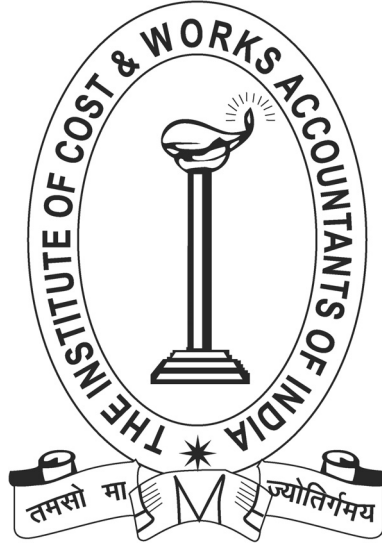


REVISED SYLLABUS 2008

TEST PAPERS

Foundation

QUESTION PAPERS FOR POSTAL STUDENTS ONLY
(FOR JUNE/DECEMBER 2013)



THE INSTITUTE OF COST AND WORKS
ACCOUNTANTS OF INDIA

DIRECTORATE OF STUDIES

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PAPER 1

ORGANIZATION & MANAGEMENT FUNDAMENTALS

TEST PAPER – FDN/1/OMF/2008/T-1

Time Allowed : 3 hours

Full Marks : 100

(Answer any Five Questions : All Questions are of Equal Marks)

1. State the principles of Formal organization.
2. What is meant by Organisation Behavior? Mention its main characteristics?
3. What is decision -making? Discuss the steps in decision -making?
4. Explain the important methods of Training.
5. What do you understand by Human Resource Planning? Mention its objective.
6. Explain the reasons for conflict between Line and Staff and suggest solutions.
7. Write Short note on :
 - (a) Single Use Plans.
 - (b) Distinction between Authority and Responsibility.
 - (c) Process of Communication.
 - (d) Formal and informal organization.

PAPER 1
ORGANIZATION & MANAGEMENT FUNDAMENTALS
TEST PAPER – FDN/1/OMF/2008/T-2

Time Allowed : 3 hours

Full Marks : 100

(Answer any Five Questions : All Questions are of Equal Marks)

1. Define Organization. Explain organisation in process.
2. What do you understand by organisational culture? Discuss its determinants.
3. Explain the general principal of management as propounded by Henri Fayol.
4. What is meant by 'forecasting'? Discuss the elements of business forecasting.
5. Discuss the functions of the Board of Directors.
6. What is a conflict? Discuss both the causes and consequences of conflict.
7. Write Short note on :
 - (a) Objectives of Public Enterprises
 - (b) Democratic or participative leadership
 - (c) Matrix Organisation
 - (d) Business Process Re-engineering

PAPER 2

ACCOUNTING

TEST PAPER – FDN/2/ACT/2008/T-1

Time Allowed : 3 hours

Full Marks : 100

Answer question one which is compulsory. Answer any five from the rest.

Q. 1.(a) Give one word or term for the following: **(1×5 marks)**

- (i) Commission given for taking over responsibility of bad debts by consignee
- (ii) Charges paid on dishonour of a bill of exchange
- (iii) Expenses due but not paid
- (iv) Costs that vary with output but not in same proportion
- (v) Prime cost plus factory overheads

(b) Fill in the blanks : **(2×5 marks)**

- (i) Excess of _____ over _____ is called as deficit in a non-trading organisation.
- (ii) Discount received is recorded on _____ side of the cash book, while discount allowed is recorded on the _____ side of it.
- (iii) Fixed overheads are charged to cost of production under _____ costing, whereas only variable costs are considered as product costs under _____ costing.
- (iv) Bills payable account is a _____ account and closing stock account is _____ account.
- (v) Posting from a Purchase return book is made to the debit of _____ account and to the credit of _____ account

(c) State with reasons whether the following statements are true or false.

(2×5 marks)

- (i) Errors of omission will not affect Trial balance
- (ii) Piece rate method can be adopted in any industry.

- (iii) Credit sale of stationery by Bombay Stationery Mart will be recorded in Sales book.
- (iv) Fixed cost per unit changes and variable cost per unit is same.
- (v) The entry for bill of exchange discounted with the bank is passed in the books of drawee of the bill.

(d) Match the following : (1×5 marks)

1) Conservative principle	a) Recording transactions at cost
2) Accrual concept	b) Product costs
3) Variable costs	c) Stocks valued at lower of cost or market price
4) Historical cost concept	d) Recognition of cash & credit transactions
5) fixed costs	e) Two effects of a transaction
	f) Period costs

Q. 2. (i) Pass necessary journal entries for the following : (2×4 marks)

- (a) Goods of ₹ 1,400 purchased from Ram although entered in purchase book was not recorded in Ram's account
- (b) Wages paid ₹ 45,000 for erection of machinery were debited to Wages account.
- (c) Goods supplied by Sujit for ₹ 150,000 were entered in Sales book.
- (d) Sale of old furniture for ₹ 3,500 was recorded to sales book

(ii) Prepare a bank reconciliation statement from the following details submitted to you by M/s Poonam Trading company as on 31st March 2010 :

(6 Marks)

Cash Book (bank column only)

Date	Particulars	₹	Date	Particulars	₹
3-Mar-10	To Cash	36,000	1-Mar-10	By Balance b/d	40,000
20-Mar-10	To Roy	24,000	4-Mar-10	By John	2,000
22-Mar-10	To Kapoor	10,000	6-Mar-10	By Krishnan	400
31-Mar-10	To Balance c/d	7,640	15-Mar-10	By Kailash	240
			20-Mar-10	By Joshi	35,000
		77,640			77,640

The bank statement revealed the following

- Cheques deposited but not cleared by bank ₹ 10,000
- Interest on securities collected by bank but not recorded in cash book ₹ 1,080
- Credit transfers not recorded in the cash book ₹ 200
- Dividend collected by bank ₹ 1,000 not recorded in cash book
- Cheques issued but not presented for payment ₹ 37,400
- Interest debited by bank not yet recorded in cash book ₹ 1,000
- Bank charges debited by bank for the month of December ₹ 340

Q. 3. (i) The net income based on unadjusted trial balance of Mr. Sengupta, who runs a private school, as on 31st March 2010 stood at ₹ 10,875. On investigation of his books, you understand that the books are kept on cash basis & that following balances has not been considered. Please work out the revised net income of Mr. Sengupta based on the details given below :

Particulars	As on 1st April 2010 (₹)	As on 31st March 2010 (₹)
Accrued fees	350	250
Fees received in advance	100	50
Outstanding expenses	200	250
Prepaid expenses	100	175

(6 marks)

(ii) A company uses three types of raw material in manufacturing of its product X. The following information is given to you in respect of them :

Material	A	B	C
Usages per unit of X in kg	10	4	6
Re-order quantity in kg	10000	5000	10000
Price per unit	10	30	15
Delivery period in weeks	1 to 3	3 to 5	2 to 4
Re-order level in kg	8000	4750	
Minimum level in kg			2000

Weekly production of X varies between 175 to 225 units, averaging 200 units. Find out the quantities of (a) minimum level of A, (b) maximum level of B, (c) Re-order level of C, (d) Average level of C

(2×4 marks)

Q. 4. The following balances are given to you for a sports club :

	31-03-2009	31-03-2010
Fixed Assets	110000	99000
Bank	12500	15300
Cash	1500	2500
Prepaid Insurance	2000	
Subscription received in advance	45000	30000
Interest on outstanding loan	1250	
Loan	100000	
Outstanding expenses :		
Water	2350	1750
Electricity	2500	3500
Wages	12500	7500
Repairs	1500	1200
Subscription receivable	75000	67000

The Receipts and Payment Account for the year ended 31-03-2010 is given below:

Receipts	₹	Payments	₹
Opening balance :			
Bank	12500	Loan repaid	100000
Cash	1500	Rent	15000
Subscriptions	225000	Water	22750
Donations	45000	Electricity	36000
Miscellaneous	7500	Wages	48500
		Repairs	17800
		Telephone	22500
		Interest on Loan	2500
		Insurance	7500
		Miscellaneous expenses	1150
		Closing Balance	
		Bank	15300
		Cash	2500

Prepare Income & Expenditure a/c for the year ended 31-03-2010 and the Balance Sheet as on that date. Donations are to be capitalized. **(14 marks)**

Q. 5. A manufacturing company has three production departments X, Y, and Z and two service departments A and B. The following estimates are given to you for the quarter ended 30th Sept 2010.

Rent and Rates	₹ 10000
Lighting and electricity	₹ 1200
Indirect wages	₹ 3000
Power	₹ 3000
Depreciation on machinery	₹ 20000
Other expenses and sundries	₹ 20000

Following are further details :

	X	Y	Z	A	B	Total
Floor space (sq ft)	2000	2500	3000	2000	500	10000
Light Points (nos)	20	30	40	20	10	120
Direct wages (₹)	60000	40000	60000	30000	10000	200000
HP of Machines	120	60	100	20		300
Cost of machines	24000	32000	40000	2000	2000	100000

The expenses of service departments A and B are to be distributed as follows :

	X	Y	Z	A	B
A	20%	30%	40%	-	10%
B	40%	20%	30%	10%	-

Calculate the overhead absorption rate per hour in respect of the three departments. What will be the total cost of the job with material cost of ₹ 80 and direct labour cost of ₹ 40 which passes through X, Y, & Z for 2, 3 and 4 hours respectively? **(14 marks)**

Q. 6. (a) On 1st April 2010, Mohan of Mumbai consigned 400 packets of Tooth powder bottles to Mr. Sohan of Kolkata. Each packet contained 100 bottles. Cost price of each packet is ₹ 300. Mohan spent ₹ 50 per packet as cartage, freight, insurance & forwarding charges. One packet was lost on the way and Mohan lodged a claim with the insurance company & could get ₹ 270/- Sohan took delivery of the rest of the material and spent ₹ 19950/- as storage and ₹ 9975 as Octroi & freight. He sold 320 packets for cash and 50 packets on credit at ₹ 650 per packet. He was entitled to a commission of 3% on sales plus 1% Del credere commission on credit sales. Sohan remitted ₹ 200000 by bank draft on 30th June 2010.

Prepare consignment account and Sohan's a/c in the books of Mr. Mohan.

(7 marks)

- (b) The following details have been extracted from the books of a manufacturing company for the half year ended 30th September 2010 :

	Amount ₹
Purchase of raw material	132000
Direct wages	110000
Rent, rates, insurance	44000
Carriage inward	1584
Stock 1-4-2010 :	
Raw material	22000
Finished goods (1600 tonnes)	17600
WIP	5280
Stock 30-09-2010 :	
Raw material	24464
Finished goods (3200 tonnes)	35200
WIP	17600
Factory supervision	8800
Sale of finished goods	330000

Selling costs were ₹ 0.75 per tonne for 25600 tonnes sold during the period. Calculate prime cost, factory cost, cost of sales, profit and no of tonnes produced. **(7 marks)**

- Q. 7. (a)** A company produces a single product sells it at ₹ 50 per unit. The variable cost per unit is ₹ 35 and the fixed costs are ₹ 12 lacs per annum. Please calculate :

- (i) P/V ratio and break even sales
- (ii) New breakeven if variable costs increase by ₹ 3 per unit, without increase in selling price.
- (iii) Increase in sales required if profits are to be increased by ₹ 240000
- (iv) Quantum of advertising expenditure permissible to increase sales by ₹ 120000 without affecting the existing profit quantum.

All the events are independent of each other. **(2×4 marks)**

- (b) Following particulars are taken from the books of Supreme industries :

Time allowed for the job	15 hours	15 hours	5 hours
Time taken for the job	15 hours	12 hours	9 hours

The hourly rate payable as normal wages is ₹ 2 per hour. Compute the total wages as per Halsey plan (50% sharing) and Rowan plan. What is your recommendation if the time taken is going to be 6 hours after 3 months?

(6marks)

PAPER 2

ACCOUNTING

TEST PAPER – FDN/2/ACT/2008/T-2

Time Allowed : 3 hours

Full Marks : 100

Answer question one which is compulsory. Answer any five from the rest.

Q. 1. (i) Please choose the correct answer from the alternatives given (1×10 marks)

- a) The time period principle assumes that an organization's activities can be divided into specific time periods including :
 - (i) Months
 - (ii) Quarters
 - (iii) Years
 - (iv) All of above
- b) The accounting principle that requires revenue to be reported when earned is the :
 - (i) Matching principle
 - (ii) Revenue recognition principle
 - (iii) Accounting period principle
 - (iv) Going concern principle
- c) Adjusting entries
 - (i) Affect only income statements
 - (ii) Affect only balance sheet accounts
 - (iii) Affect both income statements and balance sheet accounts
 - (iv) Affect cash flow statements
- d) The recurring steps performed each accounting period, starting with analyzing and recording transactions in the journal and continuing through the postclosing trial balance, is referred to as the :
 - (i) Accounting period
 - (ii) Operating cycle
 - (iii) Closing cycle
 - (iv) Accounting cycle

- e) If a company failed to make an adjusting entry at the end of its accounting period to record depreciation for this period, the omission will cause :
- (i) An understatement of expenses
 - (ii) An overstatement of revenues
 - (iii) An understatement of assets
 - (iv) An overstatement of liabilities
- f) Which of the following assets is not depreciated?
- (i) Fixtures
 - (ii) Motor car
 - (iii) Land
 - (iv) Machinery
- g) If furniture is bought on account, it will result into
- (i) Increase in asset & decrease in liability
 - (ii) Increase in liability and increase in asset
 - (iii) Decrease in asset & decrease in liability
 - (iv) Increase in liability and decrease in asset
- h) Which of the following is an item of expense
- (i) Charges paid for installation of machinery
 - (ii) Recovery of electricity bills paid for employees
 - (iii) Payment of electricity deposit
 - (iv) Payment of electricity bill
- i) Material was purchased for ₹ 25000 and freight was paid for ₹ 5000 for bringing it to the warehouse. Half of it was sold for ₹ 25000. The company maintains the policy of selling at 66.67% above cost. The value of closing stock will be
- (i) ₹ 12500
 - (ii) ₹ 15000
 - (iii) ₹ 20875
 - (iv) Can't say
- j) The prepaid expenses account showed an opening balance of ₹ 10000 and closing balance of ₹ 17500. The effect of this will mean
- (i) Decrease in profit by ₹ 10000
 - (ii) Increase in profit by ₹ 17500
 - (iii) Increase in profit by ₹ 7500
 - (iv) Decrease in profit by ₹ 7500

(ii) Classify the following into asset, liability, expense or income (5 marks)

- a. Rent received in advance
- b. Prepaid insurance
- c. Provision for doubtful debt
- d. Deposit with government office
- e. Commission received
- f. Cash received from customer
- g. Employer's contribution to provident fund
- h. Unsold material
- i. Carriage inwards
- j. Free samples distributed

(iii) Please choose the correct answer from the alternatives given. Show your calculations. (3×5marks)

- a) The annual fixed costs of a company are ₹ 60000. It manufactures a product which it sells at ₹ 20 each. The contribution to sales ratio is 40 per cent. The breakeven point in units is
(i) 1200 (ii) 3000 (iii) 7500 (iv) 5000
- b) The selling price of a product is ₹ 9 per unit with variable cost of ₹ 6 each and the fixed costs are ₹ 54000 per month. In a period when actual sales are ₹ 180000, the margin of safety in units is :
(i) 2000 (ii) 14000 (iii) 18000 (iv) 20000
- c) A company had opening stock of raw material A as ₹ 90000. The purchases during the period were ₹ 270000. The closing stock was valued at ₹ 110000. The inventory turnover ratio is :
(i) 2.45 (ii) 2.50 (iii) 3.00 (iv) 1.22
- d) P Ltd had an opening stock of ₹ 2640 (300 units valued at ₹ 8.80 each) on 1st April. The following receipts and issues were recorded during April

10th April	Receipt	1000 units	₹ 8.60 per unit
23rd April	Receipt	600 units	₹ 9.00 per unit
29th April	Issues	1700 units	

Under LIFO method, what was the total value of issues on 29th April?

- (i) ₹ 14840 (ii) ₹ 14880 (iii) ₹ 14888 (iv) ₹ 15300

e) The following data relates to stock item A452 :

Average usage	100 units per day
Minimum usage	60 units per day
Maximum usage	130 units per day
Lead time	20-26 days
EOQ	4000 units

The maximum stock level is :

- (i) 4780 units (ii) 5080 units (iii) 5380 units (iv) 6180 units

Q. 2. The following is the trial balance of M/s Futuristic Trading as on 31-03-2010:

Particulars	Amount Dr	Amount Cr
Cash in Hand	28,000	
Bank balance	52,000	
Stock as on 1st April 2006	12,40,000	
Debtors	17,20,000	
Furniture	4,28,000	
Office equipment	3,22,000	
Building	12,00,000	
Motor Car	4,00,000	
Creditors		8,60,000
Loan from HDFC bank		6,00,000
Reserve for bad debt		60,000
Purchases	28,00,000	
Sales		46,00,000
Purchase returns		52,000
Sales returns	84,000	
Salaries	2,20,000	
Motor car expenses	72,000	
Godown rent	1,10,000	
Interest on loan	54,000	
Rates & taxes	42,000	
Discount Allowed	48,000	
Discount received		32,000
Freight	24,000	
Carriage outwards	40,000	
Drawings	240,000	
Printing & stationery	36,000	
Electricity	44,000	
Insurance premium	1,10,000	
General expenses	60,000	
Bad debts	40,000	
Bank charges	30,000	
Capital of Mr. Roy		32,40,000
	94,44,000	94,44,000

Prepare the final account for the year ended 31st March 2010 after considering the following :

- 1) Depreciate building used for business by 5%, furniture by 10%, office equipment by 15% and motor car by 20%
- 2) A steel table purchased during the year for ₹ 28000 was sold for the same price, but sale proceeds were credited to sales account.
- 3) A printer purchased during the year for ₹ 8000 was wrongly debited to purchase account.
- 4) Closing stock was valued at ₹ 880000
- 5) One month's salary and one month's rent are outstanding.
- 6) The loan from HDFC bank was taken on 1st July 2010 @ 12% pa.
- 7) The reserve for bad debts is to be maintained at 5% on debtors
- 8) Insurance premium included ₹ 8000 paid towards the life policy of Mr. Roy and the balance of the insurance was paid for the period 1st July 2008 to 30st June 2010
- 9) Half of the building is used for residential purpose of Mr. Roy. **(14 marks)**

Q. 3.(a) i. From the following details of bank column of the cash book, find out the collection from debtors being the balancing figure :

Opening balance	₹	8000
Closing balance	₹	4000
Payment to creditors	₹	160000
Bills receivables encashed	₹	18000
Bills payable paid	₹	12000
Drawings	₹	24000
Expenses	₹	36000

ii) From the following details of the creditors account, find out the figure of credit purchases being the balancing figure :

Opening balance	₹	160000
Closing balance	₹	190000
Payments by cheques	₹	940000
Payments by bills payable	₹	100000
Payments by cash	₹	20000
Discount received	₹	10000
Purchase returns	₹	20000

(3×2 marks)

(b) Mr. Patel sold goods to Mr. Shah and drew a bill of exchange for ₹ 10000 which the later accepted. Show journal entries in the books of Mr. Patel for each of the following independent situations :

- (i) Here retains the bill till due date and then realized the money.
- (ii) He discounts the bill with the bank paying ₹ 750 as discounting charges & bill is honoured.
- (iii) He endorses the bill to Mr. Surana against amount due to him for ₹ 10200, & the bill is honoured.
- (iv) He sent the bill to the bank for collection and the bill is honoured.

(2×4 Marks)

Q. 4. (a) On 1st April 2010, the balance in Machinery account of a company stood at ₹ 567000/-. The company had the system of providing depreciation at 10% pa on diminishing balance. Now it is contemplating to change the method to straight line with retrospective effect from 1st April 2008, keeping the rate of depreciation same. Show machinery account for the years 2008-09, 2009-10 & 2010-11. The company had purchased a new machine for ₹ 60000 on 1st October 2010.

(7 marks)

(b) Mohan and Sohan entered into a joint venture agreeing to share profits or losses in the ratio of 2:1. The following transactions took place during the tenure of the venture :

	Mohan	Sohan
Cash deposited in joint bank a/c	50000	25000
Goods bought in	10000	5000
Expenses incurred	5000	2500

The joint transactions were:

Goods bought for cash ₹ 20000 and on credit from Mr. Sahani ₹ 40000. Expenses paid ₹ 1800. Goods sold to Mr. Roy ₹ 40000 against immediate cheque and to Mr. Ray for ₹ 50000 on 3 months' credit. Mr. Ray accepted a bill for this amount which was discounted at 18% pa. Mohan agreed to take over the balance stock at the value of ₹ 2700. Mr. Sahani was paid ₹ 39400 in full settlement. Show Joint Venture a/c, Joint bank a/c and the co-venturers a/c assuming that the venture was closed by settling the amount to the co-venturers.

(7 marks)

- Q. 5.(a)** In a factory, a machine is considered to work for 208 hours in a month. It includes maintenance time of 8 hours and set-up time of 20 hours. The expense data are given below :

Cost of machine is ₹ 500000 & it has life of 10 years with a salvage value of ₹ 20000 at the end of life. Repairs & maintenance ₹ 60480 pa, consumables & stores ₹ 47520 pa, Rent of the building ₹ 72000 pa, the machine occupies 1/6th of the area.

Supervisors' salary (common to three machines) ₹ 6000 pm, operators wages per machine ₹ 2500 pm, General lighting charges per month allocated to the machine ₹ 1000, power consumption is 25 units per hour at ₹ 2 per unit. The supervisor and operators are permanent. Consumables and stores vary with the running of machine.

Power is required for productive purposes only. Set-up time, although productive, does not require power.

Calculate the machine hour rate for (i) set-up time, and (ii) running time
(7 marks)

- (b) The quarterly production of a company's product has a steady market at 20000 units. Each unit requires 0.5 kg of a raw material. The ordering cost is ₹ 100 per order and the inventory carrying cost is ₹ 2 per annum. The lead time for procurement is 36 days and the safety stock is 1000 kg. The company has negotiated the following prices for the procurement of raw material :

Order quantity (kg)	Discount (₹)
Up to 6000	Nil
6000 - 8000	400
8000 - 16000	2000
16000 - 30000	3200
30000 - 45000	4000

Calculate the re-order point taking 30 days in a month. Prepare a statement showing total cost of procurement & storage of material after considering discounts if company elects to place 1, 2, 4 or 6 orders in a year. Also calculate the number of orders the company should place to minimize the costs after taking EOQ also into consideration.
(7 marks)

Q. 6. The following details were extracted from the books of a manufacturing company for the month of March 2010.

Sales for the month		₹ 8500000
Opening stock 125000 kg @ ₹ 30 per kg		
Purchases	March 7	150000 kg @ ₹ 31.10 per kg
	March 27	100000 kg @ ₹ 31.20 per kg
Closing stock on March 31		130000 kg

The Administration overheads for the month amounted to ₹ 172000.

Work out the following using FIFO and LIFO methods:

- 1) Value of closing stock as on 31st March 2010
- 2) Cost of sales for the month of March and
- 3) Profit or loss for the month of March **(6+6+2 marks)**

Q. 7. A company has decided to install a new machine for manufacturing a new product. The maximum possible sales are ₹ 50 lacs. The company is considering two models M1 and M2 for which the following details are available :

	M1	M2
Maximum sales per year	₹ 50 Lacs	₹ 50 Lacs
Fixed cost per year	₹ 5 Lacs	₹ 8 Lacs
Estimated profit for maximum sales	₹ 15 Lacs	₹ 17 Lacs

Calculate the break-even sales for both the models of the machine. Calculate the sales level at which both machines will give same amount of profit. Based on the computations, which model will be more profitable than the other over a range of sales? **(4+6+4 marks)**

PAPER 3

ECONOMICS & BUSINESS FUNDAMENTALS

TEST PAPER - FDN/3/EBF/2008/T-1

Time Allowed : 3 hours

Full Marks : 100

(Answer any Five Questions : All Questions are of Equal Marks)

1. Explain How price is determined by a firm under perfect competition. Illustrate your answer diagrammatically.
2. What is capital formation? What are the process involved in capital formation?
3. What is taxable capacity? What are its types? Explain the factors on which taxable capacity depends.
4. What is the meaning of fiscal policy? Explain the objectives of fiscal policy
5. What is a Central Bank? Discuss the function of Central Bank?
6. Discuss the merits and demerits of indirect taxes.

PAPER 3

ECONOMICS & BUSINESS FUNDAMENTALS

TEST PAPER - FDN/3/EBF/2008/T-2

Time Allowed : 3 hours

Full Marks : 100

(Answer any Five Questions : All Questions are of Equal Marks)

1. State the main features of Cooperative Society. What are the main types of cooperatives societies?
2. What is Memorandum of Association? Mention the contents of it? How the different clauses of Memorandum can be altered
3. What is a prospectus? Mention in brief the contents of Prospectus.
4. State the benefits offered by a sound communication.
5. What is a statutory meeting? What are the consequences of not holding a statutory meeting?
6. What are the essential factors to be considered while drafting a business letter?
7. Briefly indicate the services rendered by the Stock Exchanges.

PAPER 4

BUSINESS MATHEMATICS & STATISTICS FUNDAMENTALS

TEST PAPER - FDN/4/BMS/2008/T-1

Time Allowed : 3 hours

Full Marks : 100

(Answer all Questions : All Questions are of Equal Marks)

1. (a) If $\frac{x}{y+z} = \frac{y}{z+x} = \frac{z}{x+y} = k$, show that $K = \frac{1}{2}$ if $(x+y+z) = 0$
 (b) If $x = 2 + 2\frac{2}{3} + 2\frac{1}{3}$ show that $x^3 - 6x^2 + 6x - 2 = 0$
2. (a) The area of a regular hexagone is $54\sqrt{3}$ sq. cm, find lenth of a side, and also perimeter of hexagone.
 (b) A solid rectangular block of metal 49 cm. by 44 cm. by 18 cm. is melted and formed into a solid sphere, find the radius of the sphere $\left(\pi = \frac{22}{7}\right)$.
3. (a) Find the locus of a point which moves so that the sum of the squares of its distances from 2 points (3, 0) and (-3, 0) is 36.
 (b) Find the equation of the circle whose centre is (2, -4) and passes through the centre of the circle $x^2 + y^2 - 2x - 2y - 38 = 0$.
4. (a) Evaluate : (i) $\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - \sqrt{1-x}}{x}$ (ii) $\lim_{x \rightarrow -2} \frac{x^2 - 4}{x + 2}$
 (b) Evaluate : (i) $\int x(3x^2 + 7)^7 dx$ (ii) $\int_1^e x \log x dx$
5. (a) Out of ₹ 500 spent by a motor company, items of expenses are as follows :
 wages — ₹ 125, materials — ₹ 110, taxes — ₹ 180, distributed points — ₹ 65 and administration — ₹ 20.

Draw a pie chart to depict the above items

(b) Find the median from the frequency distribution

<i>Marks</i>		<i>No. of students</i>
Less than	10	5
" "	20	9
" "	30	15
" "	40	18
" "	50	20

PAPER 4

BUSINESS MATHEMATICS & STATISTICS FUNDAMENTALS

TEST PAPER - FDN/4/BMS/2008/T-2

Time Allowed : 3 hours

Full Marks : 100

(Answer all Questions : All Questions are of Equal Marks)

1. (a) The average salary per head of all the workers in an Institution is ₹ 60. The average per head of 12 officers is ₹ 400. The average salary per head of the rest is ₹ 56. Find the total number of workers.
 (b) Apply the Principle of variation, how long 25 men take to plough 30 hectare, if 5 men take 9 days to plough 10 hectare of land?
2. (a) A grassy rectangular field 2 meter wide footpath running all round it. If the cost of paving the footpath @ ₹ 20.00 per sq. cm is ₹ 2400 and the length of the field is 16 m, find the breadth of the field.
 (b) If the Volume of a cylinder is numerically equal to its lateral area, what is the diameter of its base?
3. (a) Find the equation of the straight line that passes through the point (5, -3) and is parallel to the line $7x + 9y - 11 = 0$.
 (b) Find the coordinates of vertex, focus and the length of latus rectum of the parabola $y^2 = 4(x + y)$.
4. (a) If $y = \sqrt{1+x^2}$ show that $y \frac{dy}{dx} = x$
 (b) Evaluate : (i) $\int \log x \, dx$ (ii) $\int_0^2 x\sqrt{4-x^2} \, dx$.
5. (a) A.M. of the following incomplete frequency distribution is 1.46. Find the values of f_2 and f_3 .

x :	0	1	2	3	4	5	total
y :	43	f_2	f_3	25	10	5	200

(b) Marks obtained by 50 students in a weekly test are as follows :

<i>Marks</i>		<i>No. of students</i>
Less than	5	6
" "	10	16
" "	15	36
" "	20	45
" "	25	50

Find the median from the frequency distribution.