Q. P. Code: 27773

(3 Hours) [Total Marks : 80

N.B. : 1) Question **No.1** is **compulsory.**
2) Attempt any **three** from the remaining five questions.
3) Answers to sub-questions should be grouped together.

1. (a) Explain any two instruction addressing modes with suitable examples of each. (05)
   (b) Simplify the following Boolean expression using Karnaugh Map. (05)
   $F(A,B,C,D) = \sum(1,3, 8, 9, 11, 13, 14) + d(5, 6)$
   (c) Discuss the working of an Half adder with its truth table and circuit diagram. (05)
   (d) Explain the structure and working of an SRAM. (05)

2. (a) What are Multiplexers and de-multiplexers? Explain its use in logic circuits. Construct a 1:8 demultiplexer using basic logic gates and derive its truth table. (10)
   (b) Explain the role of registers in a CPU. Discuss the organisation of registers in a CPU. (10)

3. (a) What is a Control Unit? Explain the basic functions of a Control Unit. Discuss the basic model of a control unit along with its internal organization. (10)
   (b) Explain, how are multiple instructions executed by a processor. Discuss the six stage instruction pipelining mechanism with the help of a timing diagram. (10)

4. (a) Discuss the use of a Cache Memory. Explain various Cache mapping techniques. (10)
   (b) What are interrupts? Explain methods for handling interrupts. (10)

5. (a) Explain the basic organization of an I/O module with its block diagram. Discuss the Programmed I/O and Interrupt driven techniques for I/O operation. (10)
   (b) What is a RAID? Explain various RAID Levels in detail with the help of appropriate diagrams. (10)

6. Write Short Notes on **any four** of the following: (20)
   (a) Flynn's Taxonomy
   (b) R-S Flip Flop
   (c) Bus arbitration methods
   (d) RISC v/s CISC
   (e) Bus interconnections
   (f) NUMA

MCA Sem-I Choice Based NID-2016 23-12-16

Sub - IT in management

Q. P. Code : 751102

(3 Hours) **(Marks: 80)**

Note: (1) Question no.1 is compulsory.
(2) Attempt Any Three question from Q. 2 to Q. 7.
(3) Figures to right indicates marks.
(4) Additional information can be considered but justify the same.
(5) Write assume data for case study.

1. Write a Short on Following **(Any four).** **20**
(a) Current Trends in IT
(b) Social Responsibilities of IT
(c) Internet governance
(d) Manager's Responsibilities for Information Technology
(e) Roles of IT in M-commerce
(f) International Business using IT

2. (a) Explain IT design variable for Online Airline Reservation system. **10**
(b) Explain risks of a global IT strategy also explain its benefits. **10**

3. (a) List and Explain in detail Contents of an Information System Plan. **10**
(b) Analyze the statement "key challenge for management is the integration of information technology and the business". **10**

4. (a) Explain stepwise process to manage information Technology internationally. **10**
(b) Explain the necessities to acquire technology in a firm. How to check for maturity of technology? **10**

5. (a) Identify and evaluate different option for regulating and managing acquisition for Technology. **10**
(b) List the drawbacks of workplace monitoring. How should managers introduce organisational changes that employ technology? **10**

6. (a) Design Role Of Computer in "The Calyx and Corolla website (for managing delivery of flowers online)" considering perspective of all stakeholders. **10**
(b) Detine Information Technology. Classify different type of Information System availablc in modern organization. **10**

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COURSE : M.C.A.(CBCGSS) (Choice Based) (Prog-T8621A)

QP Code : 751102

Change in the instruction are -

Q.1 is compulsory question

Solve any 3 from Q. 2 to Q 6

Query Update time: 23/12/2016 12:05 PM

M.C.A. Sem-I (Choice Based)

Q.P. Code :02850

[Time: 3 Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. Q .1 is **compulsory**
2. **Attempt Any Three questions from Q.2 to Q.6**
3. **Figures to right indicates marks**
4. **Additional information can be considered but justify the same**

Q.1 Write Short on Following (Any Four) **20**

a. Role Of Computer in Modern Business

b. E- governance

c. Roles of IT in E-commerce

d. International Business using IT

e. Added Value of The CIO

f. Value Chain

Q.2 a) Summarize key management issues for Information Technology Management **10**

b) Explain stepwise process to manage Information Technology internationally. **10**

Q.3 a) Identify and evaluate different option for regulating and managing acquisition. **10**

b) Analyze the statement "Key challenge for management is the integration of information technology and the business". **10**

Q.4 a) Explain benefits of a global IT strategy. Also associated risk **10**

b) Differentiate between major types of international business strategies. **10**

Q.5 a) List and Explain in detail Contents of an Information System Plan **10**

b) Describe different perspectives of Information system. **10**

Q.6 a) Describe and Compare the role of Information Technology in E-Commerce and M-Commerce **10**

b) Explain the necessities in acquire technology in a firm. Write down steps to check for maturity of technology. **10**

MCA (CBSGS) - I 13/12/2016

Object Oriented Programming

Choice - Based

Q.P. Code : 750702

(3 Hours) **[Total marks : 80]**

N.B.: 1) Question No. **1 is compulsory.**
2) Attempt any **three** from remaining **five** questions.

1. (a) What are Programming Paradigms? Explain Procedure Oriented and Object Oriented Programming Paradigms in detail. **10**
   (b) What is Dynamic Memory Allocation? Design a Class DynamicArray with data[](int) and size(int) as data members. Add a Constructor taking size as a parameter and allocate memory for the array Dynamically. Add Methods to store integer elements in the array and print the elements of the array. **10**

2. (a) Design a Class Counter with Count(int) data member. Overload ++operator for pre- increment and post-increment of integer Count Variable. **10**
   (b) Differentiate between **10**
   1. C and C++
   2. Pass By Value and Pass by Reference

3. (a) What is use of Constructor and Destructor? Explain different types of constructors with suitable example. **10**
   (b) What is Inheritance? Explain Public, Private and Protected Inheritance with a suitable example of each. **10**

4. (a) What is Template? Explain the concept of Function Template. Write a template function for addition of its arguments. Instantiate it for characters, integers and floats. **10**
   (b) Explain Exception handling mechanism of C++. Write a program to handel DivisionByZero exception. **10**

5. (a) What is polymorphism? Explain with example how polymorphism can be achieved at run-time. Add a note on Virtual destructors. **10**
   (b) What are Different File Opening Modes? Declare a person class-with age(int) and name(stirng). Write a program to store and access the object of person class into and from binary file. **10**

6. Write short notes on (any four) : **20**
   a) Uses of Explicit and Mutable Keywords
   b) Static data members and functions
   c) Bitwise Operators in C++
   d) Namespaces in C++
   e) Types of Pointers

****

MCA (CBSGS) - I 13/12/2016

Object Oriented Programming

Choice - Based

Q.P. Code : 750702

(3 Hours) **[Total marks : 80]**

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MCA (CBSGS) - I 13/12/2016

Object Oriented Programming

Choice - Based

Q.P. Code : 750702

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   (b) Differentiate between **10**
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   2. Pass By Value and Pass by Reference

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6. Write short notes on (any four) : **20**
   a) Uses of Explicit and Mutable Keywords
   b) Static data members and functions
   c) Bitwise Operators in C++
   d) Namespaces in C++
   e) Types of Pointers

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object oriented programming 15/05/2012

MCA | Sem I | (Choice based) (15)

Q.P. Code :02555

[Time: Three Hours] [Marks:80]

Please check whether you have got the right question paper.

N.B: 1. **Question.No.1** is Compulsory.
2. Attempt any **three** from reaming **five** questions.

Q.1 a) What is a Class? How will you create a class in C++? What are different elements that can be added to a Class? Explain with a suitable program. **10**

b) What is inline function? What are restrictions on use of Inline functions? Write a program to implement the concept of inline function. **10**

Q.2 a) What is Operator Overloading? Explain how you will overload a binary operator with a suitable programming example. **10**

b) What is friend function? What is need of friend function? Write a program to illustrate the use of friend function. **10**

Q.3 a) What is inheritance? What type of ambiguity occurs in multiple inheritances and how is it resolved? **10**

b) Explain the differences between: **10**
1) Static and Constant
2) C and C++

Q.4 a) What is Template? Explain the concept of Class Template. Write a program to implement the use of class template. **10**

b) What is polymorphism? Explain with example how polymorphism can be achieved at run-time. **10**

Q.5 a) Declare a student class-with roll no, name and address. Write a program to store and access the object of student class into and from binary file. **10**

b) What is Exception Handling? Write a program to create and handle user defined exception. **10**

Q.6 Write short notes on **(any four)** **20**
a) New and delete operators

b) This pointer

c) Namespaces in C++

d) Manipulators

e) Loops in C++

MCA Sem I. Choice Based. Nov/Dec-2016

Sub:- Statistics & Probability. 21-12-16

Q.P. Code : 751002

(3 Hours) **Total Marks: 80**

N.B. **(1) Question No. 1 is compulsory.**
(2) Attempt any **THREE** out of remaining five questions.
(3) Assume any necessary data but justify the same.
(4) Figure to the right indicates marks.
(5) Use of scientific calculator is allowed.

Q.1 **a)** Mean and standard deviation of 100 items are 40 and 10. If at the time of calculation two items are wrongly taken as 30 and 72 instead of 3 and 27, find the correct mean and standard deviation. **[5]**

b) In the frequency distribution of 100 families given below, the number of families corresponding to expenditure groups 20-40 and 60-80 are missing. The median is known to be 50. Find the missing frequencies. **[5]**

Expenditure (in Rs.)	No. of Families
0-20	14
20-40	?
40-60	27
60-80	?
80-100	15

c) A box contains 36 tag numbered 1 to 36. One tag is drawn at random. Find the probability that the number on the tag is either divisible by 3 or is a perfect square. **[5]**

d) If X is a discrete random variable, then prove that : **[5]**
i) $E(aX + b) = a\,E(X) + b$
ii) $V(aX + B) = a^2\,V(X)$

Q.2 **a)** If X and Y are two random variables having joint probability density function **[10]**
$f(x,y) = 2 \quad ; \quad 0 < x < 1 \;,\; 0 < y < x$
$= 0 \quad ; \quad$ otherwise
i) Find the marginal density functions of X and Y.
ii) Find conditional density function of Y given X and X given Y.
iii) Check for independence of X and Y.

b) Calculate the Bowley's coefficient of skewness for the following distribution. **[5]**

Class	05-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	07	09	16	22	14	12	3

TURN OVER

	c)	Use the Stem and Leaf plot to answer following questions. **Stem** | **Leaf** 6 | 1 1 4 6 7 8 7 | 2 3 5 7 9 8 | 1 3 5 6 6 7 7 8 9 9 | 0 0 3 4 6 8 9 9 10 | 0 0 i) What is the best test score? ii) How many students took the test? iii) How many students scored 90? iv) What is the lowest score? v) Find the difference between the high and low scores.	[5]
Q.3	a)	Ten competitors in a beauty contest are ranked by three judges in the following order. | Judge1 | 1 | 1 | 5 | 4 | 8 | 9 | 6 | 10 | 7 | 3 | 2 | | Judge2 | 2 | 4 | 8 | 7 | 6 | 5 | 9 | 10 | 3 | 2 | 1 | | Judge3 | 3 | 6 | 7 | 8 | 1 | 5 | 10 | 9 | 2 | 3 | 4 | Use rank correlation coefficient to discuss which pair of judges has the nearest approach to beauty.	[10]
	b)	Let X be a discrete random variable with the following p.d.f. | X | 0 | 1 | 2 | 3 | | P(X) | 1/3 | 1\2 | 1\24 | 1\8 | Find E(Y) where $Y = (X-1)^2$	[5]
	c)	The letters of the word "failure "are arranged at random. Find the probability that the consonants may occupy only odd position.	[5]
Q.4	a)	State and prove Baye's theorem and use it to determine the probabilities in the following example: In a bolt factory machines A, B, and C manufacture respectively 25%, 35% and 40% of total. Of their output 5, 4, 2, percent are defective bolts. A bolt is drawn at random from the product and is found to be defective. What is the probability that it was manufactured by machines A, B,C ?	[10]
	b)	Show that whether A and B are independent, positively associated or negatively associated. $(AB) = 128$, $(\alpha B) = 384$, $(A\beta) = 24$, $(\alpha\beta) = 72$	[5]

c) The following figures show the distribution of digits in number chosen at random from a telephone directory. **[5]**

Digits	0	1	2	3	4	5	6	7	8	9
Freq.	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory. (Given the table value of chi_square for 9 degrees of freedom at 5% level of significance is 16.92)

Q.5 **a)** An analyst takes a random sample of 100 recent truck shipment made by a company and records the distance in miles and delivery time to the nearest half-day from the time that the shipment was made available for pick-up as given in the table below **[10]**

Distance In miles (x)	852	215	1070	550	480	920	1350	325	670	1215
Delivery time in days (Y)	3.5	1	4	2	1	3	4.5	1.5	3	5

i) Determine lines of Regression Y on X and X on Y
ii) Find Karl Pearson's correlation coefficient
iii) Estimate the delivery time in days for 1000 miles
iv) Estimate the distance in miles for 2.5 days.

b) Find the quartile deviation for the following data: **[5]**

Class Interval	0-15	15-30	30-45	45-60	60-75	75-90	90-105
Frequency	8	26	30	45	20	17	4

c) The probability that a person stopping at a petrol pump will ask for petrol is 0.8, will ask for water is 0.7 and for both is 0.65. find the probability that the person will ask for : **[5]**
i) either petrol or water ii) neither petrol nor water iii) only petrol

Q.6 **a)** Draw Box and Whisker diagram for the following data set **[5]**
3, 7, 7, 3, 10, 1, 6, 6

b) Test the consistency of the following data with the symbols having their usual meaning : N = 1000 , (A) = 600 , (B) = 500 , (AB) = 50 **[5]**

c) A machine is design to produce insulating washers for electric devices of average thickness of 0.025 cm. A random sample of 10 washers was found to have an average thickness of 0.024 cm. with a standard deviation of 0.002 cm. Test the significance of the deviation. Value of t for 9 degrees of freedom at 5% level is 2.262. **[5]**

d) A continuous random variable has pdf **[5]**

$f(x) = k(2-x), \quad 0 \le x < 2$
$= kx(x-2), \quad 2 \le x < 3$
$= 0, \quad$ otherwise

Find k and median of the distribution.

COURSE : M.C.A.(CBCGSS) (Choice Based) (Prog-T8621A)

QP Code: 751002

Q 3 (a) TABLE READ AS FOLLOW

Judge 1	1	5	4	8	9	6	10	7	3	2
Judge 2	4	8	7	6	5	9	10	3	2	1
Judge 3	6	7	8	1	5	10	9	2	3	4

Query Update time: 21/12/2016 12:35 PM

MCA Sem I. Choice Based. Nov/Dec-2016

Sub:- Statistics & Probability. 21-12-16

Q.P. Code : 751002

(3 Hours) **Total Marks: 80**

N.B. **(1) Question No. 1 is compulsory.**
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b) In the frequency distribution of 100 families given below, the number of families corresponding to expenditure groups 20-40 and 60-80 are missing. The median is known to be 50. Find the missing frequencies. **[5]**

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c) A box contains 36 tag numbered 1 to 36. One tag is drawn at random. Find the probability that the number on the tag is either divisible by 3 or is a perfect square. **[5]**

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b) Calculate the Bowley's coefficient of skewness for the following distribution. **[5]**

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TURN OVER

	c)	Use the Stem and Leaf plot to answer following questions. **Stem** | **Leaf** 6 | 1 1 4 6 7 8 7 | 2 3 5 7 9 8 | 1 3 5 6 6 7 7 8 9 9 | 0 0 3 4 6 8 9 9 10 | 0 0 i) What is the best test score? ii) How many students took the test? iii) How many students scored 90? iv) What is the lowest score? v) Find the difference between the high and low scores.	[5]
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	b)	Let X be a discrete random variable with the following p.d.f. | X | 0 | 1 | 2 | 3 | | P(X) | 1/3 | 1\2 | 1\24 | 1\8 | Find E(Y) where $Y = (X-1)^2$	[5]
	c)	The letters of the word "failure "are arranged at random. Find the probability that the consonants may occupy only odd position.	[5]
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b) Find the quartile deviation for the following data: **[5]**

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c) The probability that a person stopping at a petrol pump will ask for petrol is 0.8, will ask for water is 0.7 and for both is 0.65. find the probability that the person will ask for : **[5]**
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Find k and median of the distribution.

COURSE : M.C.A.(CBCGSS) (Choice Based) (Prog-T8621A)

QP Code: 751002

Q 3 (a) TABLE READ AS FOLLOW

Judge 1	1	5	4	8	9	6	10	7	3	2
Judge 2	4	8	7	6	5	9	10	3	2	1
Judge 3	6	7	8	1	5	10	9	2	3	4

Query Update time: 21/12/2016 12:35 PM

Q.P. Code : 26361

[Time: 3 Hours] [Marks: 80]

Please check whether you have got the right question paper.

N.B:
1. Questions No. 1 is compulsory.
2. Attempt any THREE out of remaining five questions.
3. Assume any necessary data but justify the same.
4. Figure to the right indicates marks.
5. Use of scientific calculator is allowed.

1. A) The mean and standard deviation of 200 items are found to be 60 and 20. At the time of calculations two items are wrongly taken as 3 and 67 instead of 13 and 17. Find the correct mean and standard deviation. **05**

b) In a random arrangement of the letters of the word 'COMMERCE', find the probability that all the vowels come together. **05**

c) Find the coefficient of variation for the following data: **05**
12,17,20,16,13,11,18,12,18,13

d) Let X be random variable with the following probability distribution. Find $E(2x+1)^2$ **05**

X	-3	6	9
P(X =x)	1/6	1/2	1/3

2. a) The joint density function of the two dimensional random variable (X, Y) is given by **10**

$$f_{xy}(x, y) = x^3 y^3 / 16 \quad , 0 \le x \le 2, 0 \le y \le 2$$
$$= 0, \quad \text{otherwise.}$$

Find the marginal densities of X and Y. Also find the cumulative distribution functions of X and Y.

b) Calculate Modal marks for data given below: **05**

Marks	10-30	30-50	50-70	70-90	90-110	110-130
No. of Students	4	10	14	12	8	6

c) Find the Spearman's Rank correlation: **05**

OS	52	34	47	65	43	34	54	65
DS	65	59	65	68	82	60	57	58

3. a) The regression line of y on x for a certain bivariate data is $5y + 3x = 52$ and the regression line of x on y is $2x + y = 30$. Find **10**
   1. the arithmetic mean of x and y
   2. the coefficient of correlation between x and y
   3. the most probable value of y when $x = 10$

b) We are given a box containing 5000 IC chips, of which 1000 are manufactured by company X and rest by company Y. 10% of the chips made by company X and 5% of the chips made by company Yare defective. If a randomly chosen chip is found to be defective, find the probability that it comes from company X. **05**

c) If X is a random variable and a, b are constants, then prove that **05**
$$V(a X + b) = a^2 V(x)$$

4. a) State the Baye's theorem. Three machines A, Band C produce respectively 40%, 10% and 50% of the items in a factory. The % of defective items produced by the machine is respectively 2%, 3% and 4%. An item from the factory is selected at random. **10**
   1. Find the probability that the item is defective.
   2. If the item is defective, find the probability that the item was produced by machine C

   b) Test consistency of the following data: **05**
   N = 60 (AB) = 25 (A) = 51 (B) = 32

   c) Two hundred randomly selected adults were asked whether TV shows as a whole are primarily entertaining, educational or a waste of time. The respondents were categorized by gender. Is there a relationship between gender and opinion in the population interest? **05**
   (Critical value of $X^2 = 5.99$)
   Their responses are given in the table below:

Actual frequencies	**Opinion**		
Gender	Entertaining	Educational	Waste of time
Male	52	28	30
Female	28	12	50

5. a) Calculate Bowley's coefficient of skewness for the following: **10**

Class	30-35	35-40	40-45	45-50	50-55	55-60
Frequency	5	10	30	35	15	5

   b) The means of two samples of sizes 50 and 100 respectively are 54.1 and 50.3 and the standard deviation are 8 and 7. Obtain the standard deviation of the sample of size 150 obtained by combing the two samples. **05**

   c) Prove with example that mutual independence does not imply pair wise independence. **05**

6. a) Calculate standard deviation for the following data: **05**

20-30	30-40	40-50	50-60	60-70	70-80	80-90
3	61	132	153	140	51	2

   b) Show that whether A and B are independent, positively associated or negatively associated. **05**
   $(AB) = 128$, $(\alpha B) = 84$, $(A\beta) = 24$ and $(\alpha\beta) = 72$

   c) Two dice are rolled. Let X denote the random variable which counts the total number of points on the upturned faces. Construct a table giving the non-zero values of the probability mass function. **05**

   d) The mean of marks in statistics of 100 students in a class was 72. The mean of marks of boys was 75, while their number was 70. Find the mean of girls in the class. **05**

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(31)

MCA-Sem-I Choice Based 23/05/17

Q.P. Code :04436

[Time: 3 Hours] [Marks:80]

Please check whether you have got the right question paper.

N.B:
1. Question No. 1 is compulsory
2. Attempt any three question of remaining
3. Assume any necessary data but justify the same
4. Figure on the right indicate the full marks
5. Use of scientific calculator is allowed

Q.1 a) Find the median wage of the following distribution 05

Roll no.	0-20	20-40	40-60	60-80	80-100
Marks	5	8	15	16	6

b) The age of people in an old age home is : 05

57 61 57 57 58 57 61 54 68 51 49 64 50 48 65 52 56 46 54 49 50 47 55 54 42 51 56 55 51 54 51 60 62 43 55 56 61 52 69 64

Make a stem and leaf plot of the data.

i) How many people are 51 years old?

ii) What age is the youngest and the oldest person?

iii) How many people are 40-49 years old?

c) What is the probability that four A's come consecutively in the arrangement of the letters in word "MAHARASHTRA"? 05

d) An urn contains 7 white and 3 red balls. Two balls are drawn together at random from the urn. Compute the probability that neither of them is white. Find also the probability of getting one white and one red. Hence compute the expected number of white balls drawn. 05

Q.2 a) Two dice are rolled. Let X denotes the random variable which counts the total number of points on the upturned faces. Construct a table giving the non- zero values of the probability mass function. 05

b) If a continuous random variable has pdf 05

$f(x) = k(2-x),\ 0 \leq x < 2$

$= kx(x-2),\ 2 \leq x < 3$

$= 0$ otherwise

Find k.

c) Calculate mean deviation from mean for the following : 05

Experience in months	0	1	2	3	4	5	6	7	8	9
No. of members	15	46	91	162	110	95	82	26	13	2

d) Find the coefficient of variation of frequency distribution given that its men is 120, mode is 123 and Karl Person's coefficient of skewness is - 0.3. 05

TURN OVER

Q.P. Code :04436

Q.3 a) Box A contains 5 red marbles and 3 blue marbles and Box B contains 3 red and 2 blue. A marble is drawn at random from each box — 05

- Find the probability that both marbles are red
- Find the probability that one is red and other is blue

b) Let variable X have the distribution P(X=0) = P(X=2)=p, P(X=1)=1-2p for $0 \leq p \leq \frac{1}{2}$. — 05

For what p is the Var(X) a maximum?

c) Find the regression line of y on x for the following data — 05

X	1	2	3	4	5
Y	2	5	3	8	7

d) A : 35 47 23 6 17 10 43 9 28 — 05
Y : 30 46 33 4 23 8 48 12 31
Compute their ranks in the two subjects and the Spearman Rank correlation coefficient

Q.4 a) Two discrete random variables X and Y have joint p.m.f. given by the following table — 05

X/Y	1	2	3
1	1/12	1/6	1/12
2	1/6	1/12	1/4
3	1/12	1/12	0

Compute the probability of each of the following events
1) $X \leq 1.5$ 2) X is odd 3) Y is odd given that X is odd.

b) Let X be random variable with following probability distribution. — 05

x	-3	6	9
P (X=x)	1/6	1/2	1/3

Find $E(2x+1)^2$

c) Find the mode of the following distribution — 05

Size (x)	1	2	3	4	5	6	7	8	9	10	11	12
Frequency (f)	3	8	15	23	35	40	32	28	20	45	6	6

d) The first of the two samples has 100 items with mean 25 and S.D 3. If the whole group has 250 items with mean 15.6 and S.D $(13.44)^{\frac{1}{2}}$ find the S.D. of the second group. — 05

Q.5 a) For a group of 200 candidates the mean and standard deviation of scores were found to be 40 and 15 respectively. Later on it was discovered that the scores 43 and 35 were misread as 34 and 53 respectively. Find the corrected mean and standard deviation of the corrected figures. — 05

b) What is the chance that a leap year selected at random will contain 53 Sundays? — 05

c) Calculate Bowley's coefficient of skewness for the following — 05

Marks	0-10	10-20	20-30	30-40	40-50
Student	5	7	20	12	6

TURN OVER

d) For 8 observations the following results were calculated $\sum x = 59$, $\sum y = 40$, $\sum x^2 = 524$, $\sum y^2 = 256$, $\sum xy = 344$ find the regression equations y on x. 05

Q.6 a) The joint density function of the two dimensional random variable (X,Y) Is given by 05

$$f_{xy}(x,y) = \frac{x^3y^3}{16}, \quad 0 \le x \le 2, \quad 0 \le y \le 2$$
$$= 0 \qquad \text{otherwise}$$

Find the marginal densities of X and Y.
Also find the cumulative distribution functions of X and Y.

b) Prove that E(aX+b)=aE(X)+b and V(aX+ b) =a^2 V(X). 05

c) Give N=2500, (A)=420, (AB)=85, and (B)=670. Find the missing values. 05

d) The mean weekly sales of soap bars in department stores was 146.3 bars per store. After an advertising campaign the mean weekly sales in 22 stores for a typical week increases to 153.7 and showed a standard deviation of 17.2. Was the advertising campaign successful? 05
(Given: The table value of t for 21 d.f. at 5% significant level is 1.72)

Q.7 a) Prove that with example that three events may be pair wise independent but need not to be mutually independent. 05

b) There are three boxes. Box I contains 1 white 2 red and 3 black balls. Box II contains 2 white 3 red and 1 black balls Box III contains 3 white 1 red and 2 black balls. A box is chosen at random. If the balls drawn are first red and second white, what is the probability that they come from Box II? 05

c) Test the consistency of the following data with the symbols having their usual meaning 05
N=1000, (A) =600, (B) =500, (AB)=50

d) The observed and expected frequencies in tossing a die 120 times are given below. Test the hypothesis that the die is fair. (Use level of significance=0.05, and critical value for 5 d.f. is 11.1) 05

Die face	1	2	3	4	5	6
Observed frequencies	25	17	15	23	24	16

(31)

MCA-Sem-I Choice Based 23/05/17

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