[5170]-21

M.C.A (Mgmt.)

MT-21 : PROBABILITY AND COMBINATORICS
(2008 Pattern) (Semester - II)

Time : 3 Hours]   *[Max. Marks : 70*
Instructions to the candidates:
   1) *Question No. 1 and question No. 4 are compulsory.*
   2) *Solve any ONE from Question Nos. 2 and 3 and any ONE from Question Nos. 5 and 6.*
   3) *Figures to the right indicate full marks.*

Q1) a) State and Prove the Principle of Inclusion and Exclusion (PIE).   **[7]**

   b) If six people attend a party, where before joining the party they deposit their hats in a check room. After the party the hats get mixed up and the six gentlemen picked their hats at random manner. What is the probability that none of them receives their own hat?   **[7]**

   c) If a_n is the sum of first n positive integers, write the recurrence relation for the property and solve the recurrence relation to find the sum of first n positive integers.   **[6]**

Q2) a) Show that: **[8]**

$$\binom{r}{r} + \binom{r+1}{r} + ... + \binom{n}{r} = \binom{n+1}{r+1}$$

   b) Find how many numbers between 1 and 1000 both inclusive are divisible by either 3 or 5 or 11 or 13.   **[7]**

Q3) a) Determine the discrete numeric function corresponding to generating function   **[8]**

$$A(z) = \frac{1}{5 - 6z + z^2}$$

   b) Find the number of positive integer solutions of the equation: **[7]**

$$x_1 + x_2 + x_3 = 21; \; x_1 > 2, x_2 > 4, x_3 > 5.$$

Q4) a) Define: Joint Probability Distribution, Marginal Probability Distribution and Conditional Probability Distribution. **[6]**

b) Calculate Mean and Variance of Poisson Distribution. **[7]**

c) State Baye's Theorem and solve the following. There are 4 boys and 2 girls in room No.1 and there are 6 boys and 4 girls in room No.2. A girl from one of the two rooms laughed loudly. What is the probability, the girl who laughted loudly was from room No.2? **[7]**

Q5) a) The following table represents the joint probability distribution of the random variable (X,Y). Find all marginal distributions and conditional distributions of X given Y. **[8]**

Y \ X	1	2	3
1	$\frac{1}{12}$	0	$\frac{1}{18}$
2	$\frac{1}{6}$	$\frac{1}{9}$	$\frac{1}{4}$
3	0	$\frac{1}{5}$	$\frac{2}{15}$

b) Find the mean and variance of Hypergeometric distribution. **[7]**

Q6) a) The probability density function of continuous r.v. X is given below:**[8]**

$$f(x) = \begin{cases} k / \sqrt{x}; \ 0 \le x \le 4 \\ 0; \ \text{otherwise} \end{cases}$$

Find:

i) k

ii) $P(1 \le X \le 2)$

iii) Distribution Function of X.

b) A random variable X has following: $M_x(t) = \dfrac{2}{(2-t)}$. **[7]**

Find:

i) E(X)

ii) Var(X).

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[5170]-51

M.C.A.(Management Faculty)
IT - 51 : HUMAN COMPUTER INTERFACE
(2008 Pattern) (Semester-V)

Time : 3 Hours]   *[Max. Marks : 70*
Instructions to the candidates:
  1)   Q.1 is compulsory.
  2)   Solve any Five from remaining.

Q1) Answer any four: **[4 × 5 = 20]**

   a)   Explain the goals of user interface design.

   b)   Explain guidelines in designing form-fillin.

   c)   Explain Response time & Display rate.

   d)   Explain individual window design.

   e)   Explain goals of co-operation.

Q2) Explain three pillars of design.   **[10]**

Q3) What are the five challenges of programming in the user interface. (PITUI)**[10]**

Q4) Explain advantages & disadvantages of multiple windows.   **[10]**

Q5) Explain OAI model for website design.   **[10]**

Q6) What is Keystorke Level Model (KLM)? Explain it with suitable example.**[10]**

Q7) Write short notes on following (Any Two):   **[2 × 5 = 10]**

   a)   GOMS.

   b)   Menu Layout.

   c)   Image Browsing.

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M.C.A. - III (Management Faculty)
IT - 52 : SOFTWARE IT PROJECT MANAGEMENT
(2008 Pattern) (Semester - V)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Question No. 1 is compulsory.*
2) *Solve any five questions from remaining.*
3) *Wherever necessary, state assumptions give examples & draw diagrams.*

Q1) a) Draw a network diagram from the given information   **[10]**

- Find start time, End time, & critical path

- If activity 6 - 9 crashed by 2 weeks, draw network diagram and find out critical path & shortest path

- Calculate value of Total, Free & Independent Float

Activity	Duration in weeks
1 - 2	2
1 - 3	2
1 - 4	1
2 - 5	2
3 - 6	4
3 - 7	8
4 - 6	1
5 - 8	6
6 - 9	5
7 - 8	7
8 - 9	2

   b) Explain with suitable example the need of FPA.   **[10]**

Q2) What is Risk Management? Explain its significance in software Project Management. **[10]**

Q3) What is SCM? Explain SCM Process in details. **[10]**

Q4) Describe role of user in project management. **[10]**

Q5) Explain in detail the process of Software Team Management. **[10]**

Q6) Explain major factors involved in project success. **[10]**

Q7) Write short notes on the following (any two): **[10]**

a) Reel's Approach.

b) MS-Project.

c) Version Control.

d) Group Behaviour.

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[5170] -53
M.C.A.(Semester -V) (Mgt. Faculty)
IT -52: EMERGING TRENDS IN INFORMATION
TECHNOLOGY
(2008 Pattern)

Time : 3 Hours]   *[Maximum Marks : 70*
Instructions to the candidates:
    1)   Q.1 and Q.7. Are compulsory.
    2)   Attempt any four questions from remaining.

Q1) Government of Maharashtra wants to launch E-Learning Course on Information Technology. The course duration will be one month. Course contents will be taught through Video conferencing. As a Learning content management system steering committee head, suggest a suitable LCMS system implementation strategy. **[15]**

Q2) Explain Embedded system. What are the various types of Embedded system? **[10]**

Q3) What is GIS? Explain any two Applications of GIS **[10]**

Q4) What is knowledge Mangement? Explain various tools of knowledge Management. **[10]**

Q5) What is E-Governance? Explain Maturity models of E-Governance. **[10]**

Q6) Define Biometrics and what are the advantages and disadvantages of Biometrics? **[10]**

Q7) Write short notes on (any three)   **[15]**

    a)   BPR

    b)   ECS

    c)   Crop Management

    d)   Warehouse Management

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[5170]-54

M.C.A. (Management Faculty)
IT - 55 : ADVANCED INTERNET TECHNOLOGY
(2008 Pattern) (Semester - V)

Time : 3 Hours]   *[Max. Marks : 70*
Instructions to the candidates:
  1) *Question No. 1 and Question No. 7 are compulsory.*
  2) *Attempt any four questions from remaining.*

Q1) Define E-Commerce? Explain benefits of E-Commerce. What are the types of E-Commerce? **[15]**

Q2) Write a Servlet program to accept online registration details of candidates for appearing SET Examination. Assume suitable table structure. **[10]**

Q3) Write a PERL program to accept a file name from user. Display number of characters, number of words and number of numerical present in a file. **[10]**

Q4) Write a PHP code to accept and insert customer details from customer, after successful insertion, display customer details in proper format (Assume suitable table structure). **[10]**

Q5) Explain pattern matching in PERL with example. **[10]**

Q6) Explain types of arrays, with any five methods in PERL. **[10]**

Q7) Write Short Note on any three: **[15]**
  a) Cookies in Servlet.
  b) JSP Standard Actions.
  c) JSP Directives.
  d) CGI Architecture.
  e) PHP Error Handling.

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[5170] - 55

M.C.A. (Management Faculty)
ITE-1 - 511: CYBER LAW AND IT SECURITY
(2008 Pattern) (Semester - V) (Elective)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:
   1)   Q.No. 1 and Q.6 are compulsory.
   *2)   **Solve any three from remaining.***

Q1) a)   Explain in detail scope of IT Act 2000 and recent amendments in it. **10]**

   b)   Explain Encryption techniques in detial.   **[10]**

Q2) What is digital signature? How digital signature is used?   **[10]**

Q3) Explain concept of domain name with reference to cyber law.   **[10]**

Q4) Explain establishment and composition of appellate tribunal under Cyber Law.
                                                                           [10]

Q5) What are the powers of adjudicating officer to impose penalty?   **[10]**

Q6) Write short notes (any FOUR):   **[4×5=20]**

   a)   RSA Algorithm.

   b)   E-Governance.

   c)   Reverse Hijacking.

   d)   Cyber Squatting.

   e)   Public Key.

   f)   Trademark Law.

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[5170] - 56

M.C.A. (Management Faculty)
ITE-2: PROGRAMMING LANGUAGES PARADIGMS
(2008 Pattern) (Semester - V) (Elective)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:
  1) *Q.No. 7 is compulsory.*
  2) *Solve any four from remaining.*

Q1) Explain analysis of source program and synthesis of object program with suitable block diagram. **[14]**

Q2) Explain Local Data and Local referencing environments. **[14]**

Q3) Explain Binding Time classes and its importance in programming language.**[14]**

Q4) Explain sequence control mechanism between programming statements.**[14]**

Q5) Explain static storage management. **[14]**

Q6) Explain the features of Java programming language. **[14]**

Q7) Write short notes on (any Two): **[14]**

  a)   Attributes of good programming language.

  b)   Scalar data types.

  c)   Syntactic elements.

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[5170] - 57

M.C.A. (Management Faculty)
ADVANCED UNIX
(2008 Pattern) (Semester - V) (Elective)

Time : 3 Hours]　　　　　　　　　　　　　　　　*[Max. Marks :70*

Instructions to the candidates:

　　1)　Q.1 &Q.7 are compulsory.

　　2)　Solve any four from remaining.

　　3)　Draw diagrams wherever necessary.

Q1) Explain the following system calls.　　　　　　　**[5×2=10]**

　　a)　chmod ()

　　b)　stat ()

　　c)　dup ()

　　d)　link ()

　　e)　fork ()

Q2) What are environment variables in Unix? Explain various system calls used to manage these variables.　　**[10]**

Q3) What are pipes? Explain the creation and use of pipes in inter process communication.　　**[10]**

Q4) Explain various directory related system calls in detail.　　**[10]**

Q5) What are signals? What are the conditions that can generate a signal? What are the ways in which a process can respond to a signal?　　**[10]**

Q6) Explain semaphores in detail. How do you control operations on a semaphore.

[10]

Q7) Write short notes on (any four): **[4×5=20]**

    a)   Orphan process.

    b)   Process Termination.

    c)   File locking.

    d)   Streams.

    e)   Race condition.

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[5170] - 58

M.C.A. - III (Management Faculty)
MOBILE WIRELESS COMPUTING
(2008 Pattern) (Semester - V) (Elective)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

   1)   *Q.1 & Q.6 are compulsory.*

   2)   *Attempt any three from remaining.*

Q1) a)   Define the f ollowing terms (any five):   **[10]**

      i)   MAC

      ii)   GSM

      iii)   BSC

      iv)   BER

      v)   GPRS

      vi)   IMEI

   b)   Explain the features of wireless network.   **[10]**

Q2) Differentiate between TDMA, CDMA, & FDMA.   **[10]**

Q3) What is snooping? Why it is used in TCP?   **[10]**

Q4) How can DHCP be used for mobility and support of mobile IP?   **[10]**

Q5) Explain the importance of framing and logical channels in GSM. **[10]**

Q6) Write short notes on (any four): **[20]**

    a)   Bluetooth.

    b)   Mobile Agents.

    c)   AdHoc network.

    d)   HLR-VLR.

    e)   Advantages of Mobile Computing.

    f)   Sensor Networks.

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[5170] - 59

M.C.A. (Management Faculty)

IT-E-5: DISTRIBUTED DATABASE MANAGEMENT SYSTEM

(2008 Pattern) (Semester - V) (Elective)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:
1) *Q.No. 7 is compulsory. Solve any 5 from remaining.*
2) *Draw suitable diagram when needed.*
3) *Give suitable examples if required.*
4) *Whenever necessary state assumptions.*

Q1) Discuss in detail the problem areas in DDBMS environment. **[10]**

Q2) Explain in detail Concurrency control in DDMS. **[10]**

Q3) Explain in detail locking protocols in distributed database management systems.
[10]

Q4) Explain different distributed data storages. **[10]**

Q5) Explain in detail architecture of DDBMS. **[10]**

Q6) Explain 3 phase commit protocol in detail. **[10]**

Q7) Write short notes on any four: **[4×5=20]**

    a) Characterization of query processors.

    b) Data Replication.

    c) Deadlock in DDBMS.

    d) Cloud based databases.

    e) LDAP.

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