

I. Choose the correct answer: 5x1=5

1. ____ is used as substrate for manufacturing benzhydrol drop.
 - a. Benzoic acid
 - b. Benzaldehyde
 - c. Benzophenone
 - d. Acetophenone
2. The reagent used to distinguish between acetaldehyde and benzaldehyde is _____.
 - a. Tollens reagent
 - b. Fehling's solution
 - c. 2,4 dinitrophenyl hydrazine
 - d. Semi carbzide
3. The formation of cyanohydrin from acetone is an example of _____.
 - a. Nucleophilic substitution
 - b. Electrophilic substitution
 - c. Electrophilic addition
 - d. Nucleophilic addition
4. Fog is a colloidal solution of _____.
 - a. solid in gas
 - b. gas in gas
 - c. liquid in gas
 - d. gas in liquid
5. Collodion is a 4% solution of alcohol in ether mixture
 - a. nitroglycerine
 - b. cellulose acetate
 - c. nitrocellulose
 - d. glycoldinitrate

II. Answer any 5 of the following: 5x2=10

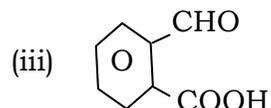
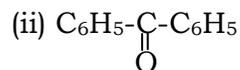
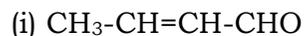
6. Which will be more adsorbed on charcoal? Why? NH_3 or CO_2 ?
7. What is the difference between homogenous and heterogenous catalysis?
8. In case of chemisorption, why adsorption first increases and then decreases with temperature?
9. Define Adsorption isobar.
10. Write Rosenmund reduction.

11. What is ozonolysis?

12. Write popoff's rule.

III. Answer any 5 of the following: 5x3=15

13. Explain Aldol condensation.
14. Write 3 Electrophilic substitution of Benzaldehyde.
15. Write the IUPAC name of:



16. Give the mechanism of cannizaro reaction.
17. Differentiate physisorption and chemisorption.
18. Write a note on Tyndall effect and Nano catalysis.

19. List the factors affecting adsorption.

IV. Answer any 2 of the following: 2x5=10

20. Explain the theory of catalysis.

21. write a note on:

a. Uses of Emulsions (2)

b. Peptisation (2)

c. Lyophilic colloids (1)

22. Write (a). Claisen – Schmidt condensation. (2)

(b). Etard reaction (2)

(c). $\text{CH}_3\text{-CHO} \xrightarrow{[\text{O}]}$ (?) (1)

23. Give a note on (a) test to detect Aldehyde (3)

(b) Perkin's reaction (2)

29.11.19 Comprehensive Revision Programme-2 Time:1.15 hrs
 STD: XII (C-E) FN Biology Marks: 20
 Bio-Botany

I. Answer all the question: 3x1=3

1. A plant called "X" possesses large flowers, brightly coloured and produce nectar in large quantities. The probable agent for pollination would be _____.

- a. water b. air c. birds d. butterflies

2. Identify the correctly matched pair:

- a. Tuber - Allium cepa
 b. Sucker - Pistia
 c. Rhizome - Musa
 d. Stolon - Zingiber

3. _____ is the structural defense by plants against fire.

II. Answer any 3 of the following: 3x2=6

4. What is proto cooperation?

5. Define Ecology by Ernest Haeckel.

6. What is Apomixis?

7. Draw and Label: The T.S of mature anther.

III. Answer any 2 of the following: 2x3=6

8. List out the functions of Tapetum.

9. Explain the categories of poly embryony.

10. List out the advantages of seed dispersal.

IV. Answer in detail: [Any 1] 1x5=5

11. Explain the Morphological Anatomical and Physiological adaptations of Hydrophytes.

OR

Explain the pollination in salvia. (Lever mechanism)

I. Answer any one of the following: 1x1=1

1. What is the genotype of Moth as per Heterogametic sex determination?

2. Which chromosome is affected in alpha thalassemia?

II. Answer any 4 of the following: 4x2=8

3. Write a note on Albinism.

4. Write a note on gemmule.

5. Write a note on pedigree analysis.

6. What is meant by idiogram? Give one use.

7. What is meant by Corpus luteum? Give its functions and role.

8. What is the role of Amniotic membrane and yolk sac?

9. What is meant by Parturition? Which hormone helps in this process?

III. Answer any 2 of the following: 2x3=6

10. Write a note on Amniocentesis.

11. What is meant by Haplodiploidy?

12. Write a note on the significance of Barr body?

13. Differentiate epimorphosis and morphallaxis.

IV. Answer any one of the following: 1x5=5

14. Write a note on Heterogametic males and Heterogametic females.

15. Write a note on Menstrual cycle.

I. Choose the correct answer:

10x1=10

1. Statement of affairs is a
 - a. statement of cash transaction
 - b. statement of asset and liabilities
 - c. summary of credit transaction
2. The excess of asset over liabilities is _____.
 - a. loss
 - b. cash
 - c. capital
3. Opening statement of affairs is usually prepared to find out the
 - a. capital in the beginning of the year
 - b. capital at the end of the year
 - c. profit made during the year
4. A firms total sale is 80,000 and its credit sales is 60,000 then cash sales is _____.
 - a. 1,40,000
 - b. 70,000
 - c. 20,000
5. In _____ system, only personal and cash a/c are opened.
 - a. single entry
 - b. double entry
 - c. trial balance
6. Legacy is a _____.
 - a. revenue expenditure
 - b. capital expenditure
 - c. capital receipt
7. Income and expenditure a/c is a _____.
 - a. nominal a/c
 - b. real a/c
 - c. personal a/c
8. Income and expenditure a/c is prepared to find out
 - a. profit or loss
 - b. surplus or deficit
 - c. financial position
9. Subscription received but not yet earned is considered _____.
 - a. asset
 - b. liability
 - c. income

10. If a donation received without any specific condition, then it is a

- a. general donation
- b. legacy
- c. specific donation

II. Answer any 4 of the following:

4x5=20

11. State the difference between Receipt and payment a/c and Income and expenditure a/c
12. From the following information given below, prepare Receipts and Payments a/c of Kurunji sports club for the year ended 31st December, 2018.

Particulars	Rs.	Particulars	Rs.
Cash in hand (1.1.18)	4000	Paid for printing	2500
Salaries paid	3000	Lockers rent received	1000
Life membership fee received	10000	Tournament receipts	14000
Subscription received	15000	Tournament expenses	10500
Rent received	2000	Investments purchased	25000

13. From the following receipts and payment a/c of Tenkasi Thiruvalluvar mandram, prepare income and expenditure a/c for the year ended 31/3/2019

Receipts	Rs.	Payments	Rs.
To balance b/d:			
Cash in hand	14,000	By salaries	20,000
To interest received	5,000	By rent	24,000
To subscription	55,000	By travelling expenses	2,000
To Legacies	48,000	By printing & stationery	6,000
To entrance fees	7000	By investments made	50,000
To sale of furniture	16000	By sports equipment	
		purchased	33,000
(Book value 17000)		By balance c/d:	
		Cash in hand	10,000
	1,45,000		1,45,000

14. From the following balances prepare a balance sheet as on 31/3/2016

Particulars	Rs.
Cash in hand	12,000
Cash at bank	8,000
Books	16,000
Billiard table	24,000
Furniture	30,000
Investment	30,000
Prepaid expenses	20,000
Building	1,00,000
Outstanding expenses	40,000
Subscription received in advance	24,000
Subscription accrued	20,000
Surplus	20,000

15. From the following particulars calculate total purchases:

Particulars	Rs.	Particulars	Rs.
Sundry Creditors	30,000	Purchase returns	15,000
Bills payable on 1.1.18	25,000	Cash purchases	2,25,000
Paid cash to creditors	1,20,000	Creditors 31.1.18	25,000
Paid for Bills payable	30,000	Bills payable 31.12.18	20,000

III. Answer the following: 1x10=10

16. From the following details of Abdul who maintains incomplete records, prepare Trading, P and L a/c for the year ended 31.3.18 & balance sheet as on the date.

Particulars	1.4.17	31.3.18
Stock	1,00,000	50,000
Sundry debtors	2,50,000	3,50,000
Cash	25,000	40,000

Furniture	10,000	10,000
Sundry creditors	1,50,000	1,75,000

Others details:

Particulars	Rs.	Particulars	Rs.
Drawings	40,000	Cash received from debtors	5,35,000
Discount received	20,000	Sundry expenses	30,000
Discount allowed	25,000	Capital as on 1.4.17	2,35,000
Capital paid to creditors			4,50,000

I. Choose the correct answer:

5x1=5

1. Short term plan is also known as _____.
a) Controlling plans b) De-controlling plans c) Rolling plans
d) De-rolling plans
2. Economic growth measures the _____.
a) Growth of productivity b) Increase in nominal income
c) Increase in output d) None of the above
3. Sarvodaya plan was advocated by _____.
a) Mahatma Gandhi b) J.P.Narayan
c) S.N.Agarwal d) M.N.Roy
4. Econometrics is the amalgamation of _____.
a) 3 subjects b) 4 subjects c) 2 subjects d) 5 subjects
5. Who stated that statistics as a science of estimates and probabilities?
a) Horace Secrist b) R.A.Fisher c) Ya-Lun-chou
d) Boddington

II. Answer any 5 of the following:

5x2=10

6. Mention the indicators of development.
7. Distinguish between economic growth and development.
8. Define correlation.
9. What is statistics?
10. What do you mean by Inferential statistics?
11. What are the kinds of data?

III. Answer any 5 of the following:

5x3=15

12. Trace the evolution of economic planning in India.
13. Distinguish between functional and structural planning.
14. What are the functions of NITI Aayog?
15. What are the functions of statistics?
16. Elucidate the major causes of vicious circle of poverty with diagram.
17. Differentiate the economic model with econometric model.

IV. Answer any 2 of the following:

2x5=10

18. Elucidate the nature and scope of Statistics.
19. Describe the application of Econometrics in Economics.
20. Discuss the economic determinants of economic development.

I. Choose the correct answer:

5x1=5

1. Primary market is a market where securities are traded in the ____.
a) first time b) second time c) three time d) several times
2. Money market institutions are _____.
a) Investment houses b) Commercial banks
c) Discount houses d) Both (a) and (b)
3. Which of the following test is used to measure the various characteristics of the candidate?
a) physical test b) proficiency test c) attitude test
d) psychological test
4. According to _____ "The purposeful activity of an individual on group of associated individuals earn profits by production".
a) Schumpeter Joseph b) Jean Batize
c) A.H.Cole d) Mary Coulter
5. _____ entrepreneurs are totally opposed to changes unfolding in the environment.
a) Fabian b) Imitative c) Drone d) Innovating

II. Answer any 5 of the following:

5x2=10

6. Mention any two features of entrepreneurs.
7. What is an interview?
8. What do you mean by auctioning?
9. Define the term "money market".
10. What is capital market?
11. Who are the participants in a capital market?

III. Answer any 5 of the following:

5x3=15

12. Explain about agricultural entrepreneur.
13. Explain the commercial functions of entrepreneur.
14. Why do you think the medical examinations of a candidate is necessary?
15. What are the features of Certificate of Deposit?
16. Explain about factoring and venture capital institutions.
17. Explain the growth and evolution of Indian capital market.

IV. Answer any 2 of the following:

2x5=10

18. How do you classify entrepreneurs?
19. Briefly explain the various types of tests.
20. Explain the instruments of money market.

I. Choose the correct answer: 5x1=5

1. When the NSEI was established?
 a) 1990 b) 1991 c) 1992 d) 1993
2. A major player in the money market is the _____.
 a) Reserve Bank of India b) State Bank of India
 c) Central Bank d) Commercial Bank
3. Selection is usually considered as a _____ process.
 a) positive b) negative c) neutral d) natural
4. According to _____, “entrepreneur is one who brings together various factors of production and creates an entity to produce product or service”.
 a) Schumpeter Joseph b) Jean Baptize
 c) A.H.Cole d) Mary Coulter
5. _____ is an entrepreneur who has rich expertise in starting a venture.
 a) Technical b) Pure c) Professional d) Corporate

II. Answer any 5 of the following: 5x2=10

6. Give some examples of pure entrepreneurs.
7. Define Intrapreneur.
8. What is selection?
9. What is a CD market?
10. Write a note on OTCEI.
11. Give three advantages of globalization.

III. Answer any 5 of the following: 5x3=15

12. Who is a private entrepreneur?
13. Explain the promotional functions of entrepreneur.
14. What is structured interview?
15. Who are the participants of money market?
16. Write a note on NCDS.
17. Discuss about the evolution and growth of Indian capital market.

IV. Answer any 2 of the following: 2x5=10

18. Distinguish between rural and urban entrepreneur.
19. Explain in detail the functions of an entrepreneur.
20. Explain the principles of placement.

I. Choose the correct Answers: 5x1=5

1. Sarvodaya plan was advocated by _____.
 a. Mahatma Gandhi b. J.P. Narayan
 c. S.N. Agarwal d. M.N. Roy
2. The chair person of NITI Aayog is _____.
 a. Prime Minister b. president
 c. Vice - president d. Finance Minister
3. The non-economic determinant of economic development
 a. Natural resources b. Human resource
 c. Foreign trade d. Capital formation
4. Econometric is the word coined by _____.
 a. Francis Galton b. Ragnar Frisn
 c. Karl person d. Spears man
5. The term regression was used by _____.
 a. Newton b. Pearson c. Spearman d. Galton

II. Answer any 5 of the following: 5x2=10

6. What is statistics?
7. What are the kinds of data?
8. What is Econometrics?
9. Distinguish between economic growth & development.
10. Define economic planning.
11. Write a short note on NITI Aayog.

III. Answer any 5 of the following: 5x3=15

12. Elucidate major causes of vicious circle of poverty with diagram.
13. Distinguish between Functional & Structural planning.
14. What are the functions of NITI Aayog?
15. Differentiate the economic model with econometric model.
16. What are the functions of Statistics?
17. Specify the objectives of econometrics?

IV. Answer any 2 of the following: 2x5=10

18. Elucidate nature and scope of Statistics.
19. Describe the application of Econometrics in Economics.
20. Describe different types of planning.

29.11.19 Comprehensive Revision Programme-2 Marks: 40
 Std: XII (A,B) AN Physics Time: 1.15 hrs

I. Choose the correct answer: 5x1=5

1. The electric potential between a proton and an electron is given by $V=V_0 \ln\left(\frac{r}{r_0}\right)$, where r_0 is a constant. Assume that Bohr atom model is applicable to potential then variation of radius of n^{th} orbit r_n with the principal quantum number n is _____.

- a) $r_n \propto \frac{1}{n}$ b) $r_n \propto n$ c) $r_n \propto \frac{1}{n^2}$ d) $r_n \propto n^2$

2. If the nuclear radius of ^{27}Al is 3.6 fermi, the approximate nuclear radius of ^{64}Cu is _____.

- a) 2.4 b) 1.2 c) 4.8 d) 3.6

3. The nucleus is approximately spherical in shape. Then the surface area of nucleus having mass number A varies as _____.

- a) $A^{\frac{2}{3}}$ b) $A^{\frac{4}{3}}$ c) $A^{\frac{1}{3}}$ d) $A^{\frac{5}{3}}$

4. The ratio of the wavelength for the transition from $n=2$ to $n=1$ is Li^{++} , He^+ and H is _____.

- a) 1:2:3 b) 1:4:9 c) 3:2:1 d) 4:9:36

5. The charge of cathode rays is _____.

- a) positive b) negative c) neutral d) not defined

II. Answer any 5 of the following: 5x2=10

6. What is Isotone? Give an example.

7. Write any 3 postulates of Bohr atom model.

8. What is distance of closest approach?

9. What is meant by radioactivity?

10. What is meant by activity? Give its unit.

11. What is mass defect?

II. Answer any 5 of the following: 5x3=15

12. What are the properties of cathode rays?

13. Derive the radius of the n^{th} orbit of an electron using Bohr atom model.

14. Explain in detail about the nuclear force.

15. A radioactive sample has $2.6\mu\text{g}$ of pure $^{13}_7\text{N}$ which has a half life of 10 minutes

- a) How many nuclei are present initially?
 b) What is the activity initially?
 c) Calculate the mean life of this sample.

16. Discuss the variation of binding energy with the mass number by graph.

17. Define Isotopes, Isobars and Isotones with example.

IV. Answer any 2 in detail: 2x5=10

18. Discuss the spectral series of hydrogen atom.

19. Describe the working of nuclear reactor with a block diagram.

20. Discuss the Millikan's oil drop experiment to determine the charge of an electron.

- I. Choose the correct answer: 5x1=5
- What is the symbol of Weak Entity?
 a) square b) double square c) rectangle d) double rectangle
 - We can use _____ to comment a single line.
 i) /? ii) // iii) # iv) /**/
 a) only (ii) b) (i), (iii) and (iv) c) (ii), (iii) and (iv)
 d) Both (ii) and (iv)
 - Maximum characters used in the label of a node?
 a) 255 b) 128 c) 63 d) 32
 - 3-D secure, a protocol was developed by _____.
 a) Visa b) Master c) Rupay d) PayTM
 - EDI interchanges starts with _____ and ends with _____.
 a) UNA, UNZ b) UNB, UNZ c) UNA, UNT d) UNB, UNT
- II. Answer any 5 in short: (Q.No.8 is compulsory) 5x2=10
- Define EDI.
 - What are the four major components of EDI?
 - Write a short note on typopiracy.
 - Write the difference between SQL and MySQL.
 - Define Client Server Architecture.
 - What is a zone?
- III. Answer any 5 in brief: (Q.No.14 is compulsory) 5x3=15
- Write a note on domain name.
 - Explain on Evolution of DBMS.
 - In how many ways you can embed PHP code in HTML page?
 - Differentiate asymmetric and symmetric algorithms.
 - Explain 3D secure payment protocols.
 - Write a short note on EDI.
 - Write about EDIFACT separators.
- IV. Answer any 2 in detail: 2x5=10
- Briefly explain various types of EDI.
 - Briefly explain SSL.
 - Explain operators in PHP with example.

- I. Choose the correct answer: 5x1=5
- The data type whose representation is known are called _____.
 a) Built in data type b) Derived data type
 c) Concrete data type d) Abstract data type
 - Which operator is also called as comparative operator?
 a) Arithmetic b) Relational c) Logical d) Assignment
 - Class members are accessed through which operator?
 a) & b) . c) # d) %
 - What type of relationship does hierarchical model represents?
 a) one to one b) one to many c) many to one
 d) many to many
 - Which key is used to run the module?
 a) F6 b) F4 c) F3 d) F5
- II. Answer any 5 of the following in one or two lines: 5x2=10
 Q.No.12 is compulsory
- List the general types of data visualization.
 - What are the advantages of DBMS?
 - What are the components of DBMS?
 - How will you declare a class variable?
 - How will you create constructor in python?
 - What is a literal? Explain the types of literals.
 - Differentiate Constructors and Destructors.
- III. Answer any 5 of the following in brief: 5x3=15
 Q.No.19 is compulsory
- Differentiate concrete and abstract datatype.
 - What is indentation?
 - Explain Ternary operator with examples.
 - What are class members? How do you define?
 - What is the role of DBA?
 - Explain Cartesian product with eg.
 - Write the coding for the following:
 a) To check if PIP is installed in your PC.
 b) To check the version of PIP installed.
 c) To list the packages in matplotlib lib.
- IV. Answer any 2 in detail: 2x5=10
- Differentiate DBMS and RDBMS.
 - Describe in detail the procedure script mode programming.
 - How will you facilitate data abstraction with example?

I. Choose the correct answer:

10x1=10

1. A random variable X has binomial distribution with $n=25$ and $p=0.8$ then standard deviation of X is _____.
 a) 6 b) 4 c) 3 d) 2
2. On a multiple-choice exam with 3 possible destructives for each of the 5 questions, the probability that a student will get 4 or more correct answers just by guessing is _____.
 a) $\frac{11}{243}$ b) $\frac{3}{8}$ c) $\frac{1}{243}$ d) $\frac{5}{243}$
3. Suppose that X takes on one of the values 0, 1 and 2. If for some constant k, $P(X=i)=kP(X=i-1)$ for $i=1,2$ and $P(X=0)=\frac{1}{7}$, then the value of k is _____.
 a) 1 b) 2 c) 3 d) 4
4. If the function $f(x)=\frac{1}{12}$ for $a<x<b$, represents a probability density function of a continuous random variable X, then which of the following cannot be the value of a and b?
 a) 0 and 12 b) 5 and 17 c) 7 and 19 d) 16 and 24
5. Two coins are to be flipped. The first coin will land on heads with probability 0.6, the second with probability 0.5. Assume that the results of the flips are independent, and let X equal the total number of heads that result. The value of $E[X]$ is _____.
 a) 0.11 b) 1.1 c) 11 d) 1
6. For binomial random variable mean (μ) is _____.
 a) npq b) np c) np² d) n+p
7. If $P(X=0)=1-P(X-1)$. If $E[X]=3\text{Var}(X)$, then $P(X=0)$ is _____.
 a) $\frac{2}{3}$ b) $\frac{2}{5}$ c) $\frac{1}{5}$ d) $\frac{1}{3}$

8. The numerical values to the elements in sample space is called _____.
 a) Random variable b) Continuous variable
 c) Outcomes d) Inverse Image

9. If $f(x)=\begin{cases} 2x & 0 \leq x \leq a \\ 0 & \text{otherwise} \end{cases}$
 is a probability density function of a random variable, then the value of a is _____.
 a) 1 b) 2 c) 3 d) 4
10. Let x have a Bernoulli distribution with mean 0.4, then the variance of $(2x-3)$ is _____.
 a) 0.24 b) 0.48 c) 0.6 d) 0.96

II. Answer any 3 of the following:

3x2=6

11. Suppose a pair of unbiased dice is rolled once. If x denotes the total score of two dice, write the sample space and values taken by random variable X.
12. Compute $P(X=k)$ for the binomial distribution $B(n, p)$ where $n=9$, $p=\frac{1}{2}$, $k=7$
13. Let X be a random variable denoting the life time of an electrical equipment having probability density function
 $f(x) = \begin{cases} K e^{-2x} & \text{for } x > 0 \\ 0 & \text{for } x \leq 0 \end{cases}$
 find the value of K.
14. Four fair coins are tossed once. Find the probability mass function.

III. Answer any 3 of the following:

3x3=9

15. Find the mean and variance for the random variable x with the given probability mass function of $f(x)=\begin{cases} \frac{4-x}{6} & x=1,2,3 \end{cases}$

16. If μ and σ^2 are the mean and variance of the discrete random variable x and $E(x+3)=10$ and $E(x+3)^2=116$, find μ and σ^2 .

17. The probability that Mr.Q hits a target at any trial is $\frac{1}{4}$.

Suppose he tries at the target 10 times. Find the probability that he hits the target (i) exactly 4 times (ii) atleast one time.

18. Find the probability mass function and cumulative distribution function of number of girl child in families with 4 children, assuming equal probabilities for boys and girls.

IV. Answer any 3 of the following: $3 \times 5 = 15$

19. A random variable x has the following probability mass

Function

x	1	2	3	4	5
$f(x)$	K^2	$2K^2$	$3K^2$	$2K$	$3K$

Find (i) the value of K (ii) $P(2 \leq x < 5)$ (iii) $P(3 < x)$

20. In a pack of 32 playing cards, two cards are drawn at random simultaneously. If the number of black cards drawn is a random variable, find the values of the random variable and number of points in its inverse image.

21. Two balls are chosen randomly from an urn containing 8 white and 4 black balls. Suppose that we win Rs.20 for each black ball selected and we lose Rs.10 for each white ball selected. Find the expected winning amount and variance.

22. A retailer purchases a certain kind of electronic device from a manufacturer. The manufacturer indicates that the defective rate of the device is 5%. The inspector of the retailer randomly picks 10 items from a shipment. What is the probability that there will be (i) atleast one defective item (ii) exactly two defective item ?

I. Choose the correct answer: 10x1=10

- In a degenerate solution number of allocations is _____.
 a) equal to $m+n-1$ b) not equal to $m+n-1$
 c) less than $m+n-1$ d) greater than $m+n-1$
- North-west corner refers to _____.
 a) top left corner b) top right corner
 c) bottom right corner d) bottom left corner
- The rank of the matrix $\begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 4 & 9 \end{bmatrix}$ is _____.
 a) 0 b) 1 c) 2 d) 3
- In a transition probability matrix, all the entries are greater than or equal to _____.
 a) 2 b) 1 c) 0 d) 3
- $|An \times n|=3$, $|\text{adj. } A|=243$ then the value of n is _____.
 a) 4 b) 6 c) 5 d) 7
- If $(A,B) \neq \rho(A)$ then the equation are _____.
 a) Consistent and unique solution
 b) Inconsistent and unique solution
 c) No solution d) Inconsistent and no solution
- Cramer's rule is applicable only when _____.
 a) $\Delta \neq 0$ b) $2\Delta \neq 0$ c) $\Delta = 0$ d) 1
- To find the feasible solution total supply must be _____ to total demand.
 a) not equal b) 0 c) 1 d) equal
- In an assignment problem involving four workers and three jobs, total number of assignment possible are _____.
 a) 4 b) 3 c) 7 d) 12
- A type of decision-making environment is _____.
 a) certainty b) uncertainty c) risk d) all of the above

II. Answer any 5 of the following:

5x3=15

11. Consider the following pay-off matrix.

Alternative	Pay-offs (Conditional events)			
	A ₁	A ₂	A ₃	A ₄
E ₁	7	12	20	27
E ₂	10	9	10	25
E ₃	23	20	14	23
E ₄	32	24	21	17

Select the best alternative (i) Maximin & (ii) Minimax

12. A computer centre has got three expert programmers. The centre needs three application programmes to be developed. The head of the computer centre, after studying carefully the programmes to be developed, estimates the computer time in minutes required by the experts to the application programme as follows:

	Programmes		
	P	Q	R
1	120	100	80
2	80	90	110
3	110	140	120

13. Obtain an initial basic feasible solution to the following transportation problem using least cost method.

	D ₁	D ₂	D ₃	a _i
O ₁	2	3	4	2
O ₂	3	2	5	8
O ₃	2	2	1	10
b _j	6	8	6	

Here O_i and D_j denote ith origin and jth destination respectively.

14. Solve the equation by using Cramer's rule.

$$5x+3y=17, 3x+7y=31$$

15. 80% of the students who do social work during one study period, will do the social work at the next study period. 30% of students who do Tamil work during one study period will do the Tamil work at the next study period. Initially there was 60 students do social work and 40 students do tamil work.

Calculate,

(i) the transition probability matrix.

(ii) the number of students who do Social work, Tamil work do the next subsequent 2 study periods.

16. Find the rank of the matrix $A = \begin{pmatrix} 0 & 1 & 2 & 1 \\ 1 & 2 & 3 & 2 \\ 3 & 1 & 1 & 3 \end{pmatrix}$

III. Answer any 3 of the following: 3x5=15

17. Assign four trucks 1,2,3 and 4 to vacant spaces A,B,C,D,E and F so that distance travelled is minimized. The matrix below shows the distance

	1	2	3	4
A	4	7	3	7
B	8	2	5	5
C	4	9	6	9
D	7	5	4	8
E	6	3	5	4
F	6	8	7	3

18. A new transit system has just gone into operation in Chennai. Of those who use the transit system this year, 30% will switch over to using metro train next year and 70% will continue to use the transit system. Of those who use metro train this year, 70% will continue to use metro train next year and 30% will switch over to the transit system. Suppose the population of Chennai city remains constant and that 60% of the commuters use the transit system and 40% of the commuters use metro train this year,

(i) What percent of commuters will be using the transit system after one year?

(ii) What percent of commuters will be using the transit system in the long run?

19. Determine basic feasible solution to the following transportation problem using North west corner rule.

		Links					
		A	B	C	D	E	Supply
P		2	11	10	3	7	4
Origins Q		1	4	7	2	1	8
R		3	9	4	8	12	9
Demand		3	3	4	5	6	

20. Explain Vogel's approximation method by obtaining initial feasible solution of the following transportation problems.

	D ₁	D ₂	D ₃	D ₄	Supply
O ₁	2	3	11	7	6
O ₂	1	0	6	1	1
O ₃	5	8	15	9	10
Demand	7	5	3	2	