FYBCS|2024-25

Exam Seat No [ ]

Total No. of Questions: 03

Total No. of Pages: 01

Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

(Autonomous)

Affiliated to Savitribai Phule Pune University, Pune

(2)

Class: FYBA/FYBCom/FYBSc (Plain)/FYBSc (Computer)/FYBVoc/FYBBACA/FYBBA/FYBLib

Subject: Functional English

Semester: II

Subject Code (ENG-181-AEC): Functional English

(NEP 2023 Pattern)

Time: 1 Hour **(No. of Credit: 2)** **Marks: 30**

Instructions: a. All questions are compulsory.
b. Figures to right indicate full marks.

Q. 1. (A) Attempt <u>each</u> of the following. **(04)**

1. I hate love stories. (Change into passive voice)
2. I am being followed by my friends. (Change into active voice)
3. I was writing an email. (Change into passive voice)
4. A case has been filed by the CBI. (Change into active voice)

(B)Attempt <u>each</u> of the following. **(06)**

1. Complete your work. You leave the office. (Join the sentences with 'before')
2. It was raining. We didn't go out. (Join the sentences with 'because')
3. Umesh ran all the way to school. He was late. (join the sentences with 'though')

Q. 2. Attempt <u>any four</u> of the following. **(12)**

1. Write about the character of Gangu in *The Child.*
2. Write about the character of the narrator in *The Child.*
3. Write about the journey of Najab across the desert in *Love Across the Salt Desert.*
4. Write about the love story of Najab and Fatimah in *Love Across the Salt Desert.*
5. What message do you get from *Still I Rise*?
6. What is the significance of war imagery in *Success is Counted Sweetest*?

Q. 3.Attempt <u>any two</u> of the following. **(08)**

1. Write a letter to invite your friend to stay with you during the summer vacations.
2. Write an email in response to the vacancy advertised in *The Times of India* for the post of a teacher.
3. Use the following Idioms/Phrasal Verbs in your own sentences:
   a) to give up
   b) to go into action
   c) to turn off
   d) to keep well
4. Identify the following words as noun/verb/adverb/adjective:
   a) walk
   b) yellow
   c) intelligently
   d) theatre

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Q1. (A) Attempt **each** of the following (1 Marks each)

(i) Define an array.
(ii) What is static storage class?
(iii) Which do you mean by constant?
(iv) Write syntax of "Do---while "loop.

(B) Attempt **each** of the following (2 Marks each)

(i) What is a programming language?
(ii) Which are basic data types in C?
(iii) List out tokens in C.

Q2. Attempt any **four** of the following (3 Marks each)

(i) Explain logical operators in detail.
(ii) Explain entry controlled loop with example.
(iii) What is function? State its advantages & disadvantages
(iv) Write C program to calculate sum of digits using function.
(v) Write a C program accepts two integers and perform arithmetic operations
(vi) Explain logical operators in detail.

Q3. Attempt any **two** of the following (4 Marks each)

(i) Write an algorithm and draw flowchart to check given number is prime or not.
(ii) Differentiate between if-else and switch case statements with example. .
(iii) Write syntax of for loop. Write a c program to print following pattern.

1

1 2

1 2 3

(iv) Write a C program to calculate factorial of number using function.

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Instructions:

i) All questions are compulsory.
ii) Figures to the right indicate full marks.
iii) Use of calculator and statistical tables is allowed.
iv) Symbols and abbreviations have their usual meanings.

Q.1) Attempt each of the following

A) Select the correct option for each of the following: **[1 each]**

i) In inclusive types of classification
   a) Lower limits are excluded
   b) Upper limits are excluded
   c) Both the limits are excluded
   d) None of limits is excluded

ii) The mean of values 45, 35, 25, 55, 15 is :
   a) 35
   b) 30
   c) 25
   d) 15

iii) If the standard deviation of a dataset is **5**, then its variance is:
   a) 2.5
   b) 5
   c) 10
   d) 25

iv) Which of the following statements is true about kurtosis?
   a) It measures the peakedness of a frequency distribution.
   b) A high kurtosis value indicates a uniform distribution.
   c) A normal distribution has a kurtosis value of 1.
   d) Kurtosis is unrelated to the shape of the distribution.

B) Attempt each of the following: **[2 each]**

i) Define range and coefficient of range.
ii) State two merits of median.
iii) State the empirical relation between mean, mode and median

[P.T.O]

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A) Select the correct option for each of the following: **[1 each]**

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B) Attempt each of the following: **[2 each]**

i) Define range and coefficient of range.
ii) State two merits of median.
iii) State the empirical relation between mean, mode and median

[P.T.O]

Q.2) Attempt any four the following

i) The mean and standard deviation of a dataset are 250 and 40, respectively. Find the coefficient of variation (C.V.) and interpret the result

ii) Explain concept of skewness. State its types with help of frequency curve.

iii) Exhibit the following data by using Stem & leaf chart.
20,51,26,45,21,31,26,35,26,16,34,29, 38,17,39,24,25,26
Which stem has maximum leaves?

iv) Arithmetic mean of weight of 10 boys is 5 kg and arithmetic mean of 5 girls is 4 kg. Calculate A. M. of combined group of boys and girls.

v) Given that $X = 2$, $\mu_2 = 4$, $\mu_3 = 0$, $\mu_4 = 17$, find first four raw moments

vi) Define quartile and decile. Give their respective formula for continuous frequency distribution.

Q.3) Attempt any two the following: **[4 each]**

i) Compute standard deviation for the following data: 10, 10,10,10,10,10.

ii) The following results are available:

	Factory	
	Worker A	Worker B
Mean wages (Rs./ hour)	60	80
S.D of wages (Rs./ hour)	6	8

Which worker is more consistent? Justify your answer.

iii) The daily expenditure of 100 families is given below:-

Daily expenditure	30-40	40-50	50-60	60-70	70-80
No. of families	25	30	25	12	8

Find the median.

iv) Explain the construction of histogram and locate mode.

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[3 e

Exam Seat No. [ ]

Total No. of Questions: 3 **Total No. of pages: 01**

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Autonomous)
Affiliated to Savitribai Phule Pune University, Pune

F.Y. B.Sc. (Comp. Sci.) Electronics
COSEL-101-GEN: Basics of Electronics
Semester- I
(2024 Pattern)

Time: One Hour **(No. of Credits 02)** **Max. Marks : 30**

Instructions to the candidate:

i. All questions are compulsory.
ii. Neat labeled diagrams must be drawn whenever necessary.
iii. Use of calculator is allowed.
iv. Figures to the right indicates full marks.

Q.1.(A) Attempt **each** of the following (1 Marks each)
i) What is Cable?
ii) Give unit of capacitance.
iii) Define Adder.
iv) What is K-map?

(B) Attempt **each** of the following (2 Marks each)
i) Calculate equivalent parallel resistance of the resistors having value 2Ω, 4Ω and 6Ω.
ii) Calculate 2's compliment of 1100.
iii) What is logic gate? Give its types.

Q.2. Attempt any **four** of the following (3 Marks each)
i) State KVL and KCL with its mathematical expression.
ii) What is ideal source? Draw the symbol of ideal current and voltage source.
iii) Write a short note on low pass filter.
iv) What is excess 3 code? How to convert $(1001)_2$ into excess 3 code.
v) State and prove any three Boolean laws.
vi) Explain half subtractor in detail.

Q.3. Attempt any **two** of the following (4 Marks each)
i) Calculate value of resistance of the resistor from given color code:
a) Brown, Black, Orange
b) Red, Red, yellow
c) Yellow, Violet, Red, Gold
d) Blue, Orange, Orange, No color
ii) Explain LCR series resonance in detail with its frequency response.
iii) Perform following operations:

a) 1 0 1 0 + 0 1 1 0

b) 1 0 0 1 + 0 0 1 1

c) 0 1 1 0 - 0 0 0 1

d) 1 1 0 1 - 0 1 1 1

iv) Simplify the given expression using K-map: F(A,B,C,D) = (1,3,5,6,7,11,13,14).

Exam Seat No

[Total No. of Questions: 3] [Total No. of Pages: 1]

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
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Affiliated to Savitribai Phule Pune University, Pune

F. Y. B.Sc. (Computer Science) Semester-I
Subject: Computer Science
Course Code: COS-102-MJM
Course Title: DBMS-I
(2023 Pattern)

Time: 01.00 Hours **(No. of Credits 02)** **Max. Marks: 30**

Instructions to the candidates:

i. Figures to the right indicate full marks.
ii. Neat diagram must be drawn whenever necessary.
iii. All questions are compulsory.

Q1. (A) Attempt **each** of the following (1 Marks each)

(i) Define Integrity constraint.
(ii) Define single value attribute
(iii) Define Schema
(iv) What is the data independence?

(B) Attempt **each** of the following (2 Marks each)

(i) Define File organization & what the types of file organization.
(ii) Define strong entity with example.
(iii) What are the different ways to represent attribute.

Q2. Attempt any **four** of the following (3 Marks each)

(i) Explain Union operation in relational data model.
(ii) Explain difference between entity and attribute
(iii) Explain specialization with proper example.
(iv) Explain types of integrity constraint.
(v) What are the advantages of DBMS?
(vi) Draw ER diagram for college admission System.

Q3. Attempt any **two** of the following (4 Marks each)

(i) Write down the difference between RDBMS and DBMS.
(ii) Explain various phases of database design system.
(iii) Explain structure of database management system.
(iv) Explain different types of keys in relational model.

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Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati.

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Affiliated to Savitribai Phule Pune University, Pune

F.Y.B.Sc. (Computer Science)

Statistics

Semester I

UCSST112 : Probability and Some Discrete Probability Distributions

(2022 Pattern)

Time Allowed: Two Hours] **[Max Marks: 60**

Instructions:

i) All questions are compulsory.
ii) Figures to the right indicate full marks.
iii) Use of scientific calculator and statistical tables is allowed.
iv) Symbols and abbreviations have their usual meanings.

Q.1 A) Choose the correct alternative of the following. **[1 each]**

i) Relative Complement of A with respective to B is given by

a) $A \cap B'$ b) $A' \cup B$ c) $A' \cap B$ d) $(A \cap B)'$

ii) Let A be event defined on sample space, Ω. Which of the following statement is true?

a) $P(A) = 1$ b) $P(A) = 0$ c) $0 \leq P(A) \leq 1$ d) $0 \leq P(A) < 1$

iii) The p.m.f. of discrete random variable X is given by :-

X	1	2	3	4	5
P(x)	0.1	0.25	0.25	0.2	0.2

What is $P(2 < X < 5)$?

a) 0.9 b) 0.5 c) 0.45 d) 0.3

iv) If X ~B(n,p) and E(X) = 5 /3 ,var(X) = 10/9, then the value of q is

a) 1 /3 b) 2 /3 c) 1 /6 d) 5 /6

B) Attempt the following. **[2 each]**

i) Define random experiment.
ii) Suppose a pair of fair dice is thrown. Find the probability that both the faces are same.
iii) Explain the random variable and discrete random variable.
iv) State the p.m.f. of Poisson distribution.

P.T.O

Q. 2) Attempt any three of the following: **[4 each]**

i) Explain the concept of mutually exclusive and exhaustive events.

ii) Find the total number of permutations of the letters of the word " INDIAN".

iii) Prove that under certain conditions to be stated, Binomial distribution is approximated by Poisson distribution.

iv) Explain complement of an event with one illustration.

Q. 3) Attempt any two of the following: **[6 each]**

i) Two fare dice are rolled. Let A be the event that sum of the points on the uppermost faces is even and B be the event that the product of the two numbers is not greater than. List the elements contained in the events

a) $A \cup B$ b) $A \cap B$ c) $(A \cap B') \cup A'$

ii) Consider that there are three identical bags, A, B and C. The bag A contains 2 gold coins bag B contains 2 silver coins and bag C contains 1 silver and 1 gold coin. What is the probability of selecting bag A out of the three given that a gold coin is selected?

iii) Define discrete uniform probability distribution & obtain its mean and variance.

Q. 4) Attempt any two of the following: **[6 each]**

i) Define. If the probability that any person 65 years old will be dead within a year is 0.05 Find the probability that out of a group of 7 such persons

a) Exactly one b) None c) at least one

d) Not more than one e) all of them will die within a year.

ii) State and prove addition theorem of probability for three events.

iii) For the following c.d.f. F(x) of discrete random variable X obtain the p.m.f. of x.

$$F(x)=\begin{cases}0 & ;x<0\\ 0.2 & ;0\le x<2\\ 0.5 & ;2\le x<4\\ 0.7 & ;4\le x<6\\ 0.8 & ;6\le x<8\\ 1 & ;x\ge 8\end{cases}$$

[12 each]

Q. 5) Attempt <u>any one</u> of the following:

i) A) Obtain mean and Variance for a Bernoulli random variable. When is the distribution symmetric [6+6]

B) If A and B are two independent events defined on Ω; then prove that.

a) A and B' are independent
b) A' and B are independent
c) A' and B' are independent

ii) A) Let X be discrete random variable with p.m.f. [6+6]

$$P(X=x)=\begin{cases}\frac{x}{15} & ;\ for\ x=1,2,3,4,5\\ 0 & ;\ otherwise\end{cases}$$

Find E(X) & Var(2X-3).

B) How many 3 digits numbers can be formed from the six digits 1,3,5,6,7,9 . If each digit is to be used only once. Among these how many will be divisible by 5.

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Total No. of pages: 2

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Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

(Autonomous)

Affiliated to Savitribai Phule Pune University, Pune

F.Y.B.Sc. (Computer Science)

ELECTRONICS

Semester-II

UCSEL121: Semiconductor Devices and Circuits

(2022 Pattern)

Time: 2.00 Hours

Max marks: 60

Instructions to the candidates:

1) All questions are compulsory.
2) Neat labelled diagrams must be drawn wherever necessary.
3) Use of calculator is allowed.
4) Figures to the right indicate full marks.

Q. 1 Attempt the following. [12]

i) State applications of LED. [1]

ii) Define semiconductor? [1]

iii) What is full form of MOSFET? [1]

iv) What do you mean by rectifier? [1]

v) In transistorized circuit, if I_C=0.98mA, I_B=0.02mA find α. [2]

vi) Write various applications of PN junction diode. [2]

vii) Draw typical nature of IV characteristics of zener diode. [2]

viii) Draw symbols of NPN and PNP transistors. [2]

Q. 2 Attempt any three of the following.

i) Draw Symbols of a) LED b) Zener diode c) Optocoupler d) Photodiode

ii) With construction explain the action of NPN transistor with input output characteristics.

iii) With neat labelled diagram explain working of Photodiode.

iv) Compare FET and BJT.

P. T. O.

Q. 3 Attempt <u>any two</u> of the following. **[12]**

i) With neat labelled diagram explain full wave bridge rectifier with input and output waveforms.

ii) Define α and β for transistor. Derive the relation between α and β.

iii) Explain construction and working of N-channel JFET with the help of IV characteristics.

Q. 4 Attempt <u>any two</u> of the following. **[12]**

i) With neat labelled block diagram explain power supply.

ii) State difference between BJT and FET. How FET works as voltage variable resistor.

iii) Draw the symbol of Optocoupler. Explain it in detail.

Q. 5 Attempt <u>any one</u> of the following. **[12]**

i) What is UJT? Draw the circuit symbol of it. Explain working of UJT with the help of an equivalent circuit. Write applications of UJT.

ii) With the help of neat circuit diagram and waveforms explain the operation of series positive and negative clipper. Assume the input to be sinusoidal.

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Total No. of Questions: 3

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Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Autonomous)
Affiliated to Savitribai Phule Pune University, Pune
Class: F Y B Sc Computer Science
Subject: Computer Science
Semester I
Course Code: COS-121-VSC
Course Title: Problem Solving Skills & DBMS Using PostgreSQL (2023 Pattern)

Time: 01.00 Hours **(No. of Credits 02)** **Max. Marks: 30**

Instructions to the candidates:
i) All questions are compulsory.
ii) Figures to the right indicate full marks.

Q1. (A) Attempt **each** of the following (1 Marks each)

(i) What is an algorithm?
(ii) Which is programming language?
(iii) What is the use of foreign key.
(iv) What is the use of between operators?

(B) Attempt **each** of the following (2 Marks each)

(i) What is the use of assembler in compilation process of c program?.
(ii) Write advantages of flowchart.
(iii) What is the use of commit command in TCL?

Q2. Attempt any **four** of the following (3 Marks each)

(i) Write a note on high level programming language.
(ii) Explain structure of C program in detail.
(iii) Write an algorithm and draw flowchart to check number is Armstrong or not
(iv) Write note on DDL command.
(v) Write note on aggregate operator used in SQL.
(vi) Write note on set membership function.

Q3. Attempt any **two** of the following (4 Marks each)

(i) Write an algorithm & draw flowchart to print reverse of a number.
(ii) Write an algorithm and draw flowchart for sum of digits of first n numbers.
(iii) Write note on DCL command.
(iv) Explain commands for modification of database.

Total No. of Questions: 05

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Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

(Autonomous)

Affiliated to Savitribai Phule Pune University, Pune

F.Y.B.Sc (Computer Science)

Statistics

Semester-II

UCSST-122: Continuous Probability Distributions and Testing of Hypothesis

(2022 Pattern)

Time: 2 Hours (Max. Marks: 60)

Instructions:

i) All questions are compulsory.

ii) Figures to the right indicate full marks.

iii) Use of scientific calculator and statistical tables is allowed.

iv) Symbols and abbreviations have their usual meanings.

Q. 1) A) Select the correct option for each of the following: **[1 each]**

i) _____distribution is also known as Rectangular distribution.

a) Exponential

b) Uniform

c) Normal

d) None of the above

ii) The maximum height of probability density curve is :

a) 1

b) 0.5

c) 0.6

d) 0.8

iii) Level of significance is the probability of _____

a) Rejection of Null hypothesis

b) Acceptance of null hypothesis

c) Rejection of null hypothesis when it is true

d) Rejection of null hypothesis when it is false

P.T.O

iv) The mean of exponential distribution with parameter θ is:
   a) θ
   b) θ+1
   c) θ-1
   d) θ/2

B) Attempt each of the following: [2 each]

i) Define type I error.

ii) Daily sales figures of 40 shopkeepers showed that their average sales and standard deviation where Rs.528 and Rs.600 respectively. Can we conclude daily sale on an average is greater than 400? (Use 5 % l.o.s.)

iii) Write the r command for model sample of size 7 from $N(\mu=3,\sigma^2=9)$

iv) Define exponential distribution with an illustration.

Q. 2) Answer any <u>three</u> questions. [4 each]

i) Let $X\sim N(\mu=6, \sigma^2=9)$ write R command for the following:
   i) $P(X>5)$
   ii) $P(5\leq X\leq 15)$

ii) Define sample, parameter and statistic with one illustration

iii) If $X\sim U(a,10)$ and $P(3<X<7)=1/2$, find the value of 'a'.

iv) Explain critical region and acceptance region with proper diagram.

Q. 3) Answer any <u>two</u> questions. [6 each]

i) A certain factory, runs in two shifts. A sample of 1000 items selected from production of day shift, gave 52 defective articles. However, a sample of 700 items selected from production of night shift revealed 45 items defective. Can we conclude that proportion of defective items in the first shift is less than that of second shift? Use 1% l.o.s

ii) Describe the test procedure for testing equality of two population variance.

iii) Define Pareto distribution. State its mean and Variance.

Q. 4) **Answer any <u>two</u> questions.** **[6 each]**

i) State and prove lack of memory property of an exponential distribution.

ii) Describe test procedure generally followed in testing of hypothesis.

iii) Write R command for the following

a) Draw a random sample of size 10 from exp(θ =2.5)

b) Draw a random sample of size 15 from uniform (2, 6)

c) Draw a random sample of size 15 from N(μ=5, σ^2=12)

iv) Describe test procedure for testing hypothesis H_0: $\mu = \mu_0$ against alternative H1: : $\mu \neq \mu_0$ for a large sample.

Q. 5) **Answer any <u>one</u> question.**

I. a) Explain in detail paired t test along with the assumption made. Give one illustration in which this test can be used. **[6+6]**

b) A departmental store claims that 60% of the customers entering the store leave without making any purchase. A random sample of 50 customers showed that 35 of them left the store without making any purchase .Are sample results consistent with the claim at 5% l.o.s

II. a) If X and Y are normally distributed random variables having N(μ=2,σ^2=4) and N(μ=3,σ^2=9) distribution respectively, identify the distribution of W=2X+3Y and Find P(X≥15). **[6+6]**

b) On the basis of the information given below, decide whether there is any association between inoculation and absence of attack of typhoid at 5% l.o.s.

	Attacked	Not Attacked
Inoculated	12	674
Not inoculated	47	1122

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Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

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Affiliated to Savitribai Phule Pune University, Pune

F.Y.B.Sc. (Computer Science) (Semester-I)

COS-137-IKS: Evolution of Computers

(2023 Pattern)

Time: 01.00 Hour **(No. of Credits: 02)** **Max. Marks: 30**

Instructions to the candidates:

i. Figures to the right indicate full marks.
ii. Draw neat diagrams wherever necessary.
iii. All questions are compulsory.

Q1. (A) Attempt **each** of the following (1 Mark each)

(i) What is the invention discovered by Charles Babbage?
(ii) What is the contribution of Ada Lovelace in early computing years?
(iii) Who has developed TCP/IP?
(iv) What is the use of HTML?

(B) Attempt **each** of the following (2 Marks each)

(i) What is VLSI?
(ii) Write in brief about PROLOG language.
(iii) What is the difference between PHP and JavaScript?

Q2. Attempt any **four** of the following (3 Marks each)

(i) Explain about the features of Abacus.
(ii) Discuss the features of COBOL and FORTRAN languages.
(iii) Discuss about the features and applications of C++.
(iv) What the types of cloud in Cloud Computing?
(v) What are the recent trends in computing?
(vi) What is the importance of SQL?

Q3. Attempt any **two** of the following (4 Marks each)

(i) Write in detail about the different Operating Systems.
(ii) Describe in detail about machine learning.
(iii) Write in detail about the applications of Artificial Intelligence.
(iv) Write in detail about evolution of C++ from C.

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Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati.
(Autonomous)
Affiliated to Savitribai Phule Pune University, Pune.
F. Y.B.Sc.(Computer Science)
Statistics
Semester II
COSST-151-GEN: Statistical Methods
(2024 Pattern)

Time Allowed: One Hour] **(No.of Credits 02)** **[Max Marks: 30**

Instructions:
i) All questions are compulsory.
ii) Figures to the right indicate full marks.
iii) Use of scientific calculator and statistical table is allowed.
iv) Symbols and abbreviations have their usual meaning.

Q.1) A) Choose the correct alternative of the following: **(1each)**

i) The value of coefficient of correlation when there is perfect correlation between two variables is _____

a) $|r| < 1$ b) $|r| > 1$ c) $|r| = 1$ d) $|r| = 1$

ii) The point of intersection of two regression lines is _____

a) (x, y) b) (0, 0) c) $(\bar{x}, \bar{y})$ d) (1, 1)

iii) The necessary and sufficient condition for coincidence of three regression plans is _____

a) $R_{1.23} > 1$ b) $R_{1.23} = 1$ c) $R_{1.23} \neq 1$ d) $R_{1.23} < 1$

iv) Exponential smoothing in time series is weighted average with _____

a) Equal weights b) Exponential decreasing weights
c) Exponentially increasing weights d) Increasing weights

(2each)

B) Answer each of the following:

i) Examine whether the results are consistent : $r_{12} = 0.75$, $r_{13} = -0.8$, $r_{23} = 0.9$

ii) Define positive correlation and negative correlation with an illustrations.

iii) If COV (X , Y) = (-100) and $b_{yx} = (-1.2)$ then find σ_x.

P.T.O.

Q.2) Attempt any <u>four</u> of the following: **(3 each)**

i) What is time series? State additive and multiplicative model of time series.

ii) Suppose that the two regression lines are given by $Y = 0.45x - 21.50$ and $X = 0.87y + 60.25$ Find the coefficient of correlation between X and Y.

iii) If $r_{12} = 0.59$, $r_{13} = 0.46$ and $r_{23} = 0.77$ then find the value of $r_{12.3}$

iv) Define covariance and state its properties.

v) Calculate the correlation coefficient (r) from the following data:

$n = 10, \sum x = 100, \sum y = 150, \sum (x-10)^2 = 180, \sum (y-15)^2 = 215, \sum (x-10)(y-15) = 60$

vi) Explain the concept of multiple correlation coefficient in case of trivariate data and state the expression for $R_{1.23}$

Q.3) Attempt any <u>two</u> of the following: **(4 each)**

i) Define regression coefficient for a bivariate data. State any two properties of regression coefficient.

ii) If $R_{1.23} = 1$ then show that $R_{2.13} = R_{3.12} = 1$

iii) Compute 4 yearly centered moving averages for the following data:

Year	1998	1999	2000	2001	2002	2003	2004	2005
Production (in 000 ton's)	150	165	140	160	158	155	165	170

iv) For a bivariate data on (X, Y) the following values are obtained:

	X	Y
Mean	39.5	47.5
Standard Deviation	10.8	17.8

Correlation coefficient between X and Y is 0.42. Find the regression line Y on X, estimate value of Y for X = 45.

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Exam. Seat No. [ ]

Total No. of Questions : 3

Total No. of Pages : 1

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Empowered Autonomous)
Affiliated to Savitribai Phule Pune University, Pune
Class: F Y B Sc Computer Science
Subject: Computer Science
Course Code: COS-151-GEN
Course Title: Advanced C Programming
(NEP-2024 Pattern) Semester II

Time : 01.00 Hour (No. of Credits 02) **Max. Marks : 30**

Q1. (A) Attempt **each** of the following (1 Marks each)

(i) Define a structure.
(ii) Which operator is used to dereference a pointer?
(iii) Write syntax to open a text file using fopen ()?
(iv) Which library function is used to concatenate 2 strings?

(B) Attempt **each** of the following (2 Marks each)

(i) Which are 2 the types of file inclusion preprocessor directive?
(ii) Write the use of typedef keyword?
(iii) What is null pointer?

Q2. Attempt any **four** of the following (3 Marks each)

(i) Explain functions used for text files in file handling.
(ii) Explain different string library functions.
(iii) Write a note on advantages and disadvantages of pointer
(iv) Write a C program to accept student details and display them using array of structure.
(v) Explain difference between structure and union.
(vi) Write a note on macro preprocessor directive.

Q3. Attempt any **two** of the following (4 Marks each)

(i) Write a C program to find factorial of a number using pointer.
(ii) Write a C program to Copy the contents of One File to Another File using file handling.
(iii) Write a program to calculate maximum among 2 numbers using macro preprocessor directive.
(iv) Write a program in C to print strings in lexicographical (dictionary) order .

****

Seat No.: _____

Total No. of Questions: 03 **Total No. of Pages: 04**

Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati.

(Autonomous)

Affiliated to Savitribai Phule Pune University, Pune.

F.Y.B.Sc.(Computer Science)

MATHEMATICS

Semester – II

COSMT-151-GEN: Graph Theory

(2024 Pattern)

Time: 1 Hours ***Max. Marks: 30***

Instructions to the Candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Use of non-programmable scientific calculator is allowed.*

Q1) **A)** Attempt the following. (*1 mark each*) [04]

a) Define complete graph.

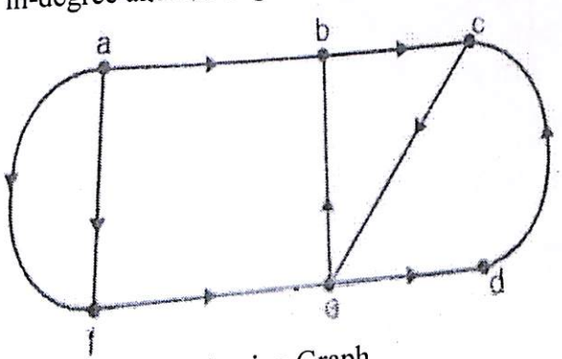
b) Draw the 4 regular graph on 5 vertices.

c) Draw a graph which is regular but not complete.

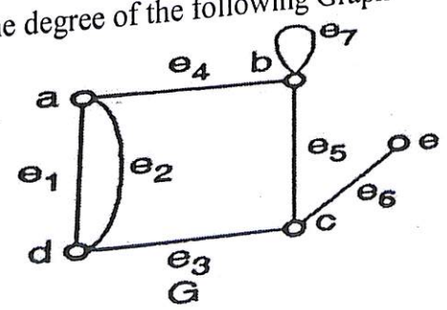
d) Define coloring of graph.

B) Attempt the following. (*2 mark each*) [06]

a) Find the in-degree and out-degree of each vertex in the digraph given below.

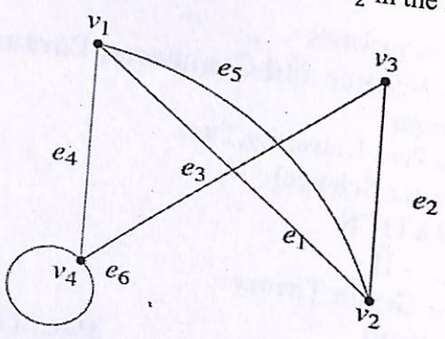


b) Find the degree of the following Graph.



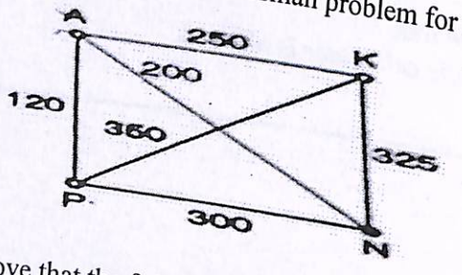
P.T.O.

c) Find any two paths from $v_1 - v_2$ in the following Graph.

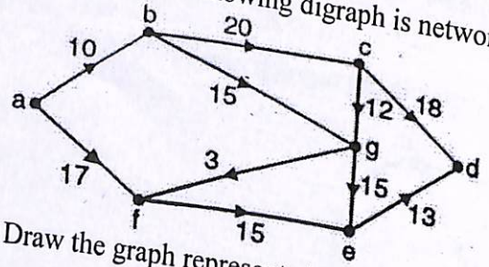


Q2) Attempt any *FOUR* of the following. (*3 mark each*)

a) Solve the travelling salesman problem for the following Graph. [12]



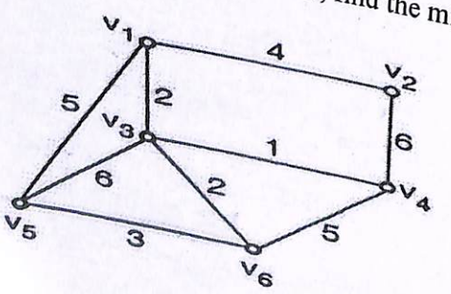
b) Prove that the following digraph is network.



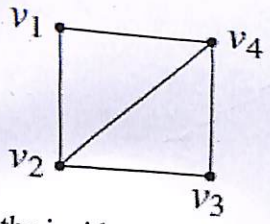
c) Draw the graph represented by the following adjacency matrix.

$$A(G) = \begin{bmatrix} 0 & 1 & 2 & 0 \\ 1 & 2 & 1 & 1 \\ 2 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}$$

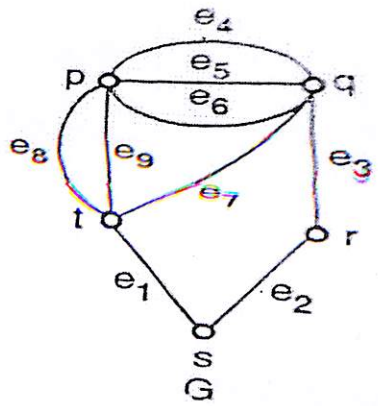
d) Using Kruskal's Algorithm, find the minimum weighted spanning tree in the following graph.



e) Find chromatic number of the following graph.

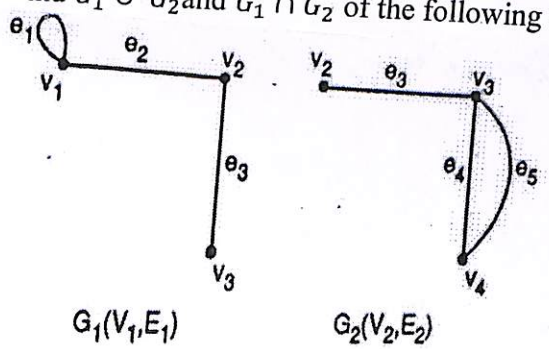


f) Find the incidence matrix of the following Graph.

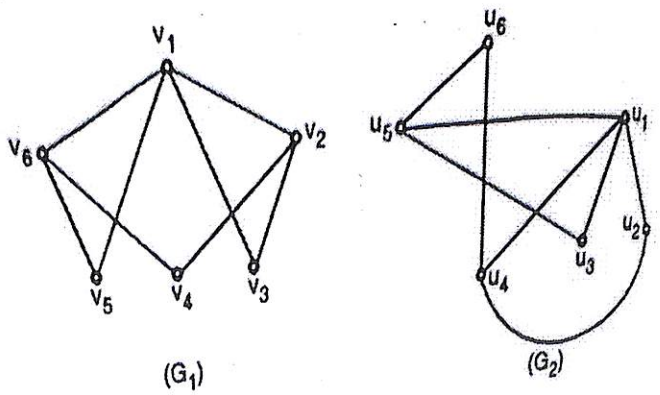


Q3) Attempt any *TWO* of the following. (*4 mark each*) [08]

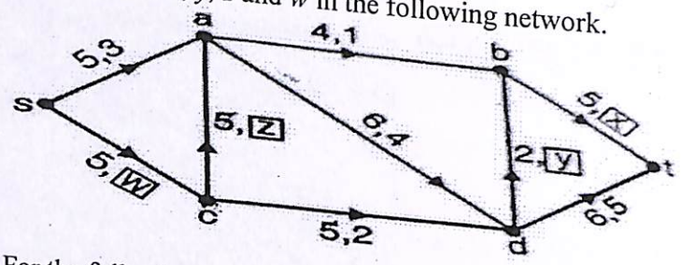
a) Find $G_1 \cup G_2$ and $G_1 \cap G_2$ of the following Graph.



b) Determine whether the following graphs are isomorphic.



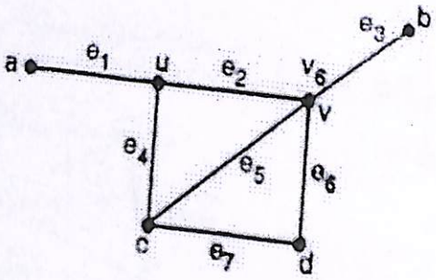
c) Find values of x, y, z and w in the following network.



d) For the following graph G find.

i) $G - E$ where $E = \{e_1, e_2, e_5\}$

ii) $G - V$ where $V = \{a, b, d\}$



G

Exam Seat No

[Total No. of Questions: 3] [Total No. of Pages: 1]

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Autonomous)
Affiliated to Savitribai Phule Pune University, Pune
F. Y. B.Sc. (Computer Science) Semester-II
Subject: Computer Science
Course Code: COS-152-MJM
Course Title: Relational database management system
(2023 Pattern)

Time: 01.00 Hours **(No. of Credits 02)** **Max. Marks: 30**

Instructions to the candidates:

i. *Figures to the right indicate full marks.*
ii. *Neat diagram must be drawn whenever necessary.*
iii. *All questions are compulsory.*

Q1. (A) Attempt **each** of the following (1 Marks each)

(i) What is a database transaction?
(ii) What is the difference between a serial and a non-serial schedule?
(iii) Define deadlock in database systems.
(iv) What is role-based access control (RBAC)?

(B) Attempt **each** of the following (2 Marks each)

(i) Explain the concept of Two-Phase Locking (2PL).
(ii) What are the advantages of using database checkpoints?
(iii) Describe the role of encryption in database security.

Q2. Attempt any **four** of the following (3 Marks each)

(i) Discuss the ACID properties of a transaction with examples.
(ii) Explain how precedence graphs are used to determine serializability.
(iii) Describe the Thomas Write Rule and its significance in concurrency control.
(iv) What are the different types of database locks? Explain with examples.
(v) What are the main security threats to a database system?
(vi) Explain the difference between discretionary and mandatory access control.

Q3. Attempt any **two** of the following (4 Marks each)

(i) Explain the phantom problem and how it can be handled in databases.
(ii) Describe the recovery techniques used in databases after a crash.
(iii) Compare and contrast XML and NoSQL databases.
(iv) What are the key characteristics of Big Data databases? Explain their applications.

Total No. of Questions: 5

Total No. of Pages: 1

Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

(Autonomous)

F.Y. B.Sc. (Computer Science)

CSEL1102: Fundamentals of Digital Electronics

Sem. I (2019 Pattern) Paper-II

Time: 2 Hrs] **[Max marks: 60**

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Neat labelled diagrams must be drawn wherever necessary.*
3) *Use of calculator and log table is allowed.*
4) *Figures to the right indicate full marks.*

Q. 1) All questions are compulsory.

a) What is octal number system? (01)

b) What is decoder? (01)

c) Write Boolean Laws :- Cumulative law and associative law. (01)

d) Specify number of variables eliminated for pair and quad for 3 variable K-map. (01)

e) Write in brief about ASCII code. (02)

f) Perform : $(01101)_2 - (01010)_2$ using rules of binary subtraction. (02)

g) Define minterm and maxterm. (02)

h) Write in brief about half adder. (02)

Q. 2) Attempt any THREE. **(12)**

a) Give symbol, Boolean equation and truth table for NAND and NOR gates.

b) Construct AND,OR and NOT gates using NOR and NAND gates.

c) Draw and explain 8:1 multiplexer.

d) Write note on "SOP and POS form of Boolean expressions".

Q. 3) Attempt any TWO. **(12)**

a) Write short notes on BCD, excess-3 and Gray codes.

b) Draw and explain full subtractor.

c) Explain how Ex-OR gate is used as parity checker and generator.

Q. 4) Attempt any TWO. **(12)**

a) Draw and explain ICs 7400,7402,7432 in brief.

b) State and explain "De Morgan's theorems".

c) Explain with proper diagram- Distributive, AND, OR and inversion laws.

Q. 5) Attempt any ONE.

A. i) With proper examples, write full note on "2,3and 4 variable K-maps" used to simplify logic equations.

(OR)

B. i) Draw and explain "Full adder".

ii) Draw and explain "Priority encoder".

Q1. All questions are compulsory. [12 M]

1. What is a generic pointer? 1
2. Give the use of outtextxy () function. 1
3. Define self-referential structure. 1
4. What is the meaning of '\Θ'? 1
5. What is the meaning of * and & operators in pointer? 2
6. Write syntax of fopen () function. 2
7. Write the types of files 2
8. List the functions used for random file access. 2

Q2. Answer any <u>three</u> questions. [3 X 4 M=12]

1. What is pointer arithmetic? Explain with Example.
2. Define File. States its advantages and disadvantages.
3. Explain in brief about pointer to pointer with example.
4. Write a short note on macro with argument.

P.T.O.

Q3. Answer any <u>two</u> questions.

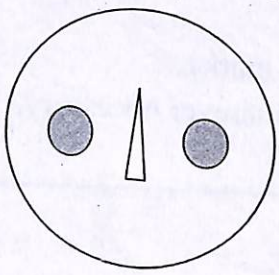
[2 X 6 M =12]

1. What is nested macro? Explain with example.
2. What is Mode? Explain the various modes which are used in fopen() with suitable examples.
3. Differentiate between Structure and Union.

Q4. Answer any <u>two</u> questions.

[2 X 6 M = 12]

1. Write a program to display the content of text file using command line argument.
2. Write a 'C' program to generate following output.



3. Write a C program to declare student structure (rollno, name, percentage). Accept details of n students and display students having percentage >=60.

Q5. Answer any <u>one</u> questions.

[1 X 12 M =12]

1. Explain the following functions with example.
   i. strrev() ii. strcmp() iii. strlen() iv. strupr() v. strlwr() vi. strcmpi()
2. Write a note on graphics programming using c. (Hint - List different functions and their uses.)

Seat No.

[Total No

Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Bar

(Autonomous)

Affiliated to Savitribai Phule Pune University, Pune

F.Y.B.Sc. (Computer Science)

Statistics

Semester-II

CSST-1202: Statistical Testing of Hypothesis and Use of R Software

(2019 Pattern)

Time:-2 Hours (Max. Mar

Instructions:

i) All questions are compulsory.

ii) Figures to the right indicate full marks.

iii) Use of scientific calculator and statistical tables is allowed.

iv) Symbols and abbreviations have their usual meanings.

Q1) A) Select the correct option for each of the following: [1 eac

i) If $X \rightarrow P(m = 4.5)$, to find $P(X \leq 4)$ we use command

a) ppois(4, 4.5) b) rpois(4,4.5)

c) dpois(4,4.5) d) ppois(4.5,4)

ii) Type I error is:

a) accepting H_0 when it is false

b) rejecting H_0 when it is false

c) accepting H_0 when it is true

d) rejecting H_0 when it is true

iii) A function of population values is known as :

a) Statistic

b) Level of significance

c) Sample

d) Parameter

iv) A 4*3 contingency table was obtained to test H0 : two attributes A and B are independent then under H0 , the distribution of statistic used in this case is

a) χ^2 with 6 d.f.

b) χ^2 with 12 d.f.

c) χ^2 with 7 d.f.

d) χ^2 with 11 d.f.

B) Attempt each of the following: - [2 each]

i) Write R-command for creating a vector z having even numbers between 1 and 50.

ii) Define a chi-square variate.

iii) Define: Null (H_0) and Alternative (H_1) Hypothesis

iv) Define Population

[2 X 6 M =12]

able examples.

M = 12]

Q2) Answer any three questions. **[4 each]**

i) Differentiate between SRSWR and SRSWOR.

ii) Create a vector x of 4 elements 8, 9, 10, 11. Create a new vector y from x containing elements 8, 9,10,11,12,13,14,15.

iii) State any two demerits of simulation. What are requisites of Good Random Number Generator?

iv) On the basis of the information given below, decide whether there is any association between inoculated and absence of attack of typhoid at 5% l.o.s.

	Attacked	Not inoculated
inoculated	12	674
Not inoculated	47	1122

Q3) Answer any two questions. **[6 each]**

i) Describe t- test for testing H_0: $\mu = \mu_0$ against

a) H_1: $\mu \neq \mu_0$

b) H_1: $\mu < \mu_0$

c) H_1: $\mu > \mu_0$

ii) Give Commands:

a) To compute length, minimum, maximum, range, mean, median of vector X containing elements 2, 4, 5, 6, 10, 12, 8.

b) Create a vector Y of numbers between 1 to 300 which are divisible by 3.

iii) In a clinical trial, two groups of patients are given different treatments for a certain condition. From group 1 out of 120 patients, 48 show improvement, and group 2 out of 150 patients, 60 show improvement. At a 5% significance level, test if there is a significant difference in the proportions of improvement between the two groups.

Q4) Answer any two questions: **[6 each]**

i) Define the following terms:-

a) Type II error b) Statistics c) p-value

ii) The theory predicts that the proportion of beans in the four groups A, B, C and D should be 9:3:3:1. In an experiment among 1600 beans, the numbers in the four groups were 882, 313, 287 and 118. Does the experimental result support the theory?

iii) A random sample of size $n_1 = 15$ taken from a normal population has standard deviation 5.2 and mean $\bar{x}_1 = 81$. A second random sample of size $n_2 = 16$ taken from normal population has mean $\bar{x}_2 = 76$ and standard deviation 3.4. Test the hypothesis that $\mu_1 = \mu_2$ against the alternative $\mu_1 > \mu_2$.

Q5) Answer any one question:

i) Describe test procedure for testing equality of single population proportion.

H_0: $P = P_0$ against

a) H1: $P < P_0$ (left tailed test)

b) H1: $P > P_0$ (right tailed test)

c) H1: $P \neq P_0$ (two tailed test)

ii) A die is thrown 75 times with the following results:

Face	1	2	3	4	5	6
frequency	15	11	10	10	13	16

Test at 5% level of significance, if the die is fair. **[4+8]**

OR

i) Explain: Critical region and Level of significance. **[4+8]**

ii)The 10 school boys were given a test in statistics. They were given a month's tuition and second test was held at the end of it. Do the marks give evidence that the students have benefited by the extra coaching?

Boys	1	2	3	4	5	6	7	8	9	10
Marks of 1st test	23	20	19	21	20	18	17	23	16	18
Marks of 2nd test	24	19	22	18	22	20	20	23	20	20

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Exam Seat No. [ ]

Total No. of Pages: 02

otal No. of Questions: 05

Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

(Autonomous)

Affiliated to Savitribai Phule Pune University, Pune

F.Y. B.Sc. (Comp. Sci.) Electronics

CSEL1201: Semiconductor Devices and Memories

Semester- II

(2019 Pattern)

(No. of Credits 03)

Max. Marks : 60

Time: Two Hours

Instructions to the candidates:

i. All questions are compulsory.
ii. Neat labelled diagrams must be drawn whenever necessary.
iii. Use of calculator is allowed.
iv. Figures to the right indicates full marks.

Q.1. (A) Attempt **each** of the following (1 Marks each)

i) Draw the symbol for LED.
ii) How many address lines are required to access 8K X 4 memory?
iii) Define transistor.
iv) What is amplifier?

(B) Attempt **each** of the following: (2 Marks each)

i) Draw I-V characteristics of p-n junction diode.
ii) For transistor having $I_C = 1mA$, $I_B = 20\mu A$, then find α?
iii) Give advantages of PLD's.
iv) Draw the symbol of N-channel and P-channel MOSFET.

Q.2. Attempt any **three** of the following (4 Marks each)

i) Define α and β of the transistor. Derive relation between them.
ii) Implement following functions using PLA,
$A(X,Y,Z) = \sum m\ (1,2,4,6)$, $B\ (X,Y,Z) = \sum m\ (0,1,6,7)$, $C(X,Y,Z) = \sum m(2,6)$.
iii) Compare SRAM and DRAM.
iv) Draw and explain block diagram of power supply.

Q.3. Attempt any **two** of the following (6 Marks each)

i) Draw the circuit diagram and explain working of UJT in detail.
ii) Explain construction and working of N-channel JFET with the help of IV characteristics.
iii) Define PLD's. Differentiate between CPLD and FPGA.

Q.4. Attempt any **two** of the following (6 Marks each)

i) Explain working of CE transistor amplifier in detail.
ii) What is MOSFET? Explain construction and working of DMOSFET.
iii) With neat circuit diagram explain bridge rectifier with its input output waveforms.

(12 Marks each)

Q.5. Attempt any **one** of the following

i) A combinational circuit defined by function,

a. F1 (A,B,C) = $\sum$ m(4,5,7)

b. F2 (A,B,C) = $\sum$ m(3,5,7)

Implement circuit with PLA.

ii) Explain RAM and ROM in detail.

OR

i) Explain the action of NPN transistor with input output characteristics. Explain CB, CC and CE configuration of transistor.

No. of Questions: 05]

Seat No. [ ]

[Total No. of pages: 03

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Autonomous)
Affiliated to Savitribai Phule Pune University, Pune
F.Y.B.Sc. (Computer Science)
Statistics
Semester-II
CSST-1202: Statistical Testing of Hypothesis and Use of R Software
(2019 Pattern)

Time:-2 Hours **(Max. Marks: 60)**

Instructions:
i) All questions are compulsory.
ii) Figures to the right indicate full marks.
iii) Use of scientific calculator and statistical tables is allowed.
iv) Symbols and abbreviations have their usual meanings.

Q1) A) Select the correct option for each of the following: **[1 each]**

i) If $X \rightarrow P(m= 4.5)$, to find $P(X \leq 4)$ we use command
a) ppois(4, 4.5)
b) rpois(4,4.5)
c) dpois(4,4.5)
d) ppois(4.5,4)

ii) Type I error is:
a) accepting H_0 when it is false
b) rejecting H_0 when it is false
c) accepting H_0 when it is true
d) rejecting H_0 when it is true

iii) A function of population values is known as :
a) Statistic
b) Level of significance
c) Sample
d) Parameter

iv) A 4*3 contingency table was obtained to test H0 : two attributes A and B are independent then under H0 , the distribution of statistic used in this case is
a) χ^2 with 6 d.f.
b) χ^2 with 12 d.f.
c) χ^2 with 7 d.f.
d) χ^2 with 11 d.f.

B) Attempt each of the following: - **[2 each]**

i) Write R-command for creating a vector z having even numbers between 1 and 50.

ii) Define a chi-square variate.

iii) Define: Null (H_0) and Alternative (H_1) Hypothesis

iv) Define Population

[P.T.O]

Q2) Answer any three questions. **[4 each]**

i) Differentiate between SRSWR and SRSWOR.

ii) Create a vector x of 4 elements 8, 9, 10, 11. Create a new vector y from x containing elements 8, 9,10,11,12,13,14,15.

iii) State any two demerits of simulation. What are requisites of Good Random Number Generator?

iv) On the basis of the information given below, decide whether there is any association between inoculated and absence of attack of typhoid at 5% l.o.s.

	Attacked	Not inoculated
inoculated	12	674
Not inoculated	47	1122

Q3) Answer any two questions. **[6 each]**

i) Describe t- test for testing H_0: $\mu = \mu_0$ against

a) H_1: $\mu \neq \mu_0$

b) H_1: $\mu < \mu_0$

c) H_1: $\mu > \mu_0$

ii) Give Commands:

a) To compute length, minimum, maximum, range, mean, median of vector X containing elements 2, 4, 5, 6, 10, 12, 8.

b) Create a vector Y of numbers between 1 to 300 which are divisible by 3.

iii) In a clinical trial, two groups of patients are given different treatments for a certain condition. From group 1 out of 120 patients, 48 show improvement, and group 2 out of 150 patients, 60 show improvement. At a 5% significance level, test if there is a significant difference in the proportions of improvement between the two groups.

Q4) Answer any two questions: **[6 each]**

i) Define the following terms:-

a) Type II error b) Statistics c) p-value

ii) The theory predicts that the proportion of beans in the four groups A, B, C and D should be 9:3:3:1. In an experiment among 1600 beans, the numbers in the four groups were 882, 313, 287 and 118. Does the experimental result support the theory?

iii) A random sample of size $n_1 = 15$ taken from a normal population has standard deviation 5.2 and mean $\bar{x}_1 = 81$. A second random sample of size $n_2 = 16$ taken from normal population has mean $\bar{x}_2 = 76$ and standard deviation 3.4. Test the hypothesis that $\mu_1 = \mu_2$ against the alternative $\mu_1 > \mu_2$.

Q5) Answer any one question:

i) Describe test procedure for testing equality of single population proportion.

H_0: $P = P_0$ against

a) H1: $P < P_0$ (left tailed test)

b) H1: $P > P_0$ (right tailed test)

c) H1: $P \neq P_0$ (two tailed test)

ii) A die is thrown 75 times with the following results:

Face	1	2	3	4	5	6
frequency	15	11	10	10	13	16

Test at 5% level of significance, if the die is fair. **[4+8]**

OR

i) Explain: Critical region and Level of significance. **[4+8]**

ii)The 10 school boys were given a test in statistics. They were given a month's tuition and second test was held at the end of it. Do the marks give evidence that the students have benefited by the extra coaching?

Boys	1	2	3	4	5	6	7	8	9	10
Marks of 1st test	23	20	19	21	20	18	17	23	16	18
Marks of 2nd test	24	19	22	18	22	20	20	23	20	20

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Total No. of Questions: 50

Total No. of Pages: 07

Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

(Autonomous)

F.Y.B. A/B. Com/B.Sc./ B.Sc. (Comp. Sci) / FYBBA/ FYBCA.

Generic Indian Knowledge System

Semester I

GEN-106-IKS: Generic Indian Knowledge System

(NEP 2024 Pattern)

(No. of Credits: 02)

Max. Marks: 50

Time: 01 Hour ..... Class-.....

Name of the Student-.....PRN No-.....

Roll No- ..... Seat No- .....

1.The period of Shankaracharya is considered to be:

A) 7th-8th century CE

B) 10th-11th century CE

C) 11th-12th century CE

D) 3rd-4th century CE

शंकराचार्यांचा काळ ..... मानलेला आहे.

अ) इ.स. 7-8 वे शतक

ब) इ.स. 10-11 वे शतक

क) इ.स. 11-12 वे शतक

ड) इ.स. 3-4 थे शतक

2. Which Upaveda (sub-Veda) is associated with Rigveda?

A) Ayurveda

B) Dhanurveda

C) Gandharvaveda

D) Brahmaveda

..... हा ऋग्वेदाचा उपवेद मानला जातो.

अ) आयुर्वेद

ब) धनुर्वेद

क) गंधर्ववेद

ड) ब्रह्मवेद

3. Aryabhata was a:

A) Hydrogeologist

B) Mathematician

C) Music expert

D) Historian

आर्यभट हे ..... होते.

अ) भूजलतज्ज्ञ

ब) गणिततज्ज्ञ

क) संगीत विशारद

ड) इतिहासकार

4. Who wrote the "Aryabhatiya" treatise?

A) Acharya Gaudapada

B) Kuvalayananda

C) Aryabhata

D) Trotakacharya

"आर्यभटीय" या ग्रंथाची रचना ..... यांनी केली.

अ) आचार्य गौडपाद

ब) कुवल्यानंद

क) आर्यभट

ड) त्रोटकाचार्य

5. Who is considered the first poet (Adikavi) and the author of Ramayana?

A) Maharshi Valmiki

B) Maharshi Vyasa

C) Maharshi Agastya

D) Maharshi Vashistha

आदिकवि आणि रामायणाचे रचनाकार ..... हे आहेत.

अ) महर्षि वाल्मीकि

ब) महर्षि व्यास

क) महर्षि अगस्ती

ड) महर्षि वसिष्ठ

6. How many verses (shlokas) are there in the Ramayana written by Maharshi Valmiki?
A) 24,000
B) 20,000
C) 18,000
D) 10,000
महर्षि वाल्मीकि यांनी लिहिलेल्या रामायण या ग्रंथाच्या रचनेत श्लोकांची संख्या ..... आहे.
अ) 24,000
ब) 20,000
क) 18,000
ड) 10,000

7. How many Kandas (sections) are there in Ramayana?
A) 7
B) 6
C) 5
D) 8
"रामायण" या ग्रंथरचनेत एकूण ..... कांडे (अध्याय) आहेत.
अ) 7
ब) 6
क) 5
ड) 8

8. How many syllables are there in the Gayatri Mantra?
A) 24
B) 23
C) 25
D) 26
गायत्री मंत्रामध्ये एकूण .... अक्षरे आहेत.
अ) 24
ब) 23
क) 25
ड) 26

9. What is the total number of Vedas?
A) 4
B) 6
C) 8
D) 10
वेदांची एकूण संख्या .... आहे.
अ) 4.
ब) 6.
क) 8.
ड) 10.

10. How many Vedangas (limbs of the Vedas) are considered?
A) 3
B) 4
C) 5
D) 7
वेदांची एकूण .... अंगे मानलेली आहेत.
अ) 3
ब) 4
क) 5
ड) 7

11. How many hymns (suktas) are there in the Rigveda?
A) 1025
B) 1026
C) 1027
D) 1028
ऋग्वेदामध्ये एकूण ..... सूक्ते आहेत.
अ) 1025
ब) 1026
क) 1027
ड) 1028

12. How many branches (shakhas) of the Yajurveda are considered?
A) 8
B) 6
C) 4
D) 2

यजुर्वेदाच्या एकूण .... शाखा मानलेल्या आहेत.
अ) 8
ब) 6
क) 4
ड) 2

13.Who made significant contributions to mathematics and astronomy in the 12th century?
A) Aryabhata
B) Bhaskara
C) Varahamihira
D) Brahmagupta
१२व्या शतकात गणित आणि खगोलशास्त्रात महत्त्वपूर्ण योगदान देणारे व्यक्ती कोण होते?
अ) आर्यभट
ब) भास्कर
क) वराहमिहिर
ड) ब्रह्मगुप्त

14.What is the name of the comprehensive astronomy text attributed to Bhaskara?
A) Surya Siddhanta
B) Pancha Siddhantika
C) Siddhanta Siromani
D) Brahmasphuta Siddhanta
भास्कर यांच्याशी संबंधित संपूर्ण खगोलशास्त्र ग्रंथाचे नाव काय आहे?
अ) सूर्य सिद्धांत
ब) पञ्च सिद्धांतिका
क) सिद्धांत शिरोमणी
ड) ब्रह्मस्फुट सिद्धांत

15. Which of the following is NOT a contribution of ancient Indian astronomy?
A) Concept of zero and decimal system
B) Accurate prediction of solar and lunar eclipses
C) Identification of 27 nakshatras
D) Development of telescope
खालीलपैकी कोणती गोष्ट प्राचीन भारतीय खगोलशास्त्राचे योगदान नाही?
अ) शून्य आणि दशांश पद्धतीची संकल्पना
ब) सूर्य व चंद्रग्रहणांची अचूक भाकित
क) २७ नक्षत्रांची ओळख
ड) टेलिस्कोपचा विकास

16.What is the concept of Agni in Ayurveda?
A) Digestive fire
B) Respiratory system
C) Circulatory system
D) Nervous system
आयुर्वेदामध्ये अग्नीची संकल्पना काय आहे?
अ) पचनाची आग
ब) श्वसन प्रणाली
क) रक्तप्रवाह प्रणाली
ड) तंत्रिका प्रणाली

17.What are the three fundamental energies in Ayurveda?
A) Vata, Pitta, Kapha
B) Earth, Water, Fire
C) Air, Ether, Agni
D) Ahara, Vihara, Ausadha
आयुर्वेदामध्ये तीन मूलभूत ऊर्जा काय आहेत?
अ) वात, पित्त, कफ
ब) पृथ्वी, जल, अग्नी
क) वायू, आकाश, अग्नी
ड) आहार, विहार, औषध

18.What is Panchakarma in Ayurveda?
A) Detoxification procedures
B) Rejuvenation therapies
C) Surgical procedures
D) Herbal medicine
आयुर्वेदामध्ये पंचकर्म काय आहे?
अ) विषहरण पद्धती
ब) पुनरुज्जीवन उपचार

क) शस्त्रक्रिया पद्धती
ड) औषधी वनस्पती

19.Who emphasized the importance of hygiene and sterilization in surgery?
A) Charak
B) Sushrut
C) Vagbhata
D) Atreya
शस्त्रक्रियेत स्वच्छतेचे आणि निर्जंतुकीकरणाचे महत्त्व कोणी व्यक्त केले?
अ) चरक
ब) सुश्रुत
क) वाग्भट
ड) आत्रेय

20.What is Rasayana in Ayurveda?
A) Detoxification procedures
B) Rejuvenation therapies
C) Surgical procedures
D) Herbal medicine
आयुर्वेदामध्ये रसायन काय आहे?
अ) विषहरण पद्धती
ब) पुनरुज्जीवन उपचार
क) शस्त्रक्रिया पद्धती
ड) औषधी वनस्पती

21.What is the significance of Ahara in Ayurveda?
A) Diet
B) Lifestyle
C) Medicine
D) All of the above
आयुर्वेदामध्ये आहाराचे महत्त्व काय आहे?
अ) आहार
ब) जीवनशैली
क) औषध
ड) वरील सर्व

22.Who classified diseases into eight categories?
A) Charak
B) Sushrut
C) Vagbhata
D) Atreya
रोगांना आठ प्रकारांमध्ये वर्गीकृत केले कोणत्या व्यक्तीने?
अ) चरक
ब) सुश्रुत
क) वाग्भट
ड) आत्रेय

23.What is the concept of Tridosha in Ayurveda?
A) Three fundamental elements
B) Three fundamental energies
C) Three types of diseases
D) Three types of treatment
आयुर्वेदामध्ये त्रिदोषाची संकल्पना काय आहे?
अ) तीन मूलभूत घटक
ब) तीन मूलभूत ऊर्जा
क) तीन प्रकारचे रोग
ड) तीन प्रकारचे उपचार

24.What is the significance of Vihara in Ayurveda?
A) Diet
B) Lifestyle
C) Medicine
D) All of the above
आयुर्वेदामध्ये विहाराचे महत्त्व काय आहे?
अ) आहार
ब) जीवनशैली
क) औषध
ड) वरील सर्व

25.Which ancient technique was used to manufacture the Iron Pillar of Delhi?
A) Lost wax casting
B) Blast furnace smelting

C) Forge welding
D) Electroplating
दिल्लीतील लोहस्तंभ तयार करण्यासाठी कोणते प्राचीन तंत्रज्ञान वापरले गेले होते?
अ) हरवलेली मेण कास्टिंग
ब) ब्लास्ट फर्नेस स्मेल्टिंग
क) फोर्ज वेल्डिंग
ड) इलेक्ट्रोप्लेटिंग

26.Which dynasty was responsible for the erection of the Iron Pillar of Delhi?
A) Maurya Dynasty
B) Gupta Dynasty
C) Chola Dynasty
D) Satavahana Dynasty
दिल्लीतील लोहस्तंभाची निर्मिती कोणत्या राजवटीच्या काळात करण्यात आली होती?
अ) मौर्य राजवंश
ब) गुप्त राजवंश
क) चोळ राजवंश
ड) सातवाहन राजवंश

27.Which organization in India challenged the patent on turmeric in the U.S. Patent Office?
A) Indian Council of Agricultural Research (ICAR)
B) Council for Scientific and Industrial Research (CSIR)
C) National Biodiversity Authority (NBA)
D) Ministry of Agriculture
अमेरिकन पेटंट कार्यालयात हळदीवरील पेटंटला भारतात कोणत्या संस्थेने विरोध केला?
अ) भारतीय कृषी संशोधन परिषद (ICAR)
ब) वैज्ञानिक आणि औद्योगिक संशोधन परिषद (CSIR)
क) राष्ट्रीय जैवविविधता प्राधिकरण (NBA)
ड) कृषी मंत्रालय

28.Which digital initiative was launched by India to document traditional knowledge in multiple languages?
A) National Knowledge Network
B) Traditional Knowledge Digital Library (TKDL)
C) National Digital Repository
D) Indian Knowledge Archive
अनेक भाषांमध्ये पारंपारिक ज्ञानाची नोंद करण्यासाठी भारताने कोणती डिजिटल योजना सुरू केली?
अ) राष्ट्रीय ज्ञान नेटवर्क
ब) पारंपारिक ज्ञान डिजिटल ग्रंथालय (TKDL)
क) राष्ट्रीय डिजिटल संग्रह
ड) भारतीय ज्ञान संग्रह

29.What was the primary reason for revoking the U.S. patent on turmeric?
A) The patent application was incomplete
B) Turmeric's medicinal use was already known in India
C) Turmeric was proven to be ineffective
D) The patent holder withdrew the application
हळदीवरील अमेरिकन पेटंट रद्द करण्याचे प्रमुख कारण काय होते?
अ) पेटंट अर्ज अपूर्ण होता
ब) हळदीचा औषधी उपयोग भारतात आधीपासून ज्ञात होता
क) हळदीला प्रभावहीन सिद्ध करण्यात आले
ड) पेटंट धारकाने अर्ज मागे घेतला

30.Which entity partnered with Mahyco to develop Bt brinjal?
A) Syngenta
B) Monsanto
C) Bayer
D) DuPont
Bt वांगी विकसित करण्यासाठी महायकोने कोणत्या संस्थेसोबत भागीदारी केली?
अ) सिंगेण्टा

ब) मॉन्सॅन्टो
क) बायर
ड) ड्यूपॉन्ट

31.Which city of the Harappan Civilization had a Great Bath?
A) Harappa
B) Mohenjo-daro
C) Dholavira
D) Lothal

सिंधू संस्कृतीतील कोणत्या शहरात 'महान स्नानगृह' होते?
अ) हडप्पा
ब) मोहनजो-दडो
क) धोलावीरा
ड) लोथल

32.What method did the Harappans use to ensure proper drainage flow?
A) Covered drains
B) Open channels
C) Pumping water
D) Use of natural slopes

योग्य जलनिस्सारण प्रवाह सुनिश्चित करण्यासाठी हरप्पांनी कोणती पद्धत वापरली?
अ) झाकलेले नाले
ब) उघडी वाहिन्या
क) पाणी पंप करणे
ड) नैसर्गिक उतारांचा वापर

33.In the Mahabharata, what consequence did kings and warriors face for harming nature unjustly?
A) Divine retribution
B) Loss of moral authority
C) Banishment from their kingdom
D) Physical punishment

महाभारत मध्ये, निसर्गाला अन्यायाने हानी पोहचवणाऱ्या राजे आणि योद्ध्यांना कोणती शिक्षा मिळाली?
अ) दैवी दंड
ब) नैतिक अधिकार गमावणे
क) त्यांच्या राज्यातून निर्वासित
ड) शारीरिक शिक्षा

34.How does the Ramayana depict Rama's interaction with the forest during his exile?
A) As a battle for survival
B) As a harmonious coexistence with nature
C) As a period of isolation from nature
D) As a struggle against wild animals

रामायण मध्ये रामाच्या वनातले संवाद कसे चित्रित केले आहे?
अ) टिकावासाठी लढाई
ब) निसर्गासोबत सुसंगत सह-अस्तित्व
क) निसर्गापासून एकाकीपणाचा काळ
ड) जंगली प्राण्यांविरुद्ध संघर्ष

35.Which scientist's work laid the foundation for understanding black holes and neutron stars?
A) Har Gobind Khorana
B) Subrahmanyan Chandrasekhar
C) C. V. Raman
D) Venkatraman Ramakrishnan

काळे विवर आणि न्यूट्रॉन ताऱ्यांच्या समजून घेण्याच्या आधारासाठी कोणत्या शास्त्रज्ञाने योगदान दिले?
अ) हर गोविंद खुराणा
ब) सुब्रमण्यम चंद्रशेखर
क) सी. व्ही. रमन
ड) वेंकटरामन रामकृष्णन

36.What was the Nobel-winning work of C. V. Raman related to?
A) Star evolution
B) Genetic code
C) Light scattering
D) Ribosome structure

सी. व्ही. रमन यांचे नोबेल पारितोषिक विजयी काम कोणाशी संबंधित होते?
अ) ताऱ्यांचा विकास
ब) जनुकीय कोड
क) प्रकाशाचा अपसरण
ड) रायबोसोम संरचना

37.In which year did Venkatraman Ramakrishnan win the Nobel Prize for his work on the ribosome structure?
A) 1968
B) 1983
C) 1930
D) 2009
वेंकटरामन रामकृष्णन यांना रायबोसोम संरचनेवरील कामासाठी कोणत्या वर्षी नोबेल पारितोषिक मिळाले?
अ) 1968
ब) 1983
क) 1930
ड) 2009

38. Which was the patron deity of the Vijayanagara rulers?
A) Vitthal
B) Balaji
C) Virupaksha
D) Rama
विजयनगर राज्यकर्त्यांचे कुलदैवत कोणते होते?
अ) विठ्ठल
ब) बालाजी
क) विरूपाक्ष
ड) राम

39. During which period were the Buddhist caves at Verúl built?
A) AD 550 to AD 800
B) AD 650 to AD 900
C) AD 150 to AD 450
D) AD 712 to AD 1000
वेरूळ येथील बौद्ध लेणी कोणत्या कालखंडात निर्माण [illegible]
अ) इ.स.५५० ते इ.स.८००
ब) इ.स.६५० ते इ.स.९००
क) इ.स.१५० ते इ.स.४५०
ड) इ.स.७१२ ते इ.स. १०००

40. Which of the following cities was originally named Ellapur?
A) Nashik
B) Verul
C) Nanded
D) Chhatrapati Sambhajinagar
खालील शहरांपैकी कोणत्या शहराचे मूळ नाव एलापूर होते?
अ) नाशिक
ब) वेरूळ
क) नांदेड
ड) छत्रपती संभाजीनगर

41. Which number of caves in Verul is known as Dotal?
A) Number. 11
B) Number 12
C) Number 13
D) Number 16
वेरूळ येथील कितव्या क्रमांकाचे लेणे दोनताल नावाने ओळखले जाते?
अ) क्रमांक ११
ब) क्रमांक १२
क) क्रमांक १३
ड) क्रमांक १६

42. How many Vedic caves are there in Verul?
A) 12
B) 15
C) 17
D) 20
वेरूळ येथे वैदिक धर्माची लेणी किती आहेत?
अ) १२
ब) १५

क) १७
ड) २०

43. What is the number of the cave known as Ravana Ki Khai in Verul?
A) 14th
B) 17th
C) 20th
D) 52nd
वेरूळ येथील रावण की खाई या नावाने ओळखल्या जाणाऱ्या लेण्याचा क्रमांक कितवा आहे?
अ) १४ वा
ब) १७ वा
क) २० वा
ड) ५२ वा

44. Which is the world-famous place in Maharashtra for Buddhist caves?
A) Pune
B) Nashik
C) Nagpur
D) Ajantha
बौद्ध लेण्यासाठी महाराष्ट्रातील जगप्रसिद्ध असणारे ठिकाण कोणते?
अ) पुणे
ब) नाशिक
क) नागपूर
ड) अजिंठा

45. In which century did the famous Chinese traveller Yuan Shuang come to India?
A) Sixth century
B) Seventh century
C) Eighth century
D) Tenth century
प्रसिद्ध चिनी प्रवासी युआन श्वांग भारतात कोणत्या शतकात आला?
अ) सहाव्या शतकात
ब) सातव्या शतकात
क) आठव्या शतकात
ड) दहाव्या शतकात

46. How many types of arts did Kayasthas have in ancient times?
A) 16
B) 76
C) 64
D) 86
प्राचीन कालखंडातील कायस्थांच्या किती प्रकारच्या कला होत्या?
अ) १६
ब) ७६
क) ६४
ड) ८६

47. "Art is the alchemy of the soul." Which thinker gave the above definition of art?
A) Plato
B) Goethe
C) Bhojraj
D) Freud
कला ही आत्म्याची किमया आहे. कलेची वरील व्याख्या कोणत्या विचारवंताने केली आहे?
अ) प्लेटो
ब) गटे
क) भोजराज
ड) फ्राईड

48. When was the 'Rani Ki Vav' tourist spot included in the UNESCO World Tourism Site?
A) 22 June 2015
B) 21 June 2014
C) 20 June 2014
D) None of these
युनेस्कोच्या जागतिक पर्यटन स्थळात 'रानी की वाव' पर्यटन स्थळाचा समावेश केंव्हा करण्यात आला?
अ) २२ जून २०१५
ब) २१ जून २०१४

क) २० जून २०१४
ड) यापैकी नाही

49. Which of the following tourist places is not in the state of Tamil Nadu?
A) Rameswaram
B) Kanyakumari
C) Ayodhya
D) Grand Dam of Kalani
खालीलपैकी कोणते पर्यटन स्थळ तामिळनाडू राज्यातील नाही?
अ) रामेश्वरम
ब) कन्याकुमारी
क) अयोध्या
ड) ग्रँड डॅम ऑफ कलानी

50. Which ruler built the Kailasa temple at Verul?
A) Rajendra I
B) Malojiraje
C) Shivaji Maharaj
D) Krishnaraja I
वेरूळ येथील कैलास मंदिराची निर्मिती कोणत्या राज्यकर्त्याने केली?
अ) राजेंद्र पहिला
ब) मालोजीराजे
क) शिवाजी महाराज
ड) कृष्णराज पहिला

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