

ORDINANCES

B.Sc. (Mathematics, Computer Applications and Management) Part-I Abbreviated as B.Sc. (MCM)

1. The course for the Degree of Bachelor of B.Sc. (Mathematics, Computer Applications and Management) shall be spread over three academic years to be called Semester I, II, III, IV, V and VI. The examination for the I, III and V Semester shall be held in the month of December/January and for the II, IV and VI semester in the month of April/May or on such other dates as may be fixed by the Academic Council.
2. The outlines of tests and syllabi shall be such as prescribed by the Academic Council from time to time.
3. (a) The Last date by which admission forms and fees must reach the Registrar shall be as follows :

Semester	Without late fee	With late fee of Rs.800/-	With late fee of Rs.1200/-	With late fee of Rs.5000/-	With late fee of Rs.10.000/-
Dec/Jan. (Odd)	Sept. 30	Oct.15	Oct. 21	Oct. 31	Nov.10*
April/ May (Even)	Feb. 28	March. 15	March 21	March 31	April 15

* No Examination form will be accepted after this date.

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- (b) Candidates shall submit their application forms for admission to the Examination duly countersigned by the Head of the Department.
 - (c) Candidate will be required to pay examination fees for each semester as prescribed by the University from time to time.
4. The medium of examination shall be English.
 - (a) In each course 50% of the total marks are assigned to the continuous assessment and 50% marks in the University examination in theory papers practical/laboratory papers.
 - (b) The minimum number of marks required to pass the examination shall be 40% in each paper in aggregate provided

the candidate gets:

- (i) Minimum 35% of the marks in continuous assessment in each paper.
 - (ii) Minimum 35% of the marks in the University examination.
- (c) When a candidate has failed or placed under reappear in the University examination, but passes in continuous assessment, the marks in the continuous assessment shall be carried for subsequent examinations.
- (d) If a candidate fails or placed under reappear in the continuous the marks in the University examination shall be carried for subsequent examinations. In that case, the candidate will have to improve his/her score in continuous assessment by taking only a single test which will consist to marks equal to the assessment marks allotted to that paper. Such candidate will have to inform the department in writing and in turn the test will be scheduled by the department.
5. The first semester examination shall be open to a person:
- (a) Who has passed 10+2 examination of Punjab School Education Board or any other examination recognized as equivalent there to with Mathematics as one of the subjects and having at least 50% marks in aggregate. In case of SC/ST candidates the percentage required shall be 45% marks in aggregate.

OR

Who has been declared to reappear in not more than one subject (other than Mathematics) in 10+2 examination of P.S.E.B. or any other examination recognized as equivalent there to with Mathematics as one of the subjects and having at least 50% marks in aggregate. In case of SC/ST candidates the percentage required shall be 45% marks in aggregate. But such candidates shall have to clear reappear subject in the supplementary examination of the same year, failing which his/her admission to B.Sc. (MCM) Part-I course shall automatically stand cancelled.

- (b) Satisfies the following requirements:
 - (i) Has been on the rolls of the Department throughout the semester preceding the examination.
 - (ii) Every candidate will be required to attend 75% attendance of the delivered number of periods in each paper.

Teaching/Seminar/ Tutorial/Guided Library-Reading:

- Period of one hour's duration - 1 attendance
- Practical one period-may be of 2 hour's duration - 2 attendance

In the Department where there is separate period Guided Library reading, the attendance for period, like the attendance for each paper shall be 75% and will be considered like a paper of separate Unit.

6. (a) Subject to conditions in (b) below a candidate shall be allowed to join:
- (i) Second Semester Provided that he/she has undergone a regular course of studies of First Semester as provided under the regulations.
 - (ii) Third Semester Provided that he/she has undergone a regular course of studies of First and Second Semesters as provided under the regulations in sequential order.
 - (iii) Fourth Semester Provided that he/she has undergone a regular course of studies of First , Second and Third Semesters as provided under the regulations in sequential order.
 - (iv) Fifth Semester Provided that he/she has undergone a regular course of studies of First , Second, Third and Fourth Semesters as provided under the regulations in sequential order.
 - (v) Sixth Semester Provided that he/she has undergone a regular course of studies of First , Second, Third , Fourth and Fifth Semesters as provided under the regulations in sequential order.

- (b) Subject to above there will be no condition of passing papers for promotion from odd semester to even semester in an Academic Session.

To qualify for admission to 2nd year of the Course, the candidate must have passed 50% of total papers of the two semesters of the 1st year. Similarly to qualify for admission to 3rd year of the course, the candidate should have passed 50% of total papers of four semesters of the earlier two years.

A candidate placed under re-appear in any paper, will be allowed two chances to clear the re-appear, which should be availed within consecutive two years/chances i.e. to pass in a paper the candidate will have a total of three chances, one as regular student and two as re-appear candidate.

The examination of re-appear papers of odd semester will be held with regular examination of the odd semester and re-appear examination of even semester. But if a candidate is placed under reappear in the last semester of the course, he will be provided chance to pass the re-appear with the examination of the next semester, provided his reappear of lower semester does not go beyond next semester.

7. Three weeks after the termination of examination or as soon thereafter as possible the Registrar shall publish the result of the candidates. Each candidate shall receive a certificate indicating details of marks obtained in each examination. Successful candidates at the end of semester-VI examination shall receive a degree stating the division according to ordinance 11 (a).
8. The grace marks shall be allowed according to the University ordinance relating to "Award of Grace Marks".
9. (i) In case of students, whose names are struck-off on account of non-payment of fee and are admitted later on their periods for the time they were not on the rolls, shall not be accounted for.
(ii) The shortage in the attendance of lectures by the candidate will be condoned as per rules made by the University from time to time.
10. Candidates shall submit their application forms for admission to the Examination of each semester duly countersigned by the Head of the Department/ Principal of the college along with a certificate from the Head of the Department/ Principal of the college that the candidate satisfies the following requirements:
 - (a) Has been on the rolls of the University Teaching Department/College throughout the academic terms preceding the semester examination and;
 - (b) Of having good moral character, and;
 - (c) Every candidate will be required to attend 75% of the number of lectures delivered/ practical in each paper. For late admission, the candidates, lectures delivered will be counted from his/her date of admission.

It shall be necessary that 75% of the lectures prescribed for the course in the syllabus are delivered before session in that paper is held.

B.Sc. (Mathematics, Computer Applications and Management) Part-I

Outlines of Tests, Syllabi and Courses of Reading.

Note: - Every theory paper will be of three hours duration for Examination Session 2010-11, 2011-12 & 2012-13.**SEMESTER-I**

Code	Title of Paper/Subject	Hrs./ Week	Max. Cont. Asmt.	Marks Univ. Exam.	Total
MCM-101	Punjabi/ P.H.C. (Qualifying Paper)	4	40	60	100
MCM-102	Calculus	4	50	50	100
MCM-103	Linear Algebra	4	50	50	100
MCM-104	Business Economics	4	50	50	100
MCM-105	Principles and Practices of Management	4	50	50	100
MCM-106	Introduction to Information Technology	4	50	50	100
MCM-107	Computer Programming Using 'C'	4	50	50	100
MCM-108	Software Lab-I (C- Programming)	4	50	50	100
	TOTAL		350	350	700

SEMESTER-II

Code	Title of Paper/Subject	Hrs./ Week	Max. Cont. Asmt.	Marks Univ. Exam.	Total
MCM-201	English (Communication Skills)	4	50	50	100
MCM-202	Differential Equations	4	50	50	100
MCM-203	Analytic Geometry	4	50	50	100
MCM-204	Organizational Behavior	4	50	50	100
MCM-205	Managerial Accounting	4	50	50	100
MCM-206	Computer System Architecture	4	50	50	100
MCM-207	Data Structure	4	50	50	100
MCM-208	Software Lab-I I(Data structure lab with 'C')	4	50	50	100
	TOTAL		400	400	800

Note: 1) The minimum pass marks in each paper is 35% in Continuous assessment and University examination separately subject to minimum of 40% in aggregate.

Break-up of Continuous Assessment of 50 Marks

THEORY PAPERS

1.	Two tests will be held and their average will be considered for assessment.	50% Marks
2.	Seminars/ Assignments/ Quizes/ Class participation	30%
3.	Attendance	20%
	Marks will be given according to below Criteria:	
	75% attendance & above but less than 80%	60% Marks of allotted marks to attendance
	80% attendance & above but less than 85%	80% Marks of allotted marks to attendance
	85% attendance & above	100 % Marks of allotted Marks to attendance

PARCTICAL PAPER

1.	Two tests will be held and their average will be considered for assessment.	50% Marks
2.	Viva and Lab records Class participation	30%
3.	Attendance	20%
	Marks will be given according to below Criteria:	
	75% attendance & above but less than 80%	60% Marks of allotted marks to attendance
	80% attendance & above but less than 85%	80% Marks of allotted marks to attendance
	85% attendance & above	100 % Marks of allotted Marks to attendance

ਸਿਲੇਬਸ
MCM-101: (ਕੁਆਲੀਫਾਇੰਗ ਪੰਜਾਬੀ)

ਕੁਲ ਅੰਕ : 100
ਸਮਾਂ : 3 ਘੰਟੇ
ਪੀਰੀਅਡ : ਪ੍ਰਤੀ ਹਫ਼ਤਾ

ਲਿਖਤੀ : 60
ਮੌਖਿਕ : 40
ਪਾਸ : 35%

ਪੰਜਾਬੀ ਦੀ ਪਾਠ ਪੁਸਤਕ

ਭਾਗ ਪਹਿਲਾ-ਪੰਜਾਬੀ ਸਾਹਿਤ

(ੳ) ਕਵਿਤਾ

(ਅ) ਕਹਾਣੀ

(ੲ) ਨਾਟਕ

ਭਾਗ ਦੂਜਾ-ਪੰਜਾਬ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ

ਭਾਗ ਤੀਜਾ- ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ

ਅੰਕ ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ

ਪੁਸਤਕ ਦੇ ਤਿੰਨ ਭਾਗ ਹਨ। ਪ੍ਰੰਤੂ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਭਾਗਾਂ ਵਿੱਚ ਹੋਵੇਗਾ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦਾ ਪਹਿਲਾ ਭਾਗ ਪੁਸਤਕ ਦੇ ਪਹਿਲੇ ਭਾਗ ਉੱਤੇ ਅਧਾਰਿਤ ਹੋਵੇਗਾ। ਇਸ ਭਾਗ ਦੇ ਕੁਲ 36 ਅੰਕ ਹਨ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦਾ ਦੂਜਾ ਭਾਗ ਪੁਸਤਕ ਦੇ ਦੂਜੇ ਅਤੇ ਤੀਜੇ ਭਾਗ ਉੱਤੇ ਅਧਾਰਿਤ ਹੋਵੇਗਾ। ਇਸ ਭਾਗ ਦੇ ਕੁਲ ਅੰਕ 24 ਹੋਣਗੇ ਅਤੇ ਇਸ ਵਿੱਚ ਪੁਸਤਕ ਦੇ ਦੂਜੇ ਅਤੇ ਤੀਜੇ ਭਾਗ ਦੇ 12-12 ਅੰਕ ਹੋਣਗੇ।

(1) ਪੁਸਤਕ ਦੇ ਪਹਿਲੇ ਭਾਗ ਦੇ ਤਿੰਨ ਉਪ-ਭਾਗ 'ੳ', 'ਅ' ਅਤੇ 'ੲ' ਹਨ। ਇਨ੍ਹਾਂ ਤਿੰਨਾਂ ਉਪ ਭਾਗਾਂ ਵਿੱਚੋਂ ਹੇਠ ਲਿਖੇ ਅਨੁਸਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣ।

(ੳ) ਇਸ ਵਿੱਚ ਕੁਲ 12 ਪ੍ਰਸ਼ਨ ਐਬਜੈਕਟਿਵ ਟਾਈਪ/ਮਲਟੀਪਲ ਚੋਣ ਵਾਲੇ ਹੋਣਗੇ। ਹਰ ਉਪ-ਭਾਗ ਵਿੱਚ 4-4 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ।

ਅੰਕ $3 \times 4 = 12$

(ਅ) ਹਰ ਉਪ-ਭਾਗ ਵਿੱਚੋਂ 5-5 ਲਘੂ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ 3-3 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਉੱਤਰ ਪੰਜ ਲਾਈਨਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ।

ਅੰਕ $9 \times 2 = 18$

(ੲ) ਹਰ ਉਪ-ਭਾਗ ਵਿੱਚੋਂ 1-1 ਪ੍ਰਸ਼ਨ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਦੋਹਾਂ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਹੋਵੇਗਾ। ਉੱਤਰ ਇੱਕ ਸਫੇ ਤੱਕ ਸੀਮਤ ਹੋਵੇ।

ਅੰਕ = 06

ਚਲਦਾ ਪੰਨਾ...2.

(2) ਪੁਸਤਕ ਦੇ ਦੂਜੇ ਅਤੇ ਤੀਜੇ ਭਾਗ ਵਿੱਚੋਂ ਪ੍ਰਸ਼ਨ ਇਸ ਪ੍ਰਕਾਰ ਪੁੱਛੇ ਜਾਣਗੇ।

(ੳ) ਹਰ ਭਾਗ ਵਿੱਚੋਂ 4-4 ਪ੍ਰਸ਼ਨ ਐਬਜੈਕਟਿਵ ਟਾਈਪ/ ਮਲਟੀਕਲ ਚੋਣ ਵਾਲੇ ਹੋਣਗੇ। ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ।

ਅੰਕ $4+4 = 08$

(ਅ) ਹਰ ਇੱਕ ਭਾਗ ਵਿੱਚ 4-4 ਸੰਖੇਪ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਕੁਲ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚ 2 ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹਨ।

ਅੰਕ $5+5 = 10$

(ੲ) ਹਰ ਇੱਕ ਭਾਗ ਵਿੱਚੋਂ 1-1 ਪ੍ਰਸ਼ਨ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨ ਹੋਵੇਗਾ।

ਉੱਤਰ ਇੱਕ ਸਫੇ ਤੱਕ ਸੀਮਤ ਹੋਵੇ।

ਅੰਕ = 06

ਨੋਟ ਮੌਖਿਕ ਪ੍ਰੀਖਿਆ ਪਾਸ ਪੁਸਤਕ ਤੇ ਹੀ ਅਧਾਰਿਤ ਹੋਵੇਗੀ। ਇਸ ਦੀ ਵਿਧੀ ਪ੍ਰੈਕਟੀਕਲ ਵਾਲੀ ਹੋਵੇਗੀ।

MCM-101: Punjab History & Culture
(Special paper in lieu of Punjabi)

Max. Marks: 100
Internal Assessment: 20

Uni Exam. 80
Pass Marks: 35%

Time Allowed: 3 hours

NOTE : The paper setter should keep in view the topics specified in each paper and not the title of the paper. Candidates are requested to attempt one question each from the sections A, B, C and D and the entire section E.

INSTRUCTIONS FOR THE PAPER SETTERS

1. The syllabus prescribed should be strictly adhered to. The paper-setters should keep in view the topics specified in each paper and not the title of the paper.
2. The questions paper will consist of five sections. A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15 marks each. Section E will consist of 15 short answer type questions which will cover the entire syllabus and will carry 20 marks in all. There being internal choice in this section, each short answer type question will carry 2 marks. Candidates are required to attempt one question each from sections A,B,C,D and the section E.
3. The wording of the questions should be simple and easily understandable by average students . There should be no vagueness.
4. There should be no question based upon quotations.
5. The general standard of the questions should cater to the different intellectual levels- average and below average.
6. Each paper is of 80 marks and of the three hours duration and 20 marks for internal assessment.

SECTION-A

1. Teachings of Guru Nanak.
2. Development of Sikh Institutions: (1) Langar (2) Sangat (3) Manji system (4) Masand system (5) Hariminder Sahib (6) Akal Takht (7) Miri Piri

SECTION-B

3. Compilation of Adi Granth, Martyrdom of Gurr Arjan.
4. Causes of Martyrdom of Guru Tegh Bahadur, Creation of Khalsa and its impact.

SECTION-C

5. Study of Institutions: Dal Khalsa, Gurmatta, Chhota Ghallughara and Wadda Ghallughara.
6. Ranjit Singh's conquest of Lahore, Personality of Ranjit Singh.

SECTION-D

7. Great Artists of Punjab: Amrita Shergill, Sobha Singh: Folk Music and Dances.
8. Famous Legends of Punjab: Heer Ranjha and Sohni Mahiwal.

SECTION-E

Fifteen short answer questions will be set from the entire syllabus. The candidates will attempt any 10 questions. These questions will be based upon terms, concepts institutions within the purview of the syllabus. The answer of these questions will be of 20-25 words and will carry 2 marks each. Thus, the total marks for these questions will be 20.

BOOKS SUGGESTED:

1. Fauja Singh (ed.) History and Culture of the Punjab, Vol. II & III.
2. G.S.Chahara, The Advanced History of the Punjab, Vol. I.
3. Ganda Singh and Teja Singh: A Short History of the Sikhs.
4. J.S.Grewal, The New Cambridge History of India: The Sikhs of the Punjab.
5. D.S.Dhillon, Sikhism: Origin and Development.
6. Hari Ram Gupta: History of the Sikhs Vol. I.

MCM-102 - Calculus

Maximum Marks: 100(50+50)

Time allowed: 3 Hrs.

External: 50

Internal: 50

Teaching hours: 55

Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section-A

Functions, Sequence Derivatives and integrals:- ϵ - δ definition of the limit of function, Continuity, One sided limits, Review rules for finding limits, uniform continuity, Sequences, sup and inf, limit superior and limit inferior, Cauchy's Convergence Criterion.

Derivatives, interpretation of derivatives, differentials, Review of the rules for differentiation, Mean Value Theorems, L Hospital's Rules, Applications to Maxima and Minima, Rates of change, Velocity and acceleration.

Precise definition of integral, Mean Value Theorem for Integrals, Review of some special integral and special methods of integration.

Section- B

Series, Improper Integrals and special Functions:- Convergence and Divergence of infinite Series, Tests for Convergence, Comparison Test, Integral Test and Alternating series test, Absolute and Conditional Convergence, infinite Sequence and Series of Functions, Uniform Convergence, Weierstrass M test and Dirichlet's . Power Series: Radius of Convergence and Simple examples.

Improper Integrals of the first and second kind, Convergence Tests for integrals of the first and second kind and some special improper integrals. Cauchy's Principles Value and Uniform Convergence of Improper Integrals.

Section-C

Multivariable Functions: Vector Valued Functions and Space Curves. Modeling Projectile Motion, Arc Length the Unit Tangent Vector, Curvature Torsion and The TNB frame. Functions of Several Variables, Limits and Continuity, Partial Derivatives, Differentiability, The Chain Rule. Partial derivatives with constrained variables, Directional Derivatives, Gradient Vectors and Tangent Plane, Extreme Value and Saddle Points, Lagrange Multipliers and the Taylor's formula.

Section-D

Multiple Integrals and the Vector Field Theory: Double Integrals, in Polar Form, Triple Integrals in Rectangular, Cylindrical and Spherical Coordinates. Line Integrals, Vector Fields, Work, Circulation and Flux, Path Independence, Potential Functions and Conservative Fields, Greens Theorem in the Plane, Surface Area and Surface Integrals, Parameterized Surface, Stokes Theorem and the Divergence Theorem.

Recommended Readings:

- 1 Theory and Problems of Advanced Calculus: Murray R. Spiegel. Schaum's Outline Series (Relevant Material from Chapters 2 to 5 and 11-12)
- 2 Calculus and Analytic Geometry: Thomas/Finney. International student Edition. 9th edition. (Relevant Materials from Chapter 11-14)

MCM-103 - Linear Algebra

Maximum Marks: 100(50+50)

Time allowed: 3 Hrs.

External: 50

Internal: 50

Teaching hours: 55

Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section-A

Vector Space and Linear Equations: Vector Spaces, Subspaces and Linear Dependence, Spanning Sets, Basis and Dimension, Row Equivalence of Matrices, Finite Dimensionality, Systems of Linear Homogeneous and Non Homogeneous Equations.

Section-B

Linear Transformations: Linear Transformations and the Space $L(V,W)$. Linear Transformations and Matrices, Similarity, The Rank Nullity Theorem, Inner Products, The Gram Schmidt Orthogonalization Process and Orthogonal Transformations.

Section-C

Determinants: Definition, Existence and Uniqueness of Determinants. The Multiplication Theorem for Determinants, Row and Column Expansions, Cramer's Rule, Determinants and Volumes, Hadamard's Inequality. Permutations and the classical expression for the complete expansion of the determinants. Polynomials of Matrices and Linear Operators.

Section-D

Eigenvalues and Eigenvectors: Diagonalization and Eigenvectors, Characteristic Polynomial and the Cayley Hamilton Theorem, Minimum Polynomial, Algebraic and Geometric Multiplicity Characteristic and Minimum Polynomial for Linear Operators.

Recommended Texts:

- 1 Linear Algebra, An Introductory Approach by Charles W.Curtis. UTM Springer International Edition, Indian Reprint 2004-2006. (Sections 3-9, 11-13, 15-19).
- 2 Theory and Problems of Linear Algebra. Schaum's Outline Series.

MCM-104 - Business Economics

Maximum Marks: 100(50+50)

Time allowed: 3 Hrs.

External: 50

Internal: 50

Teaching hours: 55

Minimum Pass Marks: 40%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section-A

Introduction: Nature, Scope and Significance of Managerial Economics, its Relationship with other Disciplines, Role of Managerial Economics in Decision Making, Decision Making under Risk and Uncertainty.

Section-B

Consumer Behaviour and Demand Analysis: Cardinal and Ordinal Approaches to Consumer Behaviour, Demand Functions, Determinants of Demand, Elasticity of Demand, Derivation of market Demand, Demand Estimation and Forecasting.

Section-C

Theory of Production and Cost: Managerial uses of Production Function, Short Run and Long Run Production Analysis, Isoquants, Optimal Combination of Inputs, Empirical Estimation of Production Functions; Traditional and Modern Theory of Cost in Short and Long Runs, Economies of Scale and Economies of Scope, Empirical Estimation of Cost Function.

Section-D

Theory and Behaviour of Firm: Profit Maximization, Alternative Objectives of Business Firms, Price Output decisions under Perfect Competition, Monopoly, Monopolistic Competition and Oligopoly, Pricing Policies and Methods, Strategic Behaviour of Firms and Game Theory:- Nash Equilibrium, Prisoner's Dilemma – Price and Non-price Competition.

Text Books:

1. Christopher R. Thomas & S. Charles Maurice (2006), Managerial Economics, Tata McGraw Hill, New Delhi.
2. Truett & Truett (2004). Managerial Economics. John Wiley & Sons Inc.
3. Petersen, H. Craig & Cris, L W (2004). Managerial Economics. Pearson Education (Singapore) Ltd.

4. Chaturvedi, D.D. & Gupta S.L. (2003). Managerial Economics: Text & Cases. Brijwasi Book Distributors and Publishers.

Reference Books:

1. Salvatore, D. (2004). Managerial Economics in a Global Economy. Irwin, Mc Graw-Hill.
2. Dholakia, R.H. & Oza, A.N. (2003). Micro Economics for Management Students. OUP, New Delhi.
3. Keating Berry and Wilson, J H. (2003). An Economic Foundation for Business Decision. Biztantra Publication, New Delhi.
4. Gupta, G.S. (2004). Managerial Economics: Micro Economic. McGraw Hill.

MCM 105 – Principles and Practices of Management

Maximum Marks: 100(50+50)

Time allowed: 3 Hrs.

External: 50

Internal: 50

Teaching hours: 55

Minimum Pass Marks: 40%

Instructions for paper-setters

The question paper will consist of five sections A,B,C,D and E. Sections A, B,C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section-A

Definition, Functions, Process, Scope and Significance of Management. Nature of Management, Managerial Roles and Skills, Difference between Management and Administration. Social Responsibilities of business, Management by Objectives

Section-B

Evolution of Management Thought, Planning and Organizing: Nature, Scope, Objective and Significance, Elements and Steps of Planning, Decision Making, Organizing Principles, Span of Control, Line and Staff Relationship, Authority, Delegation and Decentralization. Effective Organizing, Organizational Structures, Formal and Informal Organizations, Staffing.

Section-C

Directing, Supervision, Motivation, Different Theories of Motivation- Maslow, Herzberg, McClelland, Vroom, Porter, Job Satisfaction. Concept of Leadership- Theories and Styles. Communication Process, Channels and Barriers, Effective Communication.

Section-D

Controlling and Coordinating- Elements of Managerial Control, Control Systems, Management. Control Techniques, Effective Control Systems. Coordination Concept and Importance, Concept of Managerial Effectiveness, Stress management.

SUGGESTED READINGS

1. Koontz "O" Donnel Wehrich - Elements of Management.
2. Koontz H, "O" Donnel C - Management-A Book of Reading.
3. Terry and Franklin - Principles of Management
4. Stoner - Principles of Management
5. William H. Newman and - The Process of Management.

MCM 106-Introduction to Information Technology

Maximum Marks: 100(50+50)

Time allowed: 3 Hrs.

External: 50

Internal: 50

Teaching hours: 55

Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A,B,C,D and E. Sections A, B,C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

SECTION-A

Historical Evolution of Computer: Characterization of Computers, types of Computers, the Computer generations. Basic Anatomy of Computers: memory unit, input-output unit, arithmetic logic unit, control unit, central processing unit, RAM, ROM, PROM, EPROM. Input-Output Devices: punched hole devices, magnetic media devices, printers, keyboard, scanners, OCR, OMR.

SECTION-B

Number System: non-positional and positional number systems, base conversion, fractional numbers, various operations on binary numbers: addition, subtraction, multiplication and division.

Secondary Storage: sequential vs random storage, floppy, hard disk, optical disk.

SECTION-C

Computer Code: BCD, EBCDIC, ASCII, Grey Code

Computer Software: Introduction, types of software: application and systems software.

Computer Languages: Machine Language, assembly language, high level language, 4GL, assembler, compiler and interpreter.

..

SECTION-D

Networking: Basics, types of networks (LAN, WAN, MAN), topologies, communication media, Operating System, Definition, functions and types of operating system, E-commerce: meaning, advantages and application of e-commerce.

REFERENCES

- 1 V Rajaraman, "Fundamentals of Computers", PHI, N. Delhi, 1996.
- 2 N Subramaniam, "Introduction to Computers", Volume-I.
- 3 Dr. Rajesh Trehan, "A Complete Book on IT", Cyber Tech.

MCM-107- Computer Programming using 'C'

Maximum Marks: 100(50+50)

Time allowed: 3 Hrs.

External: 50

Internal: 50

Teaching hours: 55

Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A,B,C,D and E. Sections A, B,C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

SECTION-A

Programming process: Problem definition, program design, coding, compilation and debugging. Identifiers and keywords, data types, input and output, type conversion, operators and expressions: Arithmetic, unary, logical and relational operators, assignment operator, conditional operator, library functions.

SECTION-B

Control statements: branching, looping, using for, while and do-while statements, nested control structures, switch, break and continue statement. Functions: definition, call prototype and passing arguments to a function, recursion versus iteration. User defined and library functions. Storage classes: automatic, external and static variables.

SECTION-C

Arrays: Definition, accessing elements, initialization, passing to functions, multi dimensional arrays, strings, Structure: variables, accessing members, nested structures..

SECTION-D

Pointers: address and differencing operators, declaration, assignment, passing pointer to functions, pointer arrays, pointer and arrays, pointer to structures, Files: reading, writing text and binary files. text vs binary files.

TEXT BOOKS

- 1 Byron Gottfried, "Programming with C. (Second edition), Schaum's outline series" Tata McGraw Hill Publishing Co.

REFERENCE BOOKS

- 1 Ram Kumar and Rakesh Aggarwal: Programming in Ansi C, Tata McGraw Hill Publishing Co. Ltd. (2nd ed.).
- 2 B.W. Karrighan and D.M. Richie, "The C programming language", 2nd edition, (2003) PHI.
- 3 H.H. Tan & T.B. Dorazio, "C Programming for engineers & Computer Science", McGraw Hill (international edition).

MCM-108-Software Lab-I (C- Programming)

Maximum Marks: 100(50+50)

External: 50,

Internal: 50

Teaching hours: 50

Minimum Pass Marks: 35%

Programs to be developed based upon various constructs in the C language

SEMESTER-II

Code	Title of Paper/Subject	Hrs./ Week	Max. Cont. Asmt.	Marks Univ. Exam.	Total
MCM-201	English (Communication Skills)	2	50	50	100
MCM-202	Differential Equations	4	50	50	100
MCM-203	Analytic Geometry	4	50	50	100
MCM-204	Organizational Behavior	4	50	50	100
MCM-205	Managerial Accounting	4	50	50	100
MCM-206	Computer System Architecture	4	50	50	100
MCM-207	Data Structure	4	50	50	100
MCM-208	Software Lab-I I(Data structure lab with 'C')	4	50	50	100
	TOTAL		400	400	800

Note: 1) The minimum pass marks in each paper is 35% in Continuous assessment and University examination separately subject to minimum of 40% in aggregate.

Break-up of Continuous Assessment of 50 Marks

THEORY PAPERS

- | | | |
|----|---|--|
| 1. | Two tests will be held and their average will be considered for assessment. | 50% Marks |
| 2. | Seminars/ Assignments/ Quizes/
Class participation | 30% |
| 3. | Attendance | 20% |
| | Marks will be given according to below
Criteria: | |
| | 75% attendance & above
but less than 80% | 60% Marks of allotted
marks to attendance |
| | 80% attendance & above
but less than 85% | 80% Marks of allotted
marks to attendance |
| | 85% attendance & above | 100 % Marks of allotted
Marks to attendance |

PARCTICAL PAPER

- | | | |
|----|---|-----------|
| 1. | Two tests will be held and their average will be considered for assessment. | 50% Marks |
| 2. | Viva and Lab records
Class participation | 30% |
| 3. | Attendance | 20% |
| | Marks will be given according to below
Criteria: | |
| | 75% attendance & above | |

but less than 80%

60% Marks of allotted
marks to attendance

80% attendance & above
but less than 85%

80% Marks of allotted
marks to attendance

85% attendance & above

100 % Marks of allotted
Marks to attendance

MCM-201: English (Communication Skills)

Maximum Marks: 100(50+50)

External: 50

Teaching hours: 55

Time allowed: 3 Hrs.

Internal: 50

Minimum Pass Marks: 35%

INSTRUCTIONS TO THE PAPER-SETTER

All questions are to be compulsory and each question, except questions on précis and translation, will have internal choice

- 1 Coolie (Novel by Mulak Raj Anand)
 - a. One essay-type question out of the given two questions (to write semi-critical answer on the theme, episode story and characters of novel).

10 Marks
 - b. Ten short sub-questions, requiring brief answer (to test the student comprehensive of the next of the novel) out of the fifteen given questions.

10 Marks
- 2 Essay: One essay (narrative, descriptive, reflective, etc) of about 400 words of the given five topics.

10 Marks
- 3 Précis: A suitable heading and précis of the given passage.

10 Marks
- 4 Vocabulary: Meaning and use of five words, terms out of the given eight words of terms from the text.

5 Marks
- 5 Translation of one short paragraph of Punjabi or Hindi into English.

5 Marks

(For foreign students, in lieu of translation, there will be paragraph writing. The students will be required to attempt one paragraph (of about 150 words) out of the given topics).

MCM-202 – Differential Equations

Maximum Marks: 100(50+50)

Time allowed: 3 Hrs.

External: 50

Internal: 50

Teaching hours: 55

Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

SECTION-A

First order differential equations: order and degree of a differential equations, separable differential equations, Homogeneous differential equations, equations reducible to Homogenous differential equations form, Linear differential equations and equations reducible to linear differential equations form, integrating factor and Exact differential equations.

SECTION-B

Higher order differential equations: Solution of Linear homogeneous and non-homogeneous differential equations of higher order (up to third order) with constant coefficients, Wronskian, method of Variation of Parameters, method of Undetermined Coefficients, differential operator method. Linear non-homogeneous differential equations with variable coefficients, Euler method.

SECTION-C

Partial differential equations: Partial differential equation of first order, Lagrange's solution, some special types of equation which can be solved easily by methods other than general method, Charpit's general method of solution.

SECTION-D

Partial differential equations of second and higher order: Classification of linear partial differential equations of second order. Homogeneous and non-homogeneous partial differential equations with constant coefficients. Partial differential equations reducible to equation equations with constant coefficients. Monge's method.

BOOKS RECOMMENDED

1. R. K. Jain and S. R. K. Iyengar: Advanced Engineering Mathematics, Narosa Publishing House.
2. E. Kreysig: Advanced Engineering Mathematics, John Wiley & Sons Inc., New York.
3. I. N. Sneddon: Elements of Partial Differential Equations, Mac Graw Hill Book Co.
4. A. R. Forsyth: A Treatise on Differential Equations, Macmillian & Co. Ltd., London.

MCM- 203- Analytic Geometry

Maximum Marks: 100(50+50)

External: 50

Teaching hours: 55

Time allowed: 3 Hrs.

Internal: 50

Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A,B,C,D and E. Sections A, B,C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each.

Section E will

have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section-A

Transformation of axes, shifting of origin, Rotation of axes, Reduction of the second degree equation into standard forms by transformation of co-ordinates. The invariants t and Identification of curves represented by second degree equation.

Section-B

Pole and polar, pair of tangents from a point, chord of contact, equation of the chord in terms of midpoint and diameter of conic. Polar equations of conics and equations of chords, tangents and normal's only.

Section-C

Conjugate diameters, Conjugate hyperbola, Asymptotes of a hyperbola, rectangular hyperbola. Special properties of parabola, ellipse and hyperbola.

Section-D

Sphere: Cone. Cylinder. Central conicoids. Paraboloids. Plane of Conicoids. Generating lines. Confocal Conicoids. Reduction of Second degree equation of standard forms.

Text Books:

- 1 S.L. Loney, The Elements of Coordinate Geometry, Macmillan and Company, London.
- 2 Gorakh Prasad and H.C.Gupta, Text Book on Coordinate Geometry, Pothishala Pvt. Ltd., Allahabad.
- 3 P.K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of two Dimensions, Wiley Eastern Ltd. 1994.
- 4 N.Saran and R.S. Gupta, Analytical Geometry of Three Dimensions, Pothishala Pvt. Ltd. Allahabad.

RECOMMENDED READINGS

- 1 R.J.T. Bell, Elementary Treatise on Coordinate Geometry of Three Dimesions, Macmillan India Ltd., 1994.

MCM- 204- Organizational Behaviour

Maximum Marks: 100(50+50)
External: 50
Teaching hours: 55

Time allowed: 3 Hrs.
Internal: 50
Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section-A

Organizational behavior, its concepts, features and importance, understanding Indian social and cultural environment and its influence on industrial behavior. Challenges and opportunities for Organizational behavior. Understanding and managing individual behavior.

Section-B

Personality, and its determinants, Personality refrits. Rule of attitudes, Values and beliefs in Personality. Perception, its nature and importance, selective perception and social perception. Learning theories and principles.

Section-C

Motivation, its meaning and type of motives, motivation theory. Leadership theories and styles of Management. Power and Politics: Meaning and relationships.

Section-D

Concept of Group binomial, its important in group decision making. Understanding organization Conflicts and dimensions, organization culture and effectiveness. Work stress management.

References:-

1. Stiffen P. Robbins, Organizational behavior, PHI
2. Fred Luthans, OB, McGraw int edition.
3. L.M. Prasad, OB. Sultan Chand & Sons.

MCM 205 -Managerial Accounting

Maximum Marks: 100(50+50)
External: 50
Teaching hours: 55

Time allowed: 3 Hrs.
Internal: 50
Minimum Pass Marks: 40%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B,C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section-A

Nature of Accounting Information: Scope of Accounting, Accounting concepts, Principles & Standards, Accounting Cycle, Journalisation, Subsidiary Books; Ledger Posting, Preparation of Trial Balance, Rectification of Error.

Section-B

Classification of Capital and Revenue. Fixed Assets and Depreciation Accounting. Preparation of Final Accounts, Manufacturing Account; Trading Account, Profit and Loss Account; Balance Sheet (with adjustments), Reports to be Annexed.

Section-C

Cost Accounting: Objectives, Classification of Cost, Preparation of Cost Sheet, Material Cost Accounting, Perpetual Inventory Control, Inventory Valuation, EOQ, ABC Analysis, Reconciliation of Financial and Cost Accounting.

Section-D

Performance Evaluation Techniques: Introduction to Budgeting and Budgetary Control; Performance Budgeting; Classification of Budget; Standard Costing and Variance Analysis, Decision Making Techniques: Cost Volume Profit Analysis; Management Accounting for Decision Making and Control; EVA and Performance Measurement.

Text Books

1. Maheshwari, S.N. (2nd ed., 2003). Financial and Cost Accounting. Sultan Chand & Sons.
2. Bhattacharya, Ashish K. (2003). Financial Accounting for Business Managers. Prentice Hall of India.
3. Arora, M. N. (2004). Cost Accounting. Vikas Publication.

Reference Books:

1. Maheshwari, S.N. (8th ed., 2004 – Vol-I) & (9th ed., 2004-Vol-II). Advanced Accountancy – Vol. I & II. Vikas Publishing House.

2. ICAI, Accounting Standards (Latest).
3. Maheshwari, S.N. (2004). Corporate Accounting for Managers. Vikas Publishing House, New Delhi.
4. Khan, M.Y. and Jain, P.K (4th ed., 2004). Financial Management, Text, Problems & Cases. Tata McGraw Hill Company, New Delhi.

MCM 206-Computer Systems Architecture

Maximum Marks: 100(50+50)
External: 50
Teaching hours: 55

Time allowed: 3 Hrs.
Internal: 50
Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section A

Basic computer architecture, functional organization, Register organization, arithmetic and logic unit, central processing unit, Instruction formats, Addressing modes, Data transfer and manipulation, Interrupts, RISC/CISC architecture.

Section B

Boolean algebra, Basic Gates, Combinational logic design: half-adder, full adder, parallel adder. Sequential circuits: concept, flip-flops (D, RS, JK, JK-Master-Slave, T), Counters (Ripple, Asynchronous Synchronous, Decade, Mod-5).

Section C

Register Transfer Language, Arithmetic, Logic and Shift micro-operations, Arithmetic Logic Shift unit, Memory organization: memory hierarchy, Memory types: cache, associative and other types.

Section D

I/O organization: Peripheral devices, I/O interface, Modes of data transfer: Programmed I/O, Interrupt initiated I/O, DMA, I/O processor.

Text Books

- 1 M.M. Mano, "Computer System Architecture", Third Edition, Prentice Hall of India, 2002.
- 2 A.S. Tannenbaum, "Structured Computer Organisation", Prentice- Hall of India, 1999.
- 3 William Stallings, "Computer Organisation and Architecture", 6th edition, Pearson Education, 2000.

MCM-207-Data Structure

Maximum Marks: 100(50+50)
External: 50
Teaching hours: 55

Time allowed: 3 Hrs.
Internal: 50
Minimum Pass Marks: 35%

Instructions for paper-setters

The question paper will consist of five sections A, B, C, D and E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and will carry 15% marks each. Section E will have 10-20 short answer type questions which will cover the entire syllabus uniformly and will carry 40% marks in all.

Instructions for candidates

Candidates are required to attempt one question each from sections A, B, C and D of the question paper and the entire section E.

Section A

Data Structure: Introduction to data structure and algorithm. - Algorithm analysis : Time space trade off algorithms and Big O notation.

Arrays: Introduction, one dimensional and multidimensional arrays, memory representation of arrays, traversing linear array, insertion and deletion in an array, sparse array.

Section B

Stacks: Push and Pop in stacks. Representation of stacks in memory (Linked and sequential)
Application of stacks: matching parenthesis, evaluation of postfix Notation, conversion from infix to postfix, recursion. , Tower of Hanoi.

Section C

Linked List, representation of linked list using static and dynamic data structures.

Comparison of linear and non- Linear data structures, Insertion and Deletion of a node from a linear linked list, doubly linked list, Circular linked list, Application of linked lists.

Section D

Searching and Sorting: Linear and binary search, bubble sort, Selection Sort, Insertion Sort, Merge Sort, Radix Sort, Quick Sort. Comparison of various searching and sorting algorithms.

References:

- 1 Tanenbaum, Y. Lanhgsam and A.J. Augenstein, "Data Structures Using C", Prentice Hall of India, 1990.
- 2 Loomis, "Data and File Structures".
- 3 Seymour Lipschultz, "Theory and Practice of Data Structures", McGraw-Hill, 1988.
- 4 E. Horowitz and S. Sahni, "Data Structures with Pascal", Galgotia, 3rd Edition, 1991.
- 5 Robert Sedgewick, "Algorithms in C", Pearson Education.
- 6 M. J. Folk, B. Zoellick, G Riccardi, " File Structures", Pearson Education.

MCM 208-Software Lab-II (Data structure lab with "C")

Maximum Marks: 100(50+50)

External: 50

Teaching hours: 55

Time allowed: 3 Hrs.

Internal: 50

Minimum Pass Marks: 35%

Programs to be developed upon data structure problems in the C language.