Introduction of authority

(f) Differentiate between recognition and management in the context of the controlling process.

(e) Discuss major activities involved in designing a management function.

(d) Discuss major activities involved in designing a management system.

(c) Discuss major activities involved in designing a management framework.

(b) Discuss major activities involved in designing a management structure.

(a) Discuss major activities involved in designing a management system.

I. Show answer in two paragraphs

Note: Answer all questions in all Q. No. 1 is compulsory.

Maximum Marks: 80

TIME: THREE HOURS
Describe the strains of group formation

1. Explain the leader's function in the organization.
2. Identify the major types of resistance to change.

Organizational

When are the key communications performed in

1. How high on the types of plans used for effective
5. Define Leadership. Explain the Prominent Contingency Theories of Leadership. Identify the various contingency factors which play a role in leaders' effectiveness.

6. Examine the concept of Organisational Conflict and its dynamics. Figure out the most widely observed types of conflict also mention possible sources of conflict.

7. Explain the concept of Learning. What is Learning Organisation? Why the concept of Learning has been gaining importance in modern organisations. Give appropriate reasons.

8. What is Interpersonal Communication? Discuss its various types. Figure out the major barriers to interpersonal communication. Also, briefly mention how to overcome those barriers to improve communication effectiveness.
MC-201
ORGANISATIONAL BEHAVIOUR
MANAGEMENT CONCEPTS

4060-S

MDE/D-18

ROLL NO. 05

Total Pages: 05
Define Organizational Development. Discuss its role.

1. Identify the major types of resistance to change.
2. Briefly describe the Team Theory of Leadership.
3. Organizational 
4. What are the key dimensions of performance?
5. Describe the stages of group formation.
5. Define Leadership. Explain the Promotion Conundrum.

6. Examine the concept of Organizational Culture and its dynamics. Point out the most widely observed types of conflict and also mention possible sources of conflict.

7. Explain the concept of Learning. Why does learning happen?

8. Write a short essay justifying the importance of modern organizations giving appropriate reasons.
Part A

Note: Attempt five questions in all. Q. No. 1 in Part A is compulsory which carries 40 marks. Attempt four questions from Part B carrying 10 marks each.

1. Write short notes on the following:
   a. 10 x 4 = 40

Part B

8. Explain the procedure of patient registration. Can everything be patented? List the things which cannot be patented.

Total Marks: 100

MC-502
BUSINESS ENVIRONMENT
MDE/D-18

2. Write a note on the role of World Bank in International Trade. How it helps in case of trade business across nations?
6. Discuss the growth and evolution of the insurance sector.

7. Explain the role and significance of environmental laws.

2. What do you mean by environmental scanning? Discuss.

**PART A**

1. Which factors influence the development of environmental laws?

2. How do you determine the potential impact of environmental laws?

3. Explain the relationship between monetary and fiscal policies.

4. Discuss the impact of regulatory frameworks on industrial growth.

5. What are the barriers to the implementation of international trade?
Write a note on the role of World Bank in International Trade.
When do you mean by environment scanning? Discuss.

PART II

1. What are the major determinants of your firm's global strategy? (a)
   (b)
   (c)
   (d)
   (e)
   (f)
   (g)
   (h)
   (i)
   (j)

2. How do you see the role of IDA in global strategy formulation? (a)
   (b)
   (c)
   (d)
   (e)
   (f)
   (g)
   (h)
   (i)
   (j)

3. How should international trade liberalisation be implemented? (a)
   (b)
   (c)
   (d)
   (e)
   (f)
   (g)
   (h)
   (i)
   (j)

4. What is the impact of regulatory framework on industry? (a)
   (b)
   (c)
   (d)
   (e)
   (f)
   (g)
   (h)
   (i)
   (j)

5. How do you see the role of IDA in global strategy formulation? (a)
   (b)
   (c)
   (d)
   (e)
   (f)
   (g)
   (h)
   (i)
   (j)

6. Discuss the impact of regulatory framework on industry.
PETO

(x)

B. Mention demand pull factors of inflation

(i) What are the causes of inflation?

(ii) Define dumping

(iii) Where and why selling costs are born?

Dearest buyers to scale,

(iv) When do you mean by marginal rate of substitution?

(v) Define cross elasticity of demand

Answer the questions of the theme

Economics: "What are the responsibilities of a Managerial Economists"

10x4=40

Time:

MC-503
MANAGERIAL ECONOMICS

MC-506

100 Remaining: 00:30:00
5. How the equilibrium of the firm is determined when a single factor is used and multiple factors are used.

6. Write a detailed note on the long run cost curves and their interrelationship.

7. Write notes on the following:
   (a) Transfer Pricing
   (b) Determinants of demand.

8. Write notes on the following:
   (a) Equilibrium in perfect competition in short and long run.
   (b) Elasticity of demand.
1. Answer to the following questions should not exceed 150 words (compulsory)

I. 

Note: Q 0. No. Is compulsory. Attempt any four questions only.

Maximum Marks: 80

MC-101

ORGANISATIONAL BEHAVIOUR

CMD-12-18

Roll No. ........................................

Total Pages: 03
1. Explain various cases studies described in transactional analysis. Also discuss various types of transactions and their impact on an organization.

2. Discuss the findings of Human Relations School, Behavioral Science School and modern approach to organizational behavior.

3. What is Group Cohesiveness? Explain the factors affecting group cohesion.

4. What is Personality? How does it affect the behavior of a person? Discuss the main personality traits influencing organizational behavior.

5. Explain the meaning and nature of perception.

6. What are the various barriers to learning? Also discuss the social learning theory.
I. Write short notes on the following:

(a) Development
(b) Environment
(c) Social Responsibility
(d) Corporate Governance
(e) Business Ethics

II. State whether the given statement is true or false. Justify your answer:

(a) No, I do confess. Additional marks will be awarded for the best answer.

Time: Three Hours
Maximum Marks: 80

MCQ-102

BUSINESS ENVIRONMENT

CDE/D-18

Total Pages: 10
MC-104
COMPANY LAW
CME/D-18
4414

Page 10

I. Write notes on the following (150 words each):

(j) Voluntary Winding up
(e) Extra-ordinary Meeting
(d) Underwriting of Shares
(c) Bonus Shares
(b) Articles of Association
(a) Limited Liability in a company

Note: Attempt five questions in all. Q. No. 1 is compulsory.

Maximum Marks: 80

Time: Three Hours
1. What do you mean by the term 'mis-management'? State the provisions of Companies Act for the prevention of mis-management.

2. How are Directors Appointed? When are various Directors Board of Directors?

3. Examine "Doctrine of Indirect Management" in detail.

4. What do you mean by alteration of share capital? What are various ways of alteration of share capital? When it can a private company be converted into a public company?

5. Explain the provisions of company law regarding reconstruction and amalgamation.

6. What do you mean by the term 'public limited company'?
1. Write short notes on the following:

   (Compulsory Question)

   Attempt any questions from remaining seven

   Note: Attempt five questions in all. Q. No. 1 is compulsory.

   Time: Three Hours

   Maximum Marks: 80

   MANAGERIAL ECONOMICS

   CME/D-18

   Roll No. 03

   Total Pages: 03
1. Define the terms: equilibrium, demand, supply, market, and price.

2. Discuss the importance of managerial economics.

3. Define the terms: demand, supply, demand function, and cost function.

4. Explain the relationship between average revenue and marginal revenue.

5. Discuss the law of variable proportions with the help of an isoquant curve.

6. Explain the relationship between average cost (AC) and marginal cost (MC).

7. What is innovation? Explain all phases of business cycle.

8. Give meaning, effects, and remedial measures of inflation.

9. Define the terms: inflation, deflation, recession, and depression.

10. Explain the factors of international trade.
I. Describe the following:

Zero-base Budgeting
Transfer Pricing
Break-even Analysis
Life-cycle Costing
Responsibility Accounting
Management Information Reporting System

Note: Attempt five questions in all. Q. 1 is compulsory.

Maximum Marks: 80

MCQ-105

DECISIONS

ACCOUNTING FOR MANAGERIAL

CMBE/D-18 4415

Roll No. ..........................

Total Pages: 05
The selling price is reduced by 20%, and
the selling price is reduced by 10%, and
the second column of panel I
be explained as to how many cycles will have to be made
and optimal when the level of production will have to
reduce the selling price, but they want to keep the
the company expects that the competition they will
The annual amount
This is based on the rearrangement of only 200 cycles per

<table>
<thead>
<tr>
<th>Selling price</th>
<th>Total</th>
<th>Fixed Overheads</th>
<th>Variable Overheads</th>
<th>Labour &amp; machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>$200</td>
<td>$50</td>
<td>$10</td>
<td>$10</td>
<td>$40</td>
</tr>
</tbody>
</table>

2. The price structure of a cycle made by the Cycle Company

3. Discuss the various steps required for designing and
installation of a management information reporting system.

4. What is management accounting? What are the different
methods and techniques used for management accounting?

5. What is the impact of price level changes on the financial
statements? What suggestions do you make to decrease
savings? Explain.

6. What is the impact of price level changes on financial
savings? Explain.
The following data is taken out from the books of a manufacturing concern:

<table>
<thead>
<tr>
<th>Project</th>
<th>Women</th>
<th>Men</th>
<th>25% of Total</th>
<th>20% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour hours</td>
<td>25</td>
<td>20</td>
<td>0.25</td>
<td>0.20</td>
</tr>
<tr>
<td>Labour cost</td>
<td>60</td>
<td>50</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>90</td>
<td>1.00</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Actual labour composition for producing 100 articles:

- 30 Women @ 1.10 per hour for 30 hours
- 20 Men @ 1.25 per hour for 25 hours

Budgeted labour composition for producing 100 articles:

- 25 Women @ 1.20 per hour for 25 hours
- 20 Men @ 1.50 per hour for 25 hours
MC-106

MARKETING MANAGEMENT

4116

CMD/D-18

Roll No. 03

Total Pages: 03

Note: Q. No. 1 carrying 24 marks is compulsory. Attempt one question 2 to 8 carrying 14 marks. Each of your more questions out of Q. Nos. 2 to 8. Each of Q. No. 1 maximum marks: 80

Time: Three Hours

1. Write short notes on the following:

(a) Marketing Ethics
(b) Online Marketing
(c) Marketing Logistics
(d) Functions of packaging
(e) Customer relationship management
(f) Marketing vs. Selling

Total 6 x 4 = 24
6. What functions do distribution channels perform? What are different types of marketing intermediaries?

5. What factors influence pricing decision? Discuss different pricing strategies.

4. Describe the process of new product development. Also discuss different branding decisions.

3. What are major determinants of consumer behavior?

2. Discuss in detail different approaches/philosophies of marketing. Which of these philosophies are more relevant in modern day India?
1. Why do you understand by network topology? Explain

2. What is Software? Name the various types of applications?

3. Explain the role of e-commerce. What are its processes?

4. Describe a website.

5. What is web-publishing tool? How does it help in
Discuss the types of mergers. (i)
Share broad areas of Corporate Reorganization. (i)
Why do you understand by hakim's share? (i)
Explain Cross and Real Working Capital. (ii)
Describe types of dividends. (i)
Explain financial indifference point. (ii)
What is optimum capital structure? (ii)
Explain Sensitivity analysis method of risk analysis. (ii)
Discuss importance of Investment Decision. (ii)
State reasons of Financial Management. (ii)

Answer all the following parts in brief:

1. 

Note: Answer the questions in all Q. No. is compulsory.

Maximum Marks: 80

Time: Three Hours

MC-602
FINANCIAL MANAGEMENT AND POLICY
DMDA/D-18 4216-S
Types of orders in secondary securities market

(i) Kinds of offerings
(ii) Down Treasury
(iii) Flats
(iv) Relationships between fundamental analysis and technical analysis
(v) Technical analysis
(vi) The Blackwater model
(vii) Leveraged Portfolio
(viii) Liquid portfolio and Leasable Portfolio
(ix) Close-end mutual fund
(x) Jensen index of portfolio performance

1. Explain with the following topics in up to one and a half paragraphs each:

(a) Time: 2 hours

Maximum Marks: 80
1. Describe various methods of issue of securities. How do the following questions differ?

(a) What is the role of intermediaries?
(b) Who is involved in the role of the IPO and FPO?
(c) What is the difference in the role of various parties involved in the new issue?

2. Explain the following in short:

(a) How is systemic risk measured?
(b) What is insider information?
(c) How does SHRI control brokers?
Explain the following with examples:
(a) Describe option pricing through binomial model.
(b) Describe the effect of decision-making with an example.
1. Short answer type questions:

Compulsory Question (Attempt 44)

1. [Some text]

Note: Attempt five questions in all. Q. No. 1 consists 10 compulsory questions carrying 10 marks each. Q. No. 1 is short answer type questions of 4 marks each.

Maximum Marks: 80

Time: Three Hours

MCQ-604

ACCOUNTING THEORY

HIGHER ACCOUNTING AND

DMCQ/D-18

1. [Some text]

Total Pages: 04

Note: You are required to pass journal entries in the books of X and Z. Depreciation was charged @ 40% per annum from the beginning of each year in 2000, 2001, and 2002.
2. Define Revenue and explain various approaches for revenue recognition.

3. Indicate approaches of accounting theory formulated in India and explain steps involved in accounting for corporate entities in India.

4. Describe the process of developing accounting standards.

5. Write a critical note on Segmental Reporting.

6. For a given lease, lease amount payable in the second and third years was released after settlement in the lease period and the same was released after settlement in the lease machinery was estimated to be 6000 after the lease. For four years on leasehold basis, the value of $ was purchased a machinery for $8,000 and leased out to you as follows:

8. For a given lease, lease amount payable in the second and third years was released after settlement in the lease machinery was estimated to be $6,000 after the lease. For four years on leasehold basis, the value of $ was purchased a machinery for $8,000 and leased out to you as follows:


10. Indicate approaches of accounting theory formulated in India and explain steps involved in accounting for corporate entities in India.
(a) How do you mean by Electronic Data Processing?

(b) Explain the functions of Central Processing Unit.

(c) What do you mean by System Software?

(d) What do you mean by Computer and its utilities?

(e) How do you mean by Web and web spiders?

Note: Attempt Five questions in all. No. 1 is compulsory.

Minimum Marks: 50

Time: Three hours

MC-301
COMPUTER APPLICATIONS IN BUSINESS
5206
COMM-D-18

Total Pages: 03
8. (a) When do you mean by multimedia? Explain using suitable examples.

(b) What is the difference between hardware and software?

(c) Can we imagine a future without computers as per current scenario? Comment.

7. Explain different kinds of media used in computer networks along with their merits and demerits.

6. (a) What is information technology? How is it useful in business? Explain.

(b) How to use video conferencing to overcome spatial boundaries?

5. (a) What do you mean by fuzzy logic? Explain it using suitable examples.

(b) Explain the difference between different kinds of software using suitable examples.

4. (a) What is database? Explain the concept of table and record in databases.

(b) Write a note on different input and output devices.
1. Explain: Answer the following pairs:

Procedure of buyback of shares (i)
Post-merger problems (ii)
Comprehensive financial leverage (iii)
Share price decision (iv)

Effect of intention to have control on capital

Objective of bonus shares issue

Types of dividend

Note: The first question is compulsory and each part of it

MC-302
ADVANCED FINANCIAL MANAGEMENT
CMA/D-18
5207
Total pages: 05
Roll No. 00

Time: Three Hours
Maximum Marks: 80
### Company B

The following data concern A and B:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Company A</th>
<th>Company B</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/E ratio (times)</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>EPS (Rs.)</td>
<td>1.0000</td>
<td>2.0000</td>
</tr>
<tr>
<td>Equity shares outstanding (000)</td>
<td>30,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Earnings after taxes</td>
<td>4.0000</td>
<td>3.0000</td>
</tr>
</tbody>
</table>

### Question

A. Difference between Net Income Approach and Net Income Approach

B. Show calculations of operating leverage and financial leverage. By what percentage will EBIT increase if there is 10% increase in sales? Verify the results.

### Calculation

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Company A</th>
<th>Company B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest expense</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Variable cost</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Sales</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

### Question

2. Explain any three factors affecting dividend payment.

3. What is a stable dividend policy, and why should it be followed?

4. What is information concerning dividend policy?

5. Answer the following in short:

   - What is the relationship between Net Income Approach and Net Income Approach?
   - Show calculations of operating leverage and financial leverage. By what percentage will EBIT increase if there is 10% increase in sales? Verify the results.
8. Explain the following:

A company has a paid-up capital of Rs. 10,00,000. It has a policy of retaining 50% of its profits as reinvestment and 20% as dividend. If it earned a profit of Rs. 2,00,000, what will be the amount of the dividend and the amount available for reinvestment?
MC-304
MARKETS
FINANCIAL INSTITUTIONS AND
CMDA/D-18
5209
Time: Three Hours

1. Answer all the following questions in brief above 150 words for each other:

(a) Explain role of SIFIs
(b) Discuss meaning of Venture Capital
(c) What do you mean by Lease Finance?
(d) System
(e) What are the components of Indian Financial Cooperation

2. Explain the importance of State Financial

Note: Attempt Five questions in all. No. I is compulsory.
1. Explain the following:

1. What do you understand by Development Bank?


4. What role does the Reserve Bank play in the financial market?


6. What do you understand by Development Bank?

7. Explain the following:

8. What is the concern of "Tangible Funds" which are the

9. Describe the role of financial markets in the economy.

10. Why do you understand by primary market? Discuss some of the important developments that have recently taken place in the primary market in India.

11. What do you understand by primary market? Describe some of the important developments that have recently taken place in the primary market in India.

12. How are callable bonds and sinking fund bonds different?

13. Why are callable and putable bonds called for by a company?

14. Explain the following:

15. Describe the role of financial markets in the economy.


18. What role does the Reserve Bank play in the financial market?


20. What do you understand by Development Bank?
I. Write notes on the following:

1. Product Life-Cycle
2. Dumpy
3. Global Branding Strategies
4. International Media Scheduling
5. Global

Each from remembering seven questions.

Note: Attempt five questions in all. No. 2 (4 Marks) is compulsory. Attempt four more questions (4 marks)

Time: Three Hours
 MC-3H

INTERNATIONAL MARKETING

CMA/D-18

Total Pages: 03

Roll No. 03
8. Discuss various techniques to measure international trade.

7. When are various approaches to international trade appropriate?

6. Discuss economic challenges in international trade.

5. Discuss international marketing strategies and ways of any

4. When are various approaches to international trade appropriate?

3. Which are the problems associated with exporting?

2. How do you see present day economic and cultural

1. Explain why foreign trade is important.

2. How do you see present day economic and cultural

3. Discuss international marketing strategies and ways of any

4. When are various approaches to international trade appropriate?

5. Discuss economic challenges in international trade.

6. Discuss various techniques to measure international trade.

7. When are various approaches to international trade appropriate?

8. Discuss various techniques to measure international trade.

9. Discuss economic challenges in international trade.

10. Discuss international marketing strategies and ways of any
I. Short answer type questions:

6 x 4 = 24

GAPs model
Ethical issues in retail
Retail audit
Organised vs unorganised
Non-store based retail formal
Cyclical theory of retail

All questions carry equal marks.

Note: Attempt any five questions. Q. No. 1 is compulsory.

Total Marks: 80

MC-313
RETAIL MANAGEMENT

CMA/D-18

PH No:..........................
Total Pages: 03

Time: Three Hours
4. What are the factors that affect the buying behavior of the retail shopper?

5. What is a store layout? Suggest a layout that would be suitable for a supermarket and a department store.

6. What is a store layout? Suggest a layout that would be suitable for a supermarket and a department store.

7. Role of IT is imperative in retail. Justify the statement.

8. Write a detailed note on IT in retail.
1. Define the following:

- Technical Feasibility
- Demand Forecasting
- Small Industries Development Organisation (SIDO)
- Market Survey
- Seed Capital
- Features of Small Scale Industries

I. Attempt any five questions out of remaining seven questions and each question carries 4 marks.

Note: Q. No. 1 is compulsory having six short questions carrying 4 marks each. Answer to these questions should be as concise as possible having 150 words each. The candidates are required to attempt any five questions out of remaining seven questions and each question carries 4 marks. Maximum Marks: 80

MC-314
Entrepreneurship Development
5219
CMO/D-18
6. What is the objective of the Indian Small Industries Development Bank (SIDBI)?

7. What are the various phases of entrepreneurship development and explain its importance?

8. Explain the various steps for starting a new project.

9. Explain in detail the various aspects of registration of a small-scale unit.

10. Discuss the people have micro-enterprises.

2. Write short notes on the following:

   (a) Integrated Production Planning

   (b) Entrepreneurship

   (c) Role of Government in development

3. What is the objective of the Indian Small Industries Development Bank (SIDBI)?

4. Explain the various phases of entrepreneurship development and explain its importance.

5. Explain in detail the various aspects of registration of a small-scale unit.

6. Discuss the people have micro-enterprises.
1. Answer the following in about 150 words:

(Compulsory Question: Marking Varies)

Note: Q. No. 1 is Compulsory. Attempt any four questions out of the remaining seven questions.

Max. Marks: 80

Time: Three Hours

MCQ

HUMAN RESOURCE MANAGEMENT

CMDA/D-18

P.T.O.

(19/11/1-21/11/18)
5. Explain the differences between classical and operant learning theories.

6. Explain the meaning of role and task analysis. What are the benefits of role analysis in an organization?

7. Explain the need for and objectives of induction programmes. Also describe the methods of induction training.

8. Explain the various steps involved in the process of selecting a training program for manpower needs.

9. Discuss the different modes of knowledge conversion within an organization. Also discuss the major challenges facing HRD professionals in contemporary business environment.

10. Explain the importance of HRD strategy. Also discuss the various HRD strategies that can be applied by an organization.
2. Show that the Lagrangian equations are multiplied if forces are non-conservative. 

III

2. Characteristic function. Give the physical significance of Hamilton's characteristic function.

2. What do you understand by fast top?

2. Force problems.

2. Explain the role of constraints of motion in central force problems.

2. Show that if a coordinate is cyclic in Lagrangian, it will be cyclic in Hamiltonian also.

Paper

CLASSICAL MECHANICS

ME/D-18

4305

Note: Attempt five questions in all, selecting at least one from each unit. Total Marks: 55

Time: Three Hours
II way for an indefinitely period.

symmetry axis, vertical may continue to spin in the same
the section of gravity which spins initially with its

7. Obtain the condition that a heavy symmetrical top under

II vector

body. Show that a set of infinitesimal rotations from a
6. State and prove Pidly's equations of motion for a rigid

Unit III

5.

Find the underlying force.
central force directed towards a point on the circle.

6. (a) A particle describes a circular orbit given by

preceded application.

6. (a) State and prove Vital theorem and also list its

II

Also derive a relation between the two co-ordinate systems.

4. Explain laboratory and center of mass co-ordinate systems.

Unit II


II

6. Deduce Newton's second law of motion from

(p)
II. Derive and explain the relation between the derivative and distribution of intensities of spectra lines.

3. Explain the principle of the Mossbauer spectroscopy in vibrational spectra. Explain:

(a) quantum classiscal theory
(b) Raman scattering phenomenon
(c) What do you mean by progression and sequence of levels?
(d) What are the hot bands and why are they called so?

Question

One question from each Unit
Attempt remaining four questions by selecting at least one from each

Note: Attempt five questions in all. Q. No. 1 is compulsory

Time: Three Hours
Maximum Marks: 55

Paper III

APPLIED SPECTROSCOPY

MDE/D-18

Roll No. .................................................
Total Pages: 03
1. Define the basic principle of NMR spectroscopy. Describe its advantages and limitations.

2. Derive the expression for resonance conditions for NMR.

3. (d) Lambda-Mossbauer factor
   (e) Reciprocal energy loss
   (f) Shielding and deshielding of magnetic nuclei
   (g) Chemical shift
   (h) What short notes on the following:

4. Explain the Vienna and London red spectra.

5. Describe the competition between Raman and infrared spectra.

6. When are the advantages and limitations of the Raman spectrum compared to infrared lines.

7. (a) What is Born-Oppenheimer approximation
    (b) Upper excited state
    (c) Intermediate distance is compared to the nuclear distance
    (d) When upper excited state is at higher

8. Explain the intensity of Vibrational Electronic spectrum

9. Explain the Intramolecular Electronic spectrum

II

4. Which is Raman effect?
   Explain in detail rotational Raman

5. Describe the influence of the nuclear spin on the vibrational spectrum of diatomic molecules.
4. Discuss mode locking and power in laser oscillation.

Unit II

5. Discuss shape and width of spectral line.
6. Discuss the origin of line shape function.

2. Describe various properties of a laser beam.

3. Explain an oscillating laser beam.
4. What is an Eximer laser?
2. What is Mode Locking?
2. Discuss Spiking in Lasers.
4. What are Induced Transitions?

Note: Attempt five questions in all, selecting one question from each Unit. No. 1 is compulsory. All questions carry equal marks.

Maximum Marks: 55

Paper IA (Opt. x) LASER PHYSICS

MDE/D-18

Roll No. Total Pages: 02
3. What do you understand by applying impedance in case of reflection from a conducting plane, what is equation?

non-conducting medium

2. How in wave equation the boundary condition is achieved? Discuss the plane monochromatic wave for

Unit I

Devices (AID)

3. (d) What do you understand by avalanche Transit Time

emitter?

(e) What do you understand by Backward Wave

Laser?

(f) What do you understand by Haled Wave

Plane?

1. (a) How does the propagation take place in conducting

Question carry equal marks.

Note: Attempt five questions in all selecting at least one

Maximum Marks: 55

Time: Three Hours

Paper II

MICROWAVES DEVICES

MDO/D-18

5010

4. (b) Write a note on second harmonic generation.

5. (c) Discuss material processes using lasers.

6. (d) Write a note on isotope separation.

7. (e) Write a note on high wave communication.

Unit II

semiconductor junction lasers

2. Explain the principle, construction and working of a

The Ne Laser

3. Explain the principle, construction and working of a

Unit III

neodymium laser

4. Explain mode stability criteria and modes in a generalized
PAPER III

THIN FILMS AND VACUUM TECHNIQUES

MDG/D-18

ROLL NO. 03

TOTAL PAGES: 03

UNIT I

What do you mean by flash evaporation?

Explain the influence of current on deposition rate.

How will you measure the vacuum of the order of 10^-12 Torr?

Give the minimum pressure that can be achieved using a diffusion pump.

What is the range of the thickness of a thin film?

What is the role of vacuum in thin film deposition?

Compulsory Question

Questions carry equal marks. Questions from each Unit Q. No. 1 is compulsory. All questions from each Unit are to be attempted. Select at least one question from each Unit. The maximum Marks: 55.

Time: Three Hours

UNIT IV

READ Diode

INVERTER Diode

TRIANGLE Diode

Write notes on any two of the following:

What are the different modes of operation of an electron device? How is the Gunn effect achieved?

What is the range of the thickness of a thin film?

What is the role of vacuum in thin film deposition?

Note: Attempt five questions in all selecting at least one question from each Unit. The maximum Marks: 55.

RAD BY 1-5001

100

UNIT V

What is the range of the thickness of a thin film?

What is the role of vacuum in thin film deposition?

What is the range of the thickness of a thin film?

What is the role of vacuum in thin film deposition?

What is the range of the thickness of a thin film?

What is the role of vacuum in thin film deposition?

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What is the range of the thickness of a thin film?

What is the role of vacuum in thin film deposition?

What is the range of the thickness of a thin film?

What is the role of vacuum in thin film deposition?
II

6. Discuss the basic principles, working and methodology of vacuum systems

III

7. Discuss various techniques for the measurement of the thickness of a thin film.

5. (a) What do you mean by chemical conversion?

8. Discuss the application of vacuum systems in the industries.

II

4. Discuss the basic principle and mechanism involved in electron beam heating.

4. Discuss the RF heating and electron bombardment heating methods for thin film deposition. What are the relative advantages and disadvantages?

UNII

7. Where do you understand by the term ‘laser deposition’ and methodology involved in laser deposition.

3. What are the following ;

(i) Laser Evaporation
(ii) Arc Evaporation

2. Define a thin film. How will you differentiate it from a bulk material?
RBS technique? Discuss.

(c) Can you identify boron in the silicon surface using RBS technique?

(d) Discuss.

(e) Can you identify hydrogen using AES techniques?

(f) Discuss.

X-ray diffraction with conventional X-ray.

(g) How will you differentiate between two different electron attenuation?

(h) Explain the difference between ion implantation and ion beam mixing.

I. (a) (Compulsory Question)

From each list, 0, 1, or 2 is compulsory.

Note: Attempt five questions in all, selecting one question from each list.

Maximum Marks: 55

Time: Three Hours

Paper 1V
CHARACTERIZATION TECHNQUES
SURFACE MODIFICATION AND
MDA/D-18

Roll No. --------------------------

Total Pages: 02
Explain the basic principle, instrumentation, and working of Electron Microscopy.

Explain the basic principle, instrumentation, and working of Scanning Electron Microscopy (SEM) technique.

How the chemical shift and oxidation states of the elements in a material can be studied using X-ray photoelectron spectroscopy (XPS). What are its applications?

Discuss various chemical ion ranges. When do you understand by Ion Beam Channelling?

At what do you understand by Atomic Force Microscopy?

What is the basic principle and its working. Highlight some of its applications.

Describe the shape of涉及到 in RBS technique. Describe the shape of involved in ion beam. How does ion implantation affect the microstructure?

Discuss the shape of涉及到 in ion beam. How does ion implantation affect the microstructure?

What is the shape of涉及到 in ion beam. How does ion implantation affect the microstructure?
2. (a) How does a linear laser beam compare to nuclear

Tune

3. What is the mechanism of dose detection? What kind of plastic detectors can be used for dose measurement? Briefly mention above.

4. What is the mechanism of X-rays production?
Unit III

6. In detail about the measurement of position

7. Explain in detail about the measurement of position

Unit IV

8. Explain in detail about the measurement of position

9. Explain in detail about the measurement of position

Unit V

10. Explain in detail about the measurement of position

11. Explain in detail about the measurement of position

12. Explain in detail about the measurement of position
Section II

8. Let \( G \) be a group of order 108. Show that \( G \) is not simple.

8. (a) State and prove Jordan-Holder Theorem.

8. (b) Prove that \( C \) is normal in \( G \).

8. (c) Let \( G \) be a group and \( C \) be the derived group of \( G \).

8. (d) Group of automorphisms of \( C \).

7. (a) Let \( G \) be a finite cyclic group of order \( n \). Determine

Section I

From each Section and compulsory question.

Note: Attempt five questions in all. Selecting one question

Maximum Marks: 80

Time: Three Hours

NM-401

ADVANCED ABSTRACT ALGEBRA-I

MDE D-18 4337

ROLL NO. ...........................................

TOTAL PAGES: 03
Section I

State and prove fundamental theorem of Galois theory.

Prove that G is isomorphic to the cyclic group of order 4.

Prove that G is a simple extension of E.

(a) If E is a finite separable extension of a field F, then

Section II

Prove that the field generated by a root of $x^2 - x - 1$ is normal over $\mathbb{Q}$.

Prove that there exists an algebraically closed field F containing E and a such that $[E : \mathbb{Q}]$ is infinite.

Give an example of an algebraic extension E of $\mathbb{Q}$.
Section 1

1. (a) If $f$ is continuous on $[q, p]$ and $[q, p] \subseteq R(x)$ for some $x \in R$, show that

$$\int_{[q]}^{[p]} f(x) \, dx$$

: Evaluate

$[q, p] \subseteq R(x)$ on $f$

2. (b) If $f$ maps $[q, p]$ into $R$, show that

$$\int_{[q]}^{[p]} (x - [x]) \, dx$$

: Denotes integral part

$$= \int_{[q]}^{[p]} (x - [x]) \, dx$$

: (i)

$$\int_{[q]}^{[p]} \left( x - [x] \right) p(x) \, dx$$

: (ii)

Theorem from each Section and the commentary

Note: Attempt five questions in all sections at least one

Maximum Marks: 80

Time: Three Hours

4338

8 D-16

REAL ANALYSIS

4338

Total Pages: 65
8
\[ \frac{\partial \phi}{\partial y} \text{ is } \frac{1}{\partial z^2 + \frac{1}{\partial x} + \frac{1}{\partial y}} \]

Show that the volume of the greatest rectangle.

8
solution near \((0,0,0)\) does not have a fixed point.

6. (a) Show that there exists a real continuous function such that the equation near \((0,0,0)\) is defined uniquely.

(b) Show that the inverse function theorem holds for real functions.

(c) Show that it is uniformly convergent for real functions.

Section II

8
\[ \int_0^1 f(x) \, dx \]

and \(f(x)\) is not integrable. Also find the volume of the region.

Section III

10

Suppose \(f(x)\) is differentiable on \(0 < x < 1\) and only if the partial derivatives

there exist and are continuous on \(0 < x < 1\). Show then that \(f(x)\) is integrable.
Find the interval of absolute convergence for the
series
\[ \sum_{n=1}^{\infty} \frac{y^n}{x^n} \]

(b) Since \( x \neq 0 \), show that.

(a) \( x \neq 0 \) if \( f(x) \) and \( \int f(x) \) are continuous at \( (0,0) \), and both the partial derivatives and \( f'' \) exist at \( (0,0) = (d'x, 0) \) show that

\[ \frac{\partial^2 f}{\partial x^2} = (d'x)f'' \]

(c) If \( (0,0) \neq (d'x) \), then show

\[ \int_0^x f(x) \, dx = x^p \]

(d) Test for uniform convergence of the sequence

Subsequence test: \( \{ y_n \} \) has a uniform convergent
sequence on \( [a, b] \) if there exists a continuous
function \( \{ g_n \} \) on \( [a, b] \) does every convergent sequence of continuous

(e) Section 17
second axiom space:

c) Give an example of a separable space which is not

c) Show and prove Lindelöf Theorem.

2. (a)

\[ (\forall x \in X) \iff (\forall \sigma \in \mathcal{T}(X)) \iff (\forall \mathcal{U} \subseteq \mathcal{T}(X)) \]

\[ (\forall x \in X) \iff (\forall \sigma \in \mathcal{T}(X)) \iff (\forall \mathcal{U} \subseteq \mathcal{T}(X)) \]

Let \( X \) be a non-empty set and \( \mathcal{P}(X) \) be the space is the smallest closed set containing the set.

P. (b) Prove that closure of a subset of a topological space is.

Section I

marks

Each question from this section all questions carry equal
Note: Attempt five questions in all sections at least one
Maximun Marks: 80

Time: Three Hours

MM-403
TOPOLOGY

MDE-D-18

4339

ROLL NO: 03

Total Pages: 03
Section I

Compact Sets

(a) Prove that a compact set is nowhere dense.

(b) Give an example of a compact set which is not nowhere dense.

(c) Give an example of a compact, non-compact, connected set.

(d) Prove that a compact set is connected.

(e) Prove that a compact, connected set is complete.

(f) Prove that a compact set is closed.

Section II

Map Is Continuous

(a) Prove that if $R$ is Hausdorff, then $X/R$ is Hausdorff.

(b) Prove that if $R$ is closed in $X$ and $X/R$ is Hausdorff, then $X/R$ is compact.

Section III

Axiom of Choice

(a) Prove that the family of all closed subsets of $X$ is a base for $X$.

(b) Prove that a compact connected $X$ is Hausdorff if its diagonal is a closed subset of $X \times X$.
(i) Solve the argument principle. 
\[ z = 0, \tan z = \frac{\tan z}{z} \]

(6) Find the singularities of the function
\[ f(z) = \frac{\tan z}{z} \]
where \( C \) is \( |z| = 1 \).

(d) Evaluate by Cauchy integral formula
\[ \frac{1}{2\pi i} \int_C \frac{f(z)}{z-w} \, dz \]
where \( C \) is a closed curve.

(e) Define index of a closed curve.

(f) Define contour and path in a region.

(g) Find the radius of convergence of the power series
\[ \sum_{n=0}^{\infty} a_n (z-c)^n \]

(ii) Complex Analysis

(three marks each)

(carry equal marks from each section, 0 to 3 marks)

Note: Attempt five questions in all, selecting one question from each section.

Maximum Marks: 80

Time: Three Hours

MM-404

COMPLEX ANALYSIS

MDE/D-18

4340

4.9

\[ \log_2 \left( \frac{z}{x} + 1 \right) \int_0^1 \frac{z}{x} \, dx \]

Prove by contour integration.

\[ \frac{a}{b} = \int_0^1 \frac{z}{x} \, dx \]
Problem 3

\[
(0 < q < r) \quad \frac{\zeta(q \cos \theta + r)}{\theta \rho} \int_{\mathbb{R}} \frac{\zeta(z)}{z} \, dz
\]

Evaluate

\section*{Unit I}

\subsection*{Problem 4}

(a) State and prove Cauchy's integral formula.
(b) Order derivatives.
(c) State and prove Cauchy's integral formula for first

\section*{Unit II}

\subsection*{Problem 7}

2. State and prove Cauchy's integral theorem.

\subsection*{Problem 8}

Integral multiple of 2π

\textbf{Unit III}

\subsection*{Problem 6}

(a) State and prove Laurent's theorem.
(b) State and prove maximum modulus principle.

\subsection*{Problem 3}

\[ e^{\frac{\zeta(z)}{z}} \int_{\mathbb{R}} \frac{\zeta(z)}{z} \, dz = \theta \rho \int_{\mathbb{R}} \frac{\zeta(z)}{z} \, dz \]

If then show that for \( R \), we have

\[ \zeta(z) = \theta \rho \int_{\mathbb{R}} \frac{\zeta(z)}{z} \, dz \]

for all \( z \) in the region of the Laurent expansion

\subsection*{Problem 2}

(a) State Taylor's theorem. If the function \( f(z) \) is

(b) State Taylor's theorem. If the function \( f(z) \) is

\section*{Unit IV}

\subsection*{Problem 5}

\[ (e^n + ez) \frac{e^{-n} + e^{-z}}{e} \]

\textbf{Unit V}

\subsection*{Problem 3}

\textbf{Unit VI}

(a) State Jordan's Lemma.
(b) Find the residue at 0.

\subsection*{Problem 4}

(a) State and prove Cauchy's integral formula.
(b) Order derivatives.
Differential Equation

(a) Define Wronskian of system of homogeneous linear
(b) Define adjoint system
(c) Solution of the system. Discuss in short

homogeneous system is trivial if and only if

Any linear combination of solution of the

value problem is a solution of

Find the first three approximations of the initial

Lagrangian set of functions

1. (a) Define: Let each point.

Note: Attempt the questions in all sections one question

Time: Three Hours

Maximum Marks: 80

Differential Equation

M DE/D.18

Total Pages: 04

Ref No.:

Page 4
Section I

Let \( \phi \) be a continuous function on \( \mathbb{R}^n \) with \( \phi(0) = 0 \). For any \( t \in \mathbb{R} \) and \( \phi \in L^2(\mathbb{R}) \), the homogeneous linear differential equation

\[
X^{(0)}(t) + a(t)X(t) = 0,
\]

is equivalent to

\[
\phi(t)X(t) + a(t)X(t) = \phi(t)X(t).
\]

where \( X(t) \) is the column vector with \( \phi(t) \) as its entries and \( a(t) \) is a bounded continuous function on \( \mathbb{R} \).

Section II

(a) Prove that the set of all solutions of the system

\[
X^{(0)}X = (0),
\]

defines a complex linear vector space on the field of complex numbers.

(b) Find the solution of the initial value problem

\[
X^{(0)}X = (0), \quad X(0) = x_0.
\]

Section III

Theorem of the Cauchy–Lipschitz theorem: If \( f \) is a continuous and uniformly bounded function on \( \mathbb{R}^n \), then for any \( x_0 \in \mathbb{R}^n \), there exists a unique solution \( X(t) \) of the initial value problem

\[
X^{(0)}X = (0), \quad X(0) = x_0.
\]

Section IV

Define solution matrix of homogeneous linear differential equation.

With a short note on uniqueness solution.

Theorem of Cauchy–Lipschitz theorem:

(1)
Section 1

Questions

From each section and the appendix

Note: Attempt one question in all sections. At least one

Maximum Marks: 80

Time: Three Hours

TOTAL Marks: 18
Inverse theorem

(a) Show that any mapping theorem and boundedness theorem on a Hilbert space $X$ are equivalent to the

(b) Show that every bounded linear functional on $X$ is continuous.

Section IV

(a) Prove that a Hilbert space $X$ is reflexive if and only if every bounded linear functional on $X$ is continuous.

(b) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(c) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(d) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(e) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(f) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(g) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(h) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(i) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(j) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(k) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(l) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(m) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(n) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(o) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(p) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(q) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(r) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(s) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(t) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(u) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(v) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(w) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(x) Show that a Banach space $X$ is reflexive if and only if $X = X'$.

(y) Show that a Hilbert space $X$ is reflexive if and only if $X = X'$.

(z) Show that a Banach space $X$ is reflexive if and only if $X = X'$.
a) Find the shortest distance between the points 

\( (1, -1, 1), \quad (2, 1, -1) \)

(b) Find the extremal of the functional:

\[ \int_{a}^{b} \sqrt{1 + (y')^2} \, dx \]

(c) Find the curve of minimum surface area when

\[ \sum_{i=1}^{n} f(x_i, y_i) \]

(d) Find the radius of curvature at the point where the surface intersects the plane

\[ z = 0 \]

(e) Find the equation of the line joining the point (1, 2, 3) to the point (4, 5, 6) through the origin.

(f) Find the shortest distance between the points 

\( (1, 2, 3), \quad (4, 5, 6) \)

(g) Prove that the equation of the line joining the points 

\( (x_1, y_1, z_1), \quad (x_2, y_2, z_2) \)

is

\[ \frac{x - x_1}{x_2 - x_1} = \frac{y - y_1}{y_2 - y_1} = \frac{z - z_1}{z_2 - z_1} \]

(h) Prove that the equation of the plane through the points 

\( (x_1, y_1, z_1), \quad (x_2, y_2, z_2), \quad (x_3, y_3, z_3) \)

is

\[ a(x - x_1) + b(y - y_1) + c(z - z_1) = 0 \]

(i) Prove that the equation of the sphere with center at the point 

\( (x_0, y_0, z_0) \) and radius \( R \) is

\[ (x - x_0)^2 + (y - y_0)^2 + (z - z_0)^2 = R^2 \]

(j) Prove that the equation of the cone with vertex at the origin and axis along the \( z \)-axis is

\[ x^2 + y^2 = z^2 \]

(k) Prove that the equation of the cylinder with base a circle of radius \( a \) and axis along the \( z \)-axis is

\[ x^2 + y^2 = a^2 \]

(l) Prove that the equation of the ellipsoid with radii \( a, b, c \) along the coordinate axes is

\[ \frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1 \]
Section II

8. (a) Define the virtual displacement

\[ \delta q = \left[ \frac{\delta q}{\delta t} \right] = 0 \]

8. (b) Derive Lagrange's equation the second kind in virtual displacement and obtain the equation of possible and

\[ \int \left( \frac{\partial T}{\partial q} - \frac{\partial \Pi}{\partial \dot{q}} \right) \, \delta q = \{ (q', \dot{q}) \} \]
4. a) Invariants of a tensor
   b) Isotopic tensor
   c) Conjugacy of tensor
   d) Cartan tensor

2. Write short notes on the following:
   a) $\mathbf{g}_{ij} = \mathbf{g}_{ij}$
   b) $\mathbf{g}_{ij} = \mathbf{g}_{ij}$
   c) $\mathbf{g}_{ij} = \mathbf{g}_{ij}$
   d) $\mathbf{g}_{ij} = \mathbf{g}_{ij}$

1. Define Isotopic tensor $\mathbf{g}_{ij}$ and show that:

Section I

Notes:

Section I is compulsary. All questions carry equal marks.

Note: Answer one question from each of the Sections I to IV.

Maximum Marks: 80

Time: Three Hours

M. M. - 503

Opn. I

Elasticity

5894

M.D.G. D - 18

Role No. 01
Section II

The topic of the second section is the analysis of the properties of materials in terms of their mechanical behavior. The section begins with an introduction to the concepts of stress and strain, followed by a detailed explanation of the relationship between them. The section then delves into the mathematical formulation of stress and strain, including the derivation of the stress-strain relationship. The section concludes with an overview of the different types of materials and their respective mechanical properties.
How to prove:

(iii) What is the importance of dimensional analysis in physics?

(iv) What do you mean by a vector flow?

(v) Define stress components in real fluid dynamic equations.

(vi) Define circulation.

(vii) Satisfy Laplace's equation.

Show that the velocity potential and stream function

\[
\phi = \frac{V}{\gamma} \left( z^2 + c^2 x \right) + \frac{1}{\gamma} \left( \frac{V}{\gamma} + c^2 x \right) \gamma = b
\]

(iii) Show that

(i) Define velocity vector and vector lines.

Note: All questions carry equal marks. Attempt the questions in all sections at least one.

Time: Three Hours

Maximum Marks: 80

598

MD/D-18

ROLL NO. 03

TOTAL PAGES: 03
(viii) Give an example of flow having an axis of symmetry.

Section I

2. (a) Define streamline and path line. If \( \vec{q} = x\vec{i} - y\vec{j} \); find streamline.
(b) Derive equation of continuity in Euler's form.

3. (a) Determine whether the:

\[
\vec{q} = \frac{A(x\vec{i} - y\vec{j})}{x^2 + y^2}
\]

is possible velocity of incompressible fluid flow. If so find streamline.
(b) Show that:

\[
\frac{x^2}{u^2} + \frac{y^2}{v^2} + \frac{z^2}{w^2} = 1 = 0
\]

is a possible form of the boundary surface.

Section II

4. (a) Derive the equation of motion of an ideal fluid.
(b) Discuss the function of Venturi meter.

5. (a) Derive Energy equation for incompressible flow.
(b) State and prove Kelvin's minimum energy theorem.

Section III

6. (a) Define stress vector at a point in flow of real fluid; and show that state of stress is completely known if nine component of stress tensor at a point are known.
(b) Discuss the flow between two parallel plates.

7. Derive the translational equation of motion of real fluid and derive the Navier-Stokes equation of motion in detail.

Section IV

8. Discuss flow through circular pipe and determine:
   (i) maximum and average velocities
   (ii) shearing stress, skin friction.

9. Discuss flow through pipe with:
   (i) Equilateral triangular cross-section
   (ii) Elliptic cross-section.
\[ \int P(x) \left[ \left( \frac{x}{2} - x \right) \varphi(x) \right] dx + (x)f(x) = (x)g \]

Section II

Theorem

2. Explain Fredholm alternative: State and prove Fredholm

of an integral equation

Define eigen values and eigen functions of the kernel

(6)

(8)

(4)

(6)

Discuss the classification of integral equations

Section I

carry equal weight.

from each Section (O, 9 is compulsory. All questions

Note: Attempt five questions in all sections one question

Maximum Marks: 80

Time: Three Hours

NM-505-(I)

INTEGRAL EQUATIONS

5102

MDQ/D-18

ROLL NO. 03

TOTAL PAGES : 03
closed curve
Inversion formula
Radius-Diameter method
Wirtinger's theorem
Reduction to solution of algebraic equations
Reduction of second derivative
Laplace product of two functions
Completion integral

Section II

Legendre's equation

\[ x > 0, (x-1)^{\frac{1}{2}} \]
\[ 0 > x, (x-1)^{\frac{1}{2}} \]

where

\[ \gamma = (x)n \]

the integral equation:

Find the series expansion of the kernel \((x-1)^{\frac{1}{2}}\) of
and eigen functions to harmonic kernels

Explain the fundamental properties of other kernels

Write a note on orthogonal system of functions

6. (a) State and prove Hermite-Riesz theorem

Section III

State and prove Fredholm's first theorem

\[ \tilde{p}(x)(x-1)^{\frac{1}{2}} \gamma + x = (x)n \]

4. (a) Find the solution for the equation:

\[ 0 < n, \tilde{p}(x)(x-1)^{\frac{1}{2}} \gamma + (x)f = (x)n \]

Find the solution kernel for the equation:

5. (b)
1. Short answer type questions:

- What is the need of understanding interpersonal
- What is the role of culture in shaping ones personality?
- What are the basic principles of learning?
- What are the major challenges faced by managers while managing HR?
- Why are the determinants of personality?
- What is the main and scope of OB?

Note: Attempt five questions in all. However, Q. No. 1 is compulsory.
Maximum Marks: 80

Time: Three Hours

MCIT-101

ORGANISATIONAL BEHAVIOUR

10032

MDE/D-18

Roll No. 04

Total Pages: 04
6. What is operant conditioning? Explain the theory of operant conditioning with the help of suitable examples.


4. What is personality? Explain psychological theories of personality with their relevance in understanding work behavior.

3. What are the assumptions of OB? Explain OB with another manager from different organizations and productivity.

2. Explain Hawton's studies with their relevance at work.
I. Answer the following in brief (not more than half page):

1. Define Globalisation.
2. Discuss the problems of economic planning in India.
3. What is interaction matrix?
4. What is the nature of business environment?
5. Answer five questions in all. Q. No. 1 is compulsory.
8. Discuss in detail the major provisions of Foreign Exchange Management Act.

5. Critically analyse the contribution of Industrial Policy in the success of Indian economy with examples.


7. Discuss the need of protection of SSI Concerns.

8. Discuss the role of Govt. of India in the formulation of various policies of FDI in India.


2. What is ETOP? How will you prepare ETOP? What is the contribution of ETOP?

3. Explain the disclosure principle of corporate governance.
Partial regression coefficients
Sampling distribution
Law of large numbers
Various types involved in Expected Frequency Values
Minimum criterion
Maximum criterion
Standard normal variable
Properties of Poisson Distribution
Multiplication rule of probabilities
Relationship between Mean, Median and Mode

1. Explain Answer the following in upto one page length

Each of the remaining seven questions carrying 10 marks

Note: Q. No. 1 Carrying 10 parts is compulsory and each part

Maximum Marks: 80

ADVANCED STATISTICS

MDE/D-18

10034

Roll No. :

Total Pages : 06
### 3. Define the following:

<table>
<thead>
<tr>
<th>Event</th>
<th>(e)</th>
<th>(f)</th>
<th>(g)</th>
<th>(h)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMV Criterion</strong></td>
<td>Maximum criterion: Expected Monetary Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Expected Monetary Value</strong></td>
<td>$2^2 = 4$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>s$^2$</strong></td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>s$^1$</strong></td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>V$^2$</strong></td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>V$^1$</strong></td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2. Find optimal decisions under:

<table>
<thead>
<tr>
<th>$s^2$</th>
<th>19</th>
<th>15</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>$s^1$</td>
<td>16</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>V$^2$</td>
<td>V$^1$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4. Actions

The following table gives payoffs for actions $A^1$, $A^2$, and $A^3$.
8. Find mean, standard deviation and coefficient of variation

\[
X = 6, 7, 8, 9, 10
\]

\[
\text{Standard Deviation} = \sqrt{\frac{\sum (X - \mu)^2}{N}}
\]

\[
\text{Coefficient of Variation} = \frac{\text{Standard Deviation}}{\mu} \times 100
\]

9. Two dice are selected at random from the digits 1 through 9. Find:

- All possible outcomes
- The probability that the sum is even
- The probability that the sum is odd
- The probability that their sum is even and odd simultaneously

10. Six dice are thrown 729 times. How many times do you expect at least three dice to show a five or six?
1. Discuss the limitations of online marketing.
(x)

2. What is the role of intermediaries?
(x)

3. Explain the concept of product.
(x)

4. What is complex buying behavior?
(x)

5. What is the scope of Marketing Research?
(x)

6. Why is study marketing environment?
(x)

7. Define Marketing Mix.
(x)

8. What is the importance of Marketing?
(x)

I. Answer the following in brief (not more than half page).

Note: Answer the questions in all Q. No. is compulsory.

Maximum Marks: 80

TIME: THREE HOURS

MICIL-104

MARKETING MANAGEMENT

10035

MDE/D-18

ROLL NO. 03

TOTAL PAGES: 03
1. What is a new product? Why many new products are failed? Suggest some measures in this regard.

2. What is Marketing Mix? What are the components of Marketing Mix?

3. What is direct marketing? What are the elements of direct marketing? Explain how mass media can be used in direct marketing.

4. What is Consumer Behaviour? How does it guide the marketers in determining their tactical decisions?

5. What is a new product? Why many new products are failed? Suggest some measures in this regard.

6. Define Planning. Discuss the various planning patterns and decision.

7. Discuss the concept of physical distribution. What makes decision?

8. Explain the role of mass media in direct marketing.
(e) Differentiate between application and system software.

(d) Explain working of DWD in brief.

(c) ROM and Flash ROM in brief.

(b) Discuss various limitations of computer;

(a) What do you mean by IT outsourcing?

In addition to the above attempt four more questions.

Note: Attempt five questions in all. No. 1 is compulsory.

Time: Three hours

Maximum Marks: 105

TECHNOLOGY

FUNDAMENTALS OF INFORMATION

MDE/D-18

10036

ROLL NO. ____________________________

Total Pages: 5
8. How a computer can be used for storing, retrieving and applications of each?

9. Explain the various types of clouds in detail, along with characteristics of each type.

10. Describe the various types of an operating system along.

A. Explain the OSI model of networking in detail.

B. Discuss the impact of cloud computing on our daily life.

10x4=40

(a) What is the role of IT in our daily life?

(b) What is a Cloud?

(c) What is Cloud Computing?

(d) What is a Wide Area Network?
7. (a) Information requirements of top management are different from that of lower level management.

8. MIS is a coordination of subsystems. Elaborate.

9. Write a note on the different techniques to determine the information needs.

10. What is a World Wide Web? Discuss its use in commerce.

Note: Attempt five questions in all. Q. No. 1 is compulsory.

Maximum Marks: 80

Time: Three Hours
6. What is the difference between conceptual system design and detailed system design? Why should involve the
organization in system design? Discuss.

5. What are the different components of an MIS? Explain.

What is Management Information System (MIS)? What

4. What is computer? How does it help in processing

3. What is search engine? Discuss in detail the advance

2. What is Firewall? What are its components?

1. What is Business Data Processing and why it is

Distinguish between MIS and Business Data

Process.

Process.

Who is the user of Decision Support System? What are the different levels of Management? What is the
making process.
1. Attempt all the following questions in brief: 10 × 4 = 40

(a) Explain primary and secondary market.

(b) What is Insider Trading?

(c) Explain Asset Management Company (AMC).

(d) Discuss types of Mutual Funds.

(e) Explain importance of Merchant Bankers.

(f) Discuss the importance of Regional Rural Banks.

(g) Explain functions of IIBCL.

(h) What are objectives of Development Banks?

(i) State the importance of Capital Market.

(j) Discuss name of Financial System.

II. Attempt any four questions from the remaining seven questions.

Note: Q. No. 1 is compulsory. Attempt any four questions.

Maximum Marks: 80

Time: Three Hours

MCET-301
MARKETS
FINANCIAL INSTITUTIONS AND
MDA/D-18

10038
5. Write a comprehensive report on the operational and promotional services of Industrial Finance Corporation of India (IFCI).

6. Describe the main functions of merchant bankers. Why are merchant banks important in the economy?

7. Discuss the role of national stock exchanges in capital market.

8. What is SIDBI? Discuss the role of SIDBI in detail.

9. The performance of SIDBI, along with suggestions to improve industrial development, has been given. Discuss the role of SIDBI in detail.

10. The recent development that has taken place in Indian money market is discussed in detail about the performance of mutual funds in India. Also discuss in detail about the importance of mutual funds.

11. Discuss the reasons of Indian money marketwhich relies mainly on various components of a developed financial system.
I. Write short notes on the following:

- Risk
  - Systematic Risk
  - Non-systematic Risk
- Balance Sheet
- Statement of Profit and Loss
- Statement of Financial Position
- Statement of Cash Flows
- Statement of Changes in Equity
- Statement of Shareholders' Equity
- Statement of Retained Earnings
- Statement of Dividends
- Statement of Future Earnings
- Statement of Future Net Income
- Statement of Future Cash Flows

Note: Q. No. 1 is compulsory. Attempt any four questions out of remaining seven questions.

Maximum Marks: 80

Time: Three Hours

MGT-302
MANAGEMENT
SECURITY ANALYSIS AND INVESTMENT

MDG/D-18
10039

Return No. 03
4. Write a detailed note on Efficient Market Hypothesis.

7. Differentiate between Fundamental and Technical Analysis.

6. How the valuation of equity shares are done? Explain.


4. Explain the trading mechanism in secondary market.

3. What is Primary market? Explain the role, function, and investment.

2. What is Investment Analysis? Explain the process of
1. Write short answers to the following. Each question carries 4 marks.

Question 1

Time: Three Hours

Maximum Marks: 80

Operation Management
MDA/D-18
10040

Note: Attempt any five questions in all. No. 1 is compulsory.

(a) Describe Plant Layout.
(b) Discuss Forecasting Methods.
(c) Explain Scope of Operations Management.

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2. Explain the concept of Inventory Management. Discuss in detail functions of Inventory Control.
1. Define Capacity Planning. Explain its benefits and disadvantages.

2. Discuss the following:
   (a) Process Chains and Acceptance Sampling
   (b) Statistical Quality Control
   (c) Classification of Inventories
   (d) LOG with and without Shrinkage

3. Write notes on the following:

4. Define Fixed Order Quantity (FOQ) System.

5. Explain the following:
   (a) CPM
   (b) PERT

6. Discuss Plan Location. Discuss in detail, factors for choice
P1.0

4.

When do you mean by relational algebra in DBMS?

(i) Example

When is Cartesian and what is with the create table

(e) What are database language? Write a query to write

(d) What is Data Abstraction?

(c) What is Strong Entity and Weak Entity and also

(ii) Naive user

(i) DBA

(b) Explain the following terms:

(i) Schema

I. (a) What do you mean by database and also define

of remaining seven questions.

Note: Q No. I is compulsory. Attempt any four questions out

Maximum Marks: 80

MCIT-306

DATABASE MANAGEMENT SYSTEM

MDE/D-18

Roll No. --------------------------

Total Pages: 03
10. What does tuple relational calculus differ from domain relational calculus? Why is division operator in relational calculus?

8. How does tuple relational calculus differ from domain relational calculus?

10. The different types of integrity in handled. (a) What is the data integrity constraints? And how
(b) What is data integrity in a database?

10. The structure.

6. What is basic concept of Hierarchical Model and explain

10. Examine the model and its mapping

5. What do you mean by Data Model & Explain network

2. What is ENTITY (Employee, Manager, Department, Project, Location), Number, Name, Location.

4. Write the ER diagram of the following conditions:

10. Traditional Sysem & Traditional Database & How is it better than

3. What is Database System and how is it better than

10. What is the difference between Logical data independance and physical data independance?

4. Explain the Project Operator of Algebra operation

4. Explain the Project Operator of Algebra operation

(4) What is CODASYL DBMS model? Also write its

(4) What is VIEW Updating Rule and High-Level Insert

(4) With example.