MCA (CBSGS) - I
Object Oriented Programming
Choice - Based

13/12/2016

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

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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) Currcnt 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

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) 19/12/2015

Comp. Organization & Arch. (COA)

QP CODE : **750901**

[Total Marks : 80

(3 Hours)

N.B. : 1) Question No.1 is **compulsory.**
2) Attempt any **three** from the remaining **five** questions.
3) Draw suitable diagrams wherever required

Q.1	**A**	What is system bus. Explain with suitable diagram	**05**
	B	Explain Multicore computer organization	**05**
	C	Compare sequential circuits and combinational circuits	**05**
	D	Define flip-flop. Explain the working of J-K FF with logic diagram.	**05**
Q.2	**A**	Explain six stage instruction pipelining with suitable diagram	**10**
	B	Explain Program I/O , Interrupt I/O and DMA techniques	**10**
Q.3	**A**	Draw & Explain Flynn's classification of parallel processing	**10**
	B	Design a combinational logic circuit whose output is HIGH when input is >9.assume that input to the circuit is 4 bit binary A3A2A1A0.	**10**
Q.4	**A**	What is RAID? Explain any three levels with suitable diagrams	**10**
	B	Explain RISC & CISC architectures	**10**
Q.5	**A**	Explain in detail about the different superscalar instruction issue policies	**10**
	B	Explain SRAM and DRAM organizations with suitable diagrams	**10**
Q.6	Write short notes on **(any four)**		**20**
	A	4:1 MUX	
	B	Flash Memory	
	C	Register Organization	
	D	Functions of I/O module	
	E	Instruction formats	

MCA-(CBCGS)-I
Software Engg & Project Mgmt

15/12/2016

Time: 3 hr **QP CODE : 750800** **Total marks: 80**

Note:

- **Question one is compulsory**
- **Attempt any three out of five**

Q1.	A.	Explain in detail the Project Management Framework	10
	B.	Consider a project with following functional units: No. of user inputs = 50 No. of User outputs= 40 No. of User Inquiries= 35 No. of User files= 06 No. of. External Interfaces= 04 Assume all Complexity adjustment factors and weighting factors are average. Compute the Function point for the project.	10
Q.2	A.	Explain the Waterfall Model in detail	10
	B.	Explain Feasibility study and its types.	10
Q.3	A.	Elaborate different types of requirement elicitation techniques	10
	B.	A project with task T1, T2, T3, T4, T5, T6, T7,T8 with duration in days 3,4,6,2,6,8,5, 0 respectively.. Ti→Tk means that task Tk can start only when task Ti is finished. Dependency for this web application is given as: T1→T2→{T3,T4,T5}→T6→T7 find out and highlight critical path	10
Q.4	A.	Explain in brief Project Scope Management	10
	B.	Explain any one modern quality technique used in project management in detail.	10
Q.5	A.	Explain the RFP and RFQ in brief	10
	B.	Explain 3 sphere model for Project Management	10
Q.6		Short Note (any 4 out of 5): A. Reliability Metrics B. Resource Leveling C. Formal Technical Review D. Three R in software engineering E. Outsourcing	20

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