*Total number of printed pages–7*

**44 (2) CBAF 2·2 (O/N)**

**2014**

# COMPUTER BASED ACCOUNTING AND FINANCIAL MANAGEMENT

*Full Marks : 80*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

1. *(a)* Explain the following : ***(any four)*** 2×4=8

   *(i)* Transaction

   *(ii)* Fixed Assets

   *(iii)* Capital

   *(iv)* Liabilities

*Contd.*

*(v)* Accounting

*(vi)* Trial Balance.

*(b)* Answer ***any three*** questions : 9×3=27

*(i)* What do you mean by Double Entry System of Book-Keeping ? Explain the advantages of Double Entry System of Book-Keeping.

*(ii)* Journalise the following transactions in the books of Rajesh :

**2014**

April 1 Commenced business with cash ₹ 50,000

April 4 Deposited cash into bank ₹ 10,000

April 5 Purchased furniture ₹ 5,000

April 7 Purchased goods ₹ 12,000

April 9 Cash sales ₹ 8,000

April 15 Paid Rent by cheque ₹ 2,500



*(iii)* What is a Cash book ?

From the following transactions of M. K. Sarma, prepare a Double Column Cash Book.

**2014**

| | | | |
|---|---|---|---|
| March 1 | Cash in hand | ₹ | 8,000 |
| March 6 | Cash purchases | ₹ | 4,000 |
| March 10 | Wages paid | ₹ | 80 |
| March 11 | Cash Sales | ₹ | 12,000 |
| March 12 | Cash received from Ram | ₹ | 3,960 |
| | and allowed him discount | ₹ | 40 |
| March 20 | Cash paid to Mohan | ₹ | 4940 |
| | and discount received | ₹ | 60 |
| March 25 | Cash paid to Rajesh | ₹ | 800 |
| March 29 | Purchased goods for cash | ₹ | 4140 |

*(iv)* The following is the trial balance of Mr. B. Saikia as on 31.3.2014. You are required to prepare a Trading and Profit & Loss Account for the year ended 31st March, 2014.

| Debit | ₹ | Credit | ₹ |
|---|---|---|---|
| Opening Stock | 3,000 | Sales | 78,000 |
| Purchases | 50,000 | Purchase Return | 1,900 |
| Carriage | 400 | Creditors | 12,000 |
| Sales Return | 500 | Capital | 14,300 |
| Wages & Salaries | 7,900 | Bills Payable | 8,000 |
| Rent | 1,800 | Sundry Receipts | 800 |
| Discount | 1,000 | | |
| Repairs | 300 | | |
| Sundry expenses | 1,000 | | |
| Cash in hand | 3,000 | | |
| Furniture | 8,000 | | |
| Debtors | 30,600 | | |
| Drawings | 6,000 | | |
| Taxes & Insurance | 1,500 | | |
| | 1,15,000 | | 1,15,000 |



The following adjustments are to be made :

*(i)* Closing Stock on 31.3.2014 ₹ 11,000

*(ii)* Furniture to be depreciated by 10% p.a.

*(iii)* Prepaid rent ₹ 200

*(iv)* Wages outstanding ₹ 400

2. Answer ***any three*** questions : 5×3=15

*(i)* Discuss different types of cash book.

*(ii)* Explain the differences between a Journal and a Ledger.

*(iii)* Name and explain *any two* methods of providing depreciation.

*(iv)* Explain the objectives of preparing a trial balance.

3. Answer ***any two*** questions : 6×2=12

*(a)* Define Ledger.

From the following particulars prepare the account of Rakesh in the books of Mahesh.

| | |
|---|---|
| 1-4-2014 Opening balance | ₹ 6700 |
| 12-4-2014 Sold goods to Rakesh | ₹ 14000 |
| 16-4-2014 Received cash from Rakesh | ₹ 10500 |
| 21-4-2014 Rakesh returned goods | ₹ 2000 |
| 27-4-2014 Sold goods to Rakesh | ₹ 10000 |
| 30-4-2014 Received cash from Rakesh | ₹ 6000 |

*(b)* Define depreciation. Explain the different causes of depreciation.

*(c)* On 1st April 2010 Assam Biscuit Ltd. purchased a Machine for ₹ 80,000 and it has been decided to charge depreciation @ 10% under straight line method.

Prepare Machinery Account and Depreciation Account for the first three years assuming that accounts are closed on 31st March.



4. Discuss briefly on ***any four*** of the following : $4\frac{1}{2}\times4=18$

*(a)* Money measurement concept

*(b)* Cash discount

*(c)* Balance Sheet

*(d)* Limitations of Accounting

*(e)* Balancing of an Account

*(f)* GAAP (Generally Accepted Accounting Principles).

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OLD COURSE

Total No. of printed Pages = 02

44(2)DCLD(0)2.2

# 2014

# DIGITAL CIRCUIT & LOGIC DESIGN (OLD)

Paper : 2.2

Full Marks: 80

Time: 3 Hours

*The figures in the margin indicate full marks for the questions.*

*Answer any 8 questions*

1. Considering three logic variables A, B and C write the following fundamentals properties of Boolean algebra. 10
   a) Commutative
   b) Associative
   c) Distributive
   d) Idempotency
   e) De Morgans theorem

2. Find the POS and SOP froms of the following expression $X = \sum m(0,1,3,6,7,8,13,15)$ 10

3. Design in 3-bit binary full adder. Give the truth table and logic diagram. 10

4. Design a typical 4×1 multiplexer with 4 input and two select lines using AND-OR logic. 10

5.(a) What is the shortcoming of an S-R flip flop? Explain how this shortcoming is removed in J-K flip flop. 5

   (b) Design a Divide-by-10 ripple counter with J-K flip-flop 5

P.T.O.

6.(a) Why a flip flop is always triggered by a clock? Is it essential? If so, give reasons. 5

(b) Explain how J-K flip flop to D flip flop conversions may be done. 5

7. Design a 4-bit serial-in serial-out shift register using D flip flop. Describe its functional characteristics. Also draw the timing diagram for the binary data 11010 using 4-bit serial-in serial-out shift register. 10

8.(a) Draw the truth table for the flowing : 5
i) Y=A.B+B.C
ii) R=A(B+C)

(b) Reduce the following Boolean functions 5
i) A+A.B+A.B
ii) (A.B+C)(A.B+D)

9. Draw a logic diagram and explain the operation of a Master-Slave J-K flip-flop. 10

10. Write short notes (any two) 5×2=10
a) Don't care condition
b) Programmable logic array
c) Flip flop excitation table
d) Magnetic core memory

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*Total number of printed pages–7*

**44 (2) MATH-2 2·3 (N/O)**

**2014**

# MATHEMATICS-II

Paper : 2·3

*Full Marks : 80*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

1. *(a)* For any sets $A$, $B$ prove that $A - B = B - A \Leftrightarrow A = B$. 3

   *(b)* Give an example of a relation that is reflexive and symmetric but not transitive. 2

*Contd.*

(c) If $R$ be a relation in the set of integers $z$ defined by $R=\{(x, y): x\in z, y\in z, (x-y)$ is divisible by $6\}$ then prove that $R$ is an equivalence relation. 3

(d) Show that the mapping $f: R\to R$ defined by $f(x)=ax+b$ where $a, b, x\in R, a\neq 0$ is invertible. Define its inverse. 3

***Or***

What is a partial ordering relation ? Give *one* example.

(e) Prove by the principle of mathematical induction that $7^n-3^n$ is divisible by 4, for every positive integer $n$. 4

2. Answer ***any five*** of the following : $3\times5=15$

(a) Show that the maximum number of edges in a simple graph with $n$ vertices is $\frac{n(n-1)}{2}$.



(b) Does there exist a 4-regular graph on 6 vertices ? If so, construct a graph.

(c) Define complete graph, regular graph and Hamiltonian graph.

(d) Prove that the number of edges in a bipartite graph with $n$ vertices is atmost $\frac{n^2}{4}$.

(e) For any positive integer $n$, if $G$ is a connected graph with $n$ vertices and $n$-1 edges, then prove that $G$ is a tree.

(f) Define binary tree. What properties should a graph have to qualify as a tree ?

(g) If a connected graph $G$ is Eulerian, then prove that every vertex of $G$ has even degree.

3. (a) Prove that $(2n)!=2^n n!\{1\cdot3\cdot5.....(2n-1)\}$ 2

(b) If $n_{c_x}=56$ and $n_{p_x}=336$, find $n$ and $x$. 3

(c) Out of 5 men and 2 women, a committee of 3 is to be formed. In how many ways can this be done so as to include *(i)* exactly one woman *(ii)* at least one woman. 4

(d) Write the principle of inclusion-exclusion for three non-empty sets $A$, $B$, $C$ and prove it. 3

4. (a) Prove that every square matrix can be uniquely expressed as the sum of symmetric and skew symmetric matrices. 3

(b) Show that characteristic roots of a triangular matrix are just the diagonal elements of the matrix. 3

***Or***

Find the rank of the matrix

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



(c) Find the eigenvalues and eigenvectors of the matrix $\begin{bmatrix} 3 & 4 \\ 4 & -3 \end{bmatrix}$ 3

(d) Test for consistency and solve by Gaussian elimination method

$$2x+3y-z=9$$
$$x-2y+z=-9$$
$$3x+2y+2z=-1$$ 4

5. (a) Show that $p\wedge(q\wedge\sim p)$ is a contradiction. 3

(b) Define C.N.F and D.N.F of logical expressions. 3

***Or***

Obtain the D.N.F of the expression $p\vee(\sim p\rightarrow(q\vee(q\rightarrow\sim r)))$. 3

(c) Prove that

(i) $a+a=a$

(ii) $a+1=a$

For Boolean algebra $[A, +, \cdot]$. 2

(d) Rewrite the following argument using quantifiers, variables and predicate symbols.

(i) All birds can fly

(ii) Some men are genius. 2

(e) With the help of truth table prove that $p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$. 5

6. (a) Let $R$ be the field of real numbers. Show that $\{(x, x, x) : x \in R\}$ is a subspace of $V_3(R)$. 3

(b) Prove that any subset of a linearly independent set is linearly independent. 3

***Or***

Express (1, 7, – 4) as a linear combination of the vectors (1, –3, 2) and (2, –1, 1) in the vector space $V_3$ of real numbers $R$.



(c) Define dimension of a vector space. If $C$ be a set of complex numbers, find its dimension considered as a real vector space. 2+2=4

**44 (2) ICTH 2·4**

**2014**

# ICT HARDWARE

Paper : 2·4

*Full Marks : 80*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

1. *(i)* Classify the modern digital computer by size and capacity. 4

   *(ii)* What are the technological and architectural differences between 1st, 2nd, 3rd and 4th generation of computers ? 4

   *(iii)* What is bus system ? Explain its different types. 4

   *(iv)* Briefly explain the functionalities of Non-impact printers. 4

*Contd.*

2. *(i)* Briefly explain the different types of hard disk depending on packaging. 6

*(ii)* What is the storage capacity of a 5·25 inch optical disk which has 3,30,000 sectors each of 2352 bytes ? 4

*(iii)* "NTFS has several improvements over FAT 32 File System" — Justify your answer. 6

3. *(i)* Explain each of the following : 6

*(a)* CD-ROM

*(b)* CD-R

*(c)* CD-RW.

*(ii)* List the differences between DVD-video and DVD-audio. 6

*(iii)* Briefly explain Intel Processor family. 4

4. *(i)* What is RAM ? What are its different types ? Explain. 2+6=8

*(ii)* What are the basic boot functions that the BIOS perform ? 4



*(iii)* How does Bootstrap Loader help in starting your PC ? 4

5. *(i)* What is NIC ? Describe the working principle of NIC. 4

*(ii)* Write short notes on : ***(any four)*** 3×4=12

*(a)* Speaker

*(b)* Defragmentation

*(c)* RJ 45 connector

*(d)* IP address

*(e)* USB

*(f)* SMPS.

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8. Write short notes on ***any three*** of the following : 5×3=15

*(a)* Watershed management

*(b)* Biodiversity hot-spots

*(c)* Environmental ethics

*(d)* Ozone layer

*(e)* Wildlife protection act

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*Total number of printed pages— 4*

**44 (2) ENST (N/O) 2·6**

**2014**

# ENV. STUDIES

(New & Old Syllabus)

Paper : 2·6

*Full Marks : 75*

Time : Three hours

***The figures in the margin indicate full marks for the questions.***

*Answer* ***any five*** *questions.*

1. *(a)* Discuss the need of environmental awareness for the protection of our environment. 5

*(b)* Differentiate between renewable and non-renewable resources with examples. 5

*(c)* Highlight the environmental problems associated with deforestation. 5

2. *(a)* What do you mean by Hydrologic Cycle ? Discuss its role in maintaining the physical environment of a place. 7

*(b)* What are the components of modern agriculture? How are they related with environmental degradation ? 8

3. *(a)* What do you mean by an ecosystem ? Explain with suitable example. 5

*(b)* Explain the flow of energy and nutrients in an ecosystem with suitable example. 5

*(c)* Discuss the process of ecological succession. 5

4. *(a)* What is biodiversity ? Illustrate the terms — genetic diversity, species diversity and ecosystem diversity. 6

*(b)* What do you mean by in-situ and ex-situ conservation of biodiversity ? Explain. 4

*(c)* What do you mean by extinct, endangered, vulnerable and rare species ? Explain with suitable examples. 5



5. *(a)* Give an account of primary air pollutants. 3

*(b)* What are the causes of water pollution? Give your suggestions for its control. 7

*(c)* What is noise pollution ? Discuss its adverse effects on man and environment. 5

6. *(a)* What do you mean by climate change ? Briefly discuss its causes and consequences. 10

*(b)* Explain the causes and effects of acid rain. 5

7. *(a)* What do you mean by value education ? How does it help in environmental conservation ? 6

*(b)* Write the meaning of the terms - doubling time of population, total fertility rate, zero population growth, life expectancy, population explosion. 5

*(c)* Write the full form of — HIV, WWF, BOD, UNEP 4