$	4	L1	CO2	II
18	Determine Poisson frequency distribution for the following data 	x	0	1	2	3	4	 	f(x)	109	65	22	3	1		8	L5	CO2	II
19	The average number of phone calls /minute coming into a switch board between 2 p.m. and 4.p.m is 2.5.Determine the probability that during one particular minute there will be (i) 4 or fewer (ii) more than 6 calls.	4	L5	CO2	II
20	If x is a poisson variant such that 3 P(x=4) = $\frac{1}{2}$ P(x=2) +P(x=0) then find (i) mean (ii) P(x≤ 2).	4	L2	CO2	II
21	In a normal distribution 40% of the items are under 30 and 15% are over 60. Find the mean and variance of the distribution	4	L1	CO2	II
22	If X is a normal variate with mean 30 and standard deviation 5. Find the probabilities that i) 26<X<40 ii) X>45	4	L1	CO2	II
23	If the masses of 300 students are normally distributed with mean 68 kgs and standard deviation 3 kgs. How many students have masses (i) greater than 72 kg (ii) less than or equal to 64 kg (iii) between 65 and 71 kg inclusive.	8	L3	CO2	II
24	A population consist of 1,2,3,4,5,6 . Consider all samples of size 2 which can be drawn without replacement . (a)Find mean , standard deviation of the population; (b) The mean of sampling distribution of means; (c) The standard deviation of sampling distribution of means.	4	L1	CO3	III
25	If the population is 2,3,6,8,11. Consider all samples of size 2 which can be drawn with replacement . (a)Find mean , standard deviation of the population. (b) The mean of sampling distribution of means. (c) The standard deviation of sampling distribution of means.	4	L1	CO3	III

Table for Question 18:

x	0	1	2	3	4
f(x)	109	65	22	3	1

26	If the population is 3,6,9,15,27. Consider all samples of size 2 which can be drawn with replacement . (a)Find mean , standard deviation of the population. (b) The mean of sampling distribution of means. (c) The standard deviation of sampling distribution of means.	4	L1	CO3	III
27	A population consist of 5,10,14,18,13,24 . Consider all samples of size 2 which can be drawn without replacement . (a)Find mean , standard deviation of the population; (b) The mean of sampling distribution of means; (c) The standard deviation of sampling distribution of means.	4	L1	CO3	III

UPTO MID1

28	What is the effect on standard error ,if a sample is taken from an infinite population of sample size is increased from 400 to 900.	4	L1	CO3	III
29	The mean of certain normal population is equal the standard error of the mean of the samples of 64 from that distribution. Find the probability that the mean of the sample size 36 will be negative	4	L1	C03	III
30	A random sample of size 100 is taken from an infinite Population having the mean $\mu = 76$ & $variance\ \sigma^2$ =256.What is the probability that $\bar{x}$ will be between 75 &78	4	L1	CO3	III
31	Explain t-Distribution, properties and Applications of t-Distribution and Explain Degrees Of Freedom.	4	L2	CO3	III
32	Explain F-Distribution, properties and Applications of F-Distribution	4	L2	CO3	III
33	Explain chi square -Distribution, properties and Applications and conditions	4	L2	CO3	III
34	Find Karl Pearson's coefficient of correlation from the following data	8	L1	CO4	IV

Wages	100	101	102	102	100	99	97	98	96	95
Cost of living	98	99	99	97	95	92	95	94	90	91

35	Evaluate rank correlation coefficient for the following data	4	L5	CO4	IV

x	68	64	75	50	64	80	75	40	55	64
y	62	58	68	45	81	60	68	48	50	70

36	From the following data calculate the rank correlation coefficient making adjustment for tied ranks.	8	L2	CO4	IV

x	48	33	40	9	16	16	65	24	16	57
y	13	13	24	6	15	4	20	9	6	19

37	Calculate the regression equations of Y on X from the data given below , taking deviations from actual means of X and Y. Also Estimate the likely demand when the price is Rs.20.	8	L2	CO4	IV

Price (Rs)	10	12	13	12	16	15
Amount Demanded	40	38	43	45	37	43

38	The mean and s.d. of population are 11,795 and 14,054 respectively if n = 50, $\bar{x} = 11795$. Construct 95% confidence interval for the mean.	4	L4	CO4	IV

39	A random sample of size 100 has a standard deviation of 5 what can u say about maximum error with 95% confidence.	4	L1	CO4	IV

40	Construct a straight line to the form for the following data	4	L3	CO4	IV

X	1	2	3	4	5
Y	14	27	40	55	68

41	By the method of least squares Construct a parabola $y = a + bx + cx^2$ for the following data	4	L3	CO4	IV

X	0	1	2	3	4
Y	1	1.8	1.3	2.5	6.3

42	Find the coefficient of correlation to the following data	4	L1	CO4	1V

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

43	In a sample of 1000 people in Karnataka 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% level of significance. Apply the test significance of single proportion	4	L3	CO5	V
44	A sample of 64 students has a mean weight of 70kgs. Can this be regarded as sample from a population with mean weight 56kgs and standard deviation of 25kgs. Explain the hypothesis for single mean.	4	L2	CO5	V
45	Samples of students were drawn from two universities and from their weights in kilograms mean and S.D are calculated and shown below.Make a large sample test for the significance of difference between means.	4	L6	CO5	V

	MEAN	S.D	SAMPLE SIZE
University-A	55	10	400
University-B	57	15	100

46	A random sample of 400 men and 600 women in a locality were asked whether they would like to have a bus stop near their residence. 200 men and 325 women are in favour of the proposal test for the significant difference between two proportions at 5% level.	4	L6	CO5	V
47	A Random sample of 10 boys had the following I.Q.'s 70,120,110,101,88,83,95,98,107 and 100 a. Do these data support the assumption of a population mean I.Q. of 100? b. Find a reasonable range in which most of the mean I.Q. values of sample of 10 boys lie	8	L1	CO5	V
48	Two compare two kinds of bumper guards , 6 of each kind were mounted on a car and then the car was run into a concrete wall . The following are the costs of repairs	8	L3	CO5	V

Guard 1	107	148	123	165	102	119
Guard 2	134	115	112	151	133	129

Use the 0.01 level of significance to test for the difference between two sample means is significant.

49	The Mean of two random samples of sizes 9 and 7 are 196.42 and 198.82 respectively. The Sum of squares of the deviations from the mean are 26.94 and 18.73 respectively. Can the sample be considered to have been drawn from the Same normal population.	4	L4	CO5	V
50	The nicotine content in milligrams of the samples of tobacco was found as follows. Can it be said that the two samples come from normal population with the same mean.	8	L5	CO5	V
51	Pumpkins were grown under two experimental conditions. Two Random samples of 11 and 9 pumpkins, show the sample standard deviations of their weights as 0.8 and 0.5 respectively. Assuming that the weight distributions are normal, test for hypothesis that the variances are equal.	4	L4	CO5	V
52	From the following data, find whether there is any significant liking in the habit of taking soft drinks among the categories of employees. Apply chi- square test .	8	L3	CO5	V

For question 50:

Sample A	24	27	26	21	25	-
Sample B	27	30	28	31	24	36

For question 52:

Employees

Soft drinks	Clerks	Teachers	Officers
Pepsi	10	25	65
Thums up	15	30	65
Fanta	50	60	30

CMR Techical Campus
B. Tech. Mid Question Bank (R22 Regulation)
Academic Year: 2025-2026   Semester: III

Subject Name: Digital Electronics [22EC302ES] Faculty

Name: N.Renuka

PART A

QN	Questions	Marks	BL	CO	UNIT
1	Convert $(36.52)_8$ to Decimal and Hexadecimal	2M	L3	CO1	I
2	Subtract $(745.81)_{10}$- $(436.62)_{10}$ using 10's Complement	2M	L3	CO1	I
3	Classify Binary Codes.	2M	L2	CO1	I
4	State Duality Principle.	2M	L1	CO1	I
5	Express the Boolean function F = A' + BC as standard sum of minterms.	2M	L2	CO1	I
6	List out universal gates and why they are called as universal gates?	2M	L1	CO1	I
7	Map the expression to minterms $f = A'B'C + AB'C + A'BC' + ABC$	2M	L2	CO2	II
8	Map the expression to maxterms $f = (A + B + C)(A' + B + C')(A' + B' + C')(A + B' + C')(A' + B' + C)$	2M	L2	CO2	II
9	Reduce the expression $f = \Sigma m(0,2,3,4,5,6)$ using k-map	2M	L3	CO2	II
10	Reduce the expression $f = \Pi M(0,1,2,3,4,7)$ using k-map	2M	L3	CO2	II
11	Reduce the expression $f = \Sigma m(0,2,3,4)$ using k-map and implement using AOI gates.	2M	L3	CO2	II
12	Reduce the expression = (1,2,3,7) using k-map and implement using AOI gate	2M	L3	CO2	II
13	Define combinational circuits and write design steps.	2M	L1	CO3	III
14	Explain Half subtractor with truth table and logic symbols.	2M	L2	CO3	III
15	Draw Full adder using Half Adder.	2M	L2	CO3	III
16	Describe 1-bit Magnitude Comparator	2M	L2	CO3	III
17	Brief about Multiplexer and Demultiplexers.	2M	L2	CO3	III
18	Discuss the 2 to 4 decoder with truth table	2M	L2	CO3	III
19	Differentiate Latch and Flip-Flop	2M	L4	CO4	IV
20	Write excitation table of D and JK flip-flop.	2M	L2	CO4	IV
21	Discuss the different types of shift registers	2M	L2	CO4	IV
22	List out the applications of Shift Registers	2M	L1	CO4	IV
23	Write characteristic equations of SR, J-K, D, and T Flip-Flops.	2M	L2	CO4	IV
24	Distinguish between synchronous and asynchronous counters.	2M	L4	CO4	IV
25	List out different types of RAM Memories	2M	L1	CO5	V
26	Encode the message bits $(1110)_2$ into 7-bit even parity hamming code.	2M	L5	CO5	V
27	Discuss the different types of ROM	2M	L2	CO5	V
28	Classify the PLDs	2M	L2	CO5	V
29	Compare PROM, PLA and PAL	2M	L4	CO5	V
30	List out IC classification based on Number of Transistors	2M	L1	CO5	V

PART- B

QN	Questions	Marks	BL	CO	UNIT
1	i) Convert the given binary number to equivalent gray code 0011, 0101, 1110, 0010. ii) Write the numbers 9, 6 and 3 in terms of following weighted binary codes a) 4,2,2,1 b) 8,4,2,1	4M	L3	CO1	I
2	11010-10000 Perform subtraction using 1's and 2's Complement method.	4M	L3	CO1	I
3	Prove Commutative, Associative and Distributive Laws of Boolean Algebra.	4M	L3	CO1	I
4	State and Prove DeMorgans Theorm.	4M	L3	CO1	I
5	Prove that $AB + A'C + BC = AB + A'C$ (Consensus Theorem) $AB + A'C = (A + C)(A' + B)$ (Transposition Theorem)	4M	L5	CO1	I
6	Find the complement and dual of the function and then reduce it to minimum number of literals $f = [(ab)'a][(ab)'b]$	4M	L3	CO1	I
7	i) Convert $(8E47.AB)_{16}$ to Decimal, Binary and Octal numbers. ii) $(163.875)_{10}$ to Binary, Octal and Hexadecimal	8M	L3	CO1	I
8	i) Expand the given Boolean expression into maxterms and minterms. a) A + B'C b) $A(A'+ B)(A'+ B + C')$ ii) Write the Boolean Expression, Truth Table, Logic Symbol of Basic Gates, Universal Gates and Derived Gates	8M	L3	CO1	I
9	i)State and prove the following Boolean laws: a) Redundant Literal Rule b) Absorption Law ii) Reduce the Boolean expression $f = A[B + C'(AB + AC')']$	8M	L5	CO1	I
10	Minimize $f = \sum$ m(0,2,3,4,5,6,9,12,14,15) using k map and implement with AOI logic.	4M	L3	CO2	II
11	Minimize the following expressions using K-map and realize using NAND Gates. F= $\prod$ M (0,1,2,4,5,6,9,11,12,13,14,15)	4M	L3	CO2	II
12	Reduce the Boolean expression using K-map and implement using NOR gates F= $\sum$ m (9,10,12)+d(3,5,6,7,11,13,14,15)	4M	L3	CO2	II
13	Reduce $\prod$ M (1,2,3,5,6,7,8,9,12,13) using K-map and implement using NOR gates.	4M	L3	CO2	II
14	Minimize the following functions using k map F(A,B,C,D) = $\sum$ m(0,1,2,5,8,15) + d(6,7,10)	4M	L3	CO2	II
15	Minimize the following functions using k map F(A,B,C,D) = $\prod$ M(0,1,3,56,7,9,10,11,12,13,15)	4M	L3	CO2	II
16	Reduce the Boolean expression using K-map and implement using both the universal gates f= $\sum$ m (0,1,3,4,5,6,7,13,15)	8M	L3	CO2	II
17	i) Convert the Boolean expression $A + \bar{B}\bar{C}$ to minterms and reduce using K-map. ii) Obtain the maxterms for the Boolean expression $A(B + \bar{C})$ and minimize using K-map.	8M	L3	CO2	II

18	Minimize the following expressions using K-map and realize using NAND and NOR Gates. $f = \Sigma m$ (1, 3, 5, 8, 9, 11, 15) +d (2, 13).	8M	L3	CO2	II
19	Design Full Adder.	4M	L6	CO3	III
20	Design Full Subtractor.	4M	L6	CO3	III
21	Design BCD Adder.	4M	L6	CO3	III
22	Design a 2-bit Magnitude Comparator.	4M	L6	CO3	III
23	Design Octal to Binary Encoder.	4M	L6	CO3	III
24	Explain i) 4 to 1 MUX. ii)1-to-8 DEMUX.	4M	L3	CO3	III
25	Discuss the design procedure of Sequential Circuit Design	4M	L2	CO4	IV
26	Give logic circuit diagram, characteristic equation, truth table and excitation table of the following flip-flops. (i) SR Flip-Flop (ii) D Flip-Flop	4M	L2	CO4	IV
27	Give logic circuit diagram, characteristic equation, truth table and excitation table of the following flip-flops. (i) J-K Flip-Flop (ii) T Flip-Flop	4M	L2	CO4	IV
28	Design Mod-6 asynchronous Counter	4M	L6	CO4	IV
29	Design Synchronous Mod-10 counter using Flip-flop	4M	L6	CO4	IV
30	Explain Shift register (SISO, SIPO, PISO, PIPO)	4M	L2	CO4	IV
31	i) Convert JK to T flip-flop ii) Convert SR flip-flop to D flip-flop	8M	L3	CO4	IV
32	Explain Ring and Johnson (Twisted ring) counter	8M	L2	CO4	IV
33	i) Design 3-bit synchronous DOWN counter ii) Design 3 bit asynchronous UP counter	8M	L6	CO4	IV
34	Explain Memory Decoding	4M	L2	CO5	V
35	Design a combinational circuit using a ROM. The circuit accepts a three-bit number and outputs a binary number equal to the square of the input number.	4M	L6	CO5	V
36	Explain Classification of IC	4M	L2	CO5	V
37	Give a brief comparison between various logic families	4M	L3	CO5	V
38	F1 = AB' + AC + A'BC' F2 = (AC + BC)' Implement using PAL	4M	L4	CO5	V
39	Implement Full adder using PLA	4M	L4	CO5	V
40	Device a single error correcting code for a 11 bit group 01101110101. Test the following hamming code sequence for a 11 bit message and correct it if necessary 101001011101011	8M	L4	CO5	V
41	Realize basic logic gates using Diodes and transistors.	8M	L4	CO5	V
42	The message below coded in the 7-bit Hamming Code is transmitted through a noisy channel. Decode the message assuming that at most a single error occured in each code word. 1001001, 0111001, 1110110, 0011011	8M	L4	CO5	V

CMR TECHNICAL CAMPUS

B. Tech. Mid Question Bank (R22 Regulation)

Academic Year: 2025-26   Semester: III

Subject Name: Programming with Python

Faculty Name: Dr N Bhaskar, Dr S Rao Chintalapudi, Ms M Sireesha, Mr M Madhusudhan, Mr G Pavan Kumar, Mr B Ramji, Mr P Vishnu

PART-A

Q.No	Mid -I Questions	Marks	BL	CO	Unit No
1	State any four applications of Python.	2	L1	CO1	I
2	Mention the key features of Python.	2	L1	CO1	I
3	How would you determine whether any element is present in a given sequence?	2	L4	CO1	I
4	Identify the Conditional statements in Python.	2	L2	CO1	I
5	Execute a python program to print the prime numbers between 1 to 100.	2	L3	CO1	I
6	Explain the advantage of using else statement with for loop.	2	L2	CO1	I
7	List our the main difference between a List and an Array.	2	L1	CO2	II
8	How would you determine length of an array and size of each element in an array ?	2	L4	CO2	II
9	Describe size and shape operations in Numpy array.	2	L2	CO2	II
10	Implement a python program to accept a string and display each word and its length.	2	L3	CO2	II
11	Define remove and pop methods in Python Arrays.	2	L2	CO2	II
12	State a python program to find the largest and second largest element in an array.	2	L1	CO2	II
13	Explain how variable length arguments can be used in a function with the help of an example..	2	L2	CO3	III
14	Implement a list using range() in python.	2	L3	CO3	III
15	Identify an example to show the usage of List Comprehension.	2	L2	CO3	III
MID-II Questions					
16	Recognize the difference between tuple and list.	2	L2	CO3	III
17	What is a Dictionary in Python? Give an example.	2	L1	CO3	III
18	Analyze the sorting of dictionaries using a key.	2	L4	CO3	III
19	List File attributes in Python.	2	L1	CO4	IV
20	List various ways of importing a module.	2	L1	CO4	IV
21	Identify some common exceptions in python.	2	L2	CO4	IV
22	Examine how do you handle the exception inside a program when you try to open a non-existent file.	2	L4	CO4	IV
23	Demonstrate the purpose of the raise statement in Python	2	L3	CO4	IV
24	Explain an example to show the purpose of finally block.	2	L2	CO4	IV
25	Define constructor method in Python.	2	L1	CO5	V
26	Identify the syntax of multilevel inheritance	2	L2	CO5	V

Q.No		Marks	BL	CO	
27	List the metacharacter in regular expression that matches any character other than the newline character.	2	L1	CO5	V
28	Analyze the method which returns the name of the thread in threading module.	2	L4	CO5	V
29	Interpret the purpose of the self keyword in methods.	2	L3	CO5	V
30	Discuss abstract class in Python.	2	L2	CO5	V

PART-B

Q.No	MID-I Questions	Marks	BL	CO	Unit No
1	List and explain different arithmetic operators supported by Python. Discuss about their precedence and associativity. ?	4	L1	CO1	I
2	Implement a Python program to compute distance between two points in a 2- dimensional coordinate system.	4	L3	CO1	I
3	Explain in detail about python type conversion	4	L2	CO1	I
4	Examine how to calculate the total amount to be paid by the user after reducing the 10% discount on purchase more than 1000 rupees	4	L4	CO1	I
5	Explain about the following Decision control Statements. i)if-else ii)nested if-else iii)if-elif-else	4	L2	CO1	I
6	State the usage of while loop in python. Write a python program to find sum of n natural numbers using while loop.	4	L1	CO1	I
7	Explain in detail about the looping statements in Python with suitable examples.	8	L2	CO1	I
8	Discuss the number data types in Python and Detail the methods to convert from one number system to other.	8	L2	CO1	I
9	Define the following statements with examples a) break b) continue c) pass d) input	8	L1	CO1	I
10	Demonstrate the following array operations with suitable examples. i) Remove ii) index iii) count	4	L3	CO2	II
11	Examine a Python program that removes all duplicate elements from an array and returns a new array	4	L4	CO2	II
12	Discuss about creating numpy arrays and their operations.	4	L2	CO2	II
13	Write a python program to compute addition, multiplication of matrices using numpy.	4	L1	CO2	II
14	Explain about different string operations using suitable python program.	4	L2	CO2	II
15	State the importance of reshaping and flattening a numpy array with suitable example.	4	L1	CO2	II
16	Classify Array methods with suitable examples.	8	L2	CO2	II
17	Discuss various string handling methods with suitable examples	8	L2	CO2	II
18	List the differences between Arrays and Lists with suitable examples	8	L2	CO2	II

19	Define what is a function. Explain about Function declaration, definition and function call in Python.	4	L1	CO3	III
20	Discuss the following with suitable example. i) Lambda function ii) Map function iii) Reduce function	4	L2	CO3	III
21	Examine List Comprehension. Write a python program to find even numbers in a list using List Comprehension.	4	L4	CO3	III
MID-II Questions					
22	1.Discuss the following dictionary methods a)fromkeys() b) setdefault() c) update()	4	L2	CO3	III
23	Describe with an example to sort Dictionary Items.	4	L2	CO3	III
24	Write about Tuple methods with examples	4	L1	CO3	III
25	Demonstrate seek() and tell() methods in file handling with an example.	4	L3	CO4	IV
26	Write a short note on different methods to read data from a file.	4	L1	CO4	IV
27	Explain Picking and unpicking with the help of an example.	4	L2	CO4	IV
28	Discuss any three common exceptions in Python with examples.	4	L2	CO4	IV
29	Examine a Python program to implement single try block with multiple except blocks and trace the code for its execution?	4	L4	CO4	IV
30	Explain the purpose of 'else' and 'finally' blocks in exception handling with a python program	4	L2	CO4	IV
31	Discuss various directory methods in OS module.	8	L2	CO4	IV
32	Explain the utility of Assert and Raise keywords. Show how to handle various exceptions with examples.	8	L2	CO4	IV
33	Describe how can you create your own exceptions in Python? Write a program to print the square root of a number, raise an exception if number is negative.	8	L2	CO4	IV
34	With the help of an example demonstrate multilevel inheritance and multiple inheritance	4	L3	CO5	V
35	Analyze init() method with the help of an example.	4	L4	CO5	V
36	With the help of an example explain data encapsulation in python class.	4	L2	CO5	V
37	Identify the difference between re.search() and re.match() in regular expressions.	4	L2	CO5	V
38	Discuss the following metacharacters a) \w b) \s c) \A d) ? e) {m}	4	L2	CO5	V

39	Define the term multithreading. Give its advantages.	4	L1	CO5	V
40	Write short notes on abstract class. State the difference between abstract class and interfaces	8	L1	CO5	V
41	Discuss re.Ignorecase and re.mutliline flags in regular expressions. Write a python program to check that a string contains only a certain set of characters (in this case a-z, A-Z and 0-9)	8	L2	CO5	V
42	Explain creating a thread using threading module.	8	L2	CO5	V

PART-A

Q.No	Questions	Marks	BL	CO	Unit No
	MID-I Questions				
1	Mention the bit size of various registers used in basic computer	2	L1	CO1	I
2	Draw a block diagram of Digital computer	2	L4	CO1	I
3	Convert the AB.CD to binary, octal, decimal.	2	L2	CO1	I
4	Show the block diagram of the hardware that implements the following register transfer statements $P:R_1 \leftarrow R_2$	2	L1	CO1	I
5	Obtain the 1's and 2's complements of the following eight-digit binary numbers: 10101110; 10000001; 10000000; 00000001.	2	L2	CO1	I
6	Define Program Counter and Accumulator.	2	L2	CO1	I
7	Write the differences between hardwired control and micro programmed control unit.	2	L1	CO2	II
8	Explain Instruction set Completeness.	2	L2	CO2	II
9	Write three types of Instruction formats.	2	L1	CO2	II
10	Write a short note on stored program organization.	2	L1	CO2	II
11	The following transfer statements specify a memory. Explain the memory operation in each case. (i) R2 M[AR] (ii) M[AR] R3 (iii) R5 M[R5]	2	L2	CO2	II
12	Explain the importance of control memory.	2	L2	CO2	II
13	Write Zero Address Instructions for the expression A*B+C.	2	L1	CO3	III
14	Give the Format of All Simple Instructions and Micro Instruction?	2	L1	CO3	III
15	What is Indexed Addressing Mode?	2	L1	CO3	III

PART-B

Q.No	Questions	Marks	BL	CO	Unit No
1	Explain about Computer Architecture, Computer Organization, Computer Design.	4	L2	CO1	I
2	Explain all Shift Micro Operations.	4	L2	CO1	I
3	Explain all Logical Micro operations.	4	L2	CO1	I
4	What is micro-operation. Write different types of it.	4	L1	CO1	I
5	What are the differences between fixed point representation and floating-point representation	4	L2	CO1	I
6	Draw and explain Arithmetic circuit	4	L4	CO1	I
7	Represent 1256.125 in IEEE 754 Double Precision Format.	8	L3	CO1	I
8	Explain about Common Bus and memory transfer using multiplexer	8	L1	CO1	I
9	Explain about Arithmetic Logic Shift Unit.	8	L2	CO1	I
10	Draw Control unit of a basic computer.	4	L3	CO2	II
11	What are the different types of Computer Registers and write their function.	4	L1	CO2	II
12	Explain Register Reference Instructions.	4	L2	CO2	II
13	Explain about Design of Control Unit for Micro Program unit.	4	L2	CO2	II
14	Discus about Instruction Cycle.	4	L2	CO2	II
15	Explain and Input Output instructions.	4	L1	CO2	II
16	Discus different types memory reference instructions	8	L2	CO2	II
17	Explain program interrupt and interrupt cycle with Input-Output Instructions.	8	L2	CO2	II
18	Discuss about timing and control unit.	8	L2	CO2	II
19	Explain Instruction formats based on type of address	4	L2	CO3	III
20	Explain Control Word.	4	L2	CO3	III
21	Write about any 4 addressing modes.	4	L2	CO3	III
22	Explain general register organization with example.	4	L2	CO3	III

MID-I Questions

CMR Technical Campus
B. Tech. Mid Question Bank (R22 Regulation)

Academic Year: 2025-26   **Semester: III**

Subject Name: Object Oriented Programming Through Java

Faculty Name: Dr Bagam Laxmaiah, S Raghavendra

PART-A

Q.No	Questions	Marks	BL	CO	Unit No
	MID-I Questions				
1	Define class and object.	2	L1	CO1	1
2	Explain the usage of super keyword in java.	2	L2	CO1	1
3	What is a Constructor Explain its types?	2	L1	CO1	1
4	Outline the concept of Object-Oriented Programming.	2	L2	CO1	1
5	Illustrate the method overloading in Java.	2	L2	CO1	1
6	What is an abstract class?	2	L1	CO1	1
7	What is a package?	2	L1	CO2	2
8	What is an interface?	2	L1	CO2	2
9	List byte streams and character streams.	2	L1	CO2	2
10	Describe how to implement an interface.	2	L2	CO2	2
11	How would you import a user-defined package in a Java program?	2	L1	CO2	2
12	Show auto boxing.	2	L2	CO2	2
13	Define Exception. How to handle Exceptions in java?	2	L1	CO3	3
14	Explain the advantages of Exception Handling.	2	L2	CO3	3
15	What are the different types of exceptions in Java?	2	L1	CO3	3

PART-B

Q.No	Questions	Marks	BL	CO	Unit No
	MID-I Questions				
1	What is a String? Explain different String Handling functions available in Java	4	L2	CO1	1
2	Explain the forms of inheritance in Java.	4	L2	CO1	1
3	Differentiate between Method overloading and Method overriding.	4	L4	CO1	1
4	Demonstrate abstract class with example.	4	L2	CO1	1
5	What is method overriding in Java? Provide an example	4	L1	CO1	1
6	Identify final keyword in various ways.	4	L3	CO1	1
7	Define Inheritance. Explain Different types of Inheritance available in Java.	8	L2	CO1	1
8	Explain in-detail about Java Buzzwords.	8	L2	CO1	1
9	Implement polymorphism and types of polymorphism with example.	8	L3	CO1	1
10	Develop a user-defined package in a Java program?	4	L3	CO2	2
11	Write a java Program that uses a nested interface.	4	L1	CO2	2
12	Discuss super keyword.	4	L2	CO2	2

13	Implement a program to copy the contents of one file into another file.	4	L3	CO2	2
14	Explain different Access specifier available in Java.	4	L4	CO2	2
15	Define File class? Explain Random Access File operations with access modes.	4	L2	CO2	2
16	Does Java support multiple inheritance? Justify your answer.	8	L5	CO2	2
17	Create a package. How many ways to importing a package with example?	8	L6	CO2	2
18	Define a stream. Illustrate the stream classes hierarchy.	8	L3	CO2	2
19	Explain the following. a) try b) catch c) finally	4	L2	CO3	3
20	Differentiate between checked and unchecked exceptions.	4	L4	CO3	3
21	Compare throw and throws keywords.	4	L2	CO3	3
22	Illustrate the creation of user defined exception with an example.	4	L2	CO3	3