

FACULTY OF SOCIAL SCIENCES  
M.A. (APE: 5-YIPGP) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
STATISTICS - I  
**PAPER – V**

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Distinguish between questionnaire and schedule.
2. State the uses of graphical representation.
3. Co-efficient of variation.
4. Exhaustive events and mutually exclusive events.
5. Define “Binomial Distribution”.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Define the “classification of data” and analyse the different methods of classifying statistical data.  
(OR)  
b) Discuss the various methods of collecting the data.
7. a) Distinguish between “natural state” and “semi-logarithmic scale” used in the graphical presentation of data.  
(OR)  
b) Draw a bar diagram to represent the following data:

year:	1952	1957	1962	1967	1972	1977
No. of women M.P's:	22	27	34	31	22	19

8. a) Compute the mean, median and mode for the data given below:

Size:	5	10	15	20	25	30	35
Frequency:	1	3	13	17	27	36	38

(OR)

- b) Define “measures of dispersion” and calculate the co-efficient of quartile deviation for the data given below:

Marks:	0-15	15-30	30-45	45-60	60-75	75-90	90-100
No. of students:	8	26	30	45	20	17	4

9. a) Enumerate the multiplication theorem of probability with the help of a suitable example.  
(OR)  
b) An Urn contains 10 blue balls and 12 yellow balls. Two balls are drawn simultaneously. What is the probability of drawing 2 blue balls and 2 yellow balls?
10. a) Examine the chief properties of “Normal Distribution” and state its significance for statistical analysis.  
(OR)  
b) Analyse the distinctive features of the “Poisson Probability Distribution”.

FACULTY OF ARTS  
M.A. (ENGLISH) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**ENGLISH LANGUAGE TEACHING - I**  
PAPER – V

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Kothari Commission
2. Communicative Competence
3. Grammar Translation Method
4. Reading and Writing Skills
5. Stylistic approach

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) State briefly the objective of English education in India according to Macaulay.  
(OR)  
b) Write in detail the important Land Marks in the history of English education in Post Independent India.
7. a) What are the objectives of teaching English in India at the college level?  
(OR)  
b) What are the advantages of Remedial Teaching?
8. a) What are the merits and demerits of “Grammar Translation Method”?  
(OR)  
b) Write briefly the importance of humanistic approaches in ELT.
9. a) Discuss the importance of a Skill-Based Language course at the under graduate level.  
(OR)  
b) What are the Language Learning Strategies? How are they helpful in learning a Language?
10. a) Explain and illustrate how you would teach Language through Literature.  
(OR)  
b) Literature text can be used as a pretext in teaching a Language. Comment.

FACULTY OF ARTS  
M.A. (HINDI) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
JANASANCHAR MADYAM

**PAPER – V**

Time: 3 hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

**Section – A**

सूचना - निम्न लिखित प्रश्नों के उत्तर एक पृष्ठ से अधिक न हो ।

(5x4=20)

1. जनसंचार के माध्यमों के क्षेत्र का संक्षिप्त परिचय दीजिए ।
2. रेडियो के हिंदी कार्यक्रमों के बारे में आप क्या जानते हैं?
3. फीचर लेखन पर प्रकाश डालिए ।
4. विज्ञापन के उद्देश्य को स्पष्ट कीजिए ।
5. टी.वी.के समाचारों में हिन्दी का क्या महत्व है?

**Section – B**

सूचना - निम्न लिखित प्रश्नों के उत्तर 4 पृष्ठों से अधिक न हो ।

(5x10=50)

6. a) जनसंचार का अर्थ बताते हुये उसकी परिभाषा लिखिए ।  
(OR)  
b) हिन्दी में रिपोर्ट लेखन को विस्तार से समझाइए ।
7. a) हिन्दी में खेल सम्बन्धी सचनाओं की समीक्षा कीजिए ।  
(OR)  
b) वर्गीकृत विज्ञापनों की उपयोगिता पर प्रकाश डालिए ।
8. a) फ़िल्म संवादों की भाषा के रूप में हिन्दी के प्रयोग के विविध रूपों का उल्लेख कीजिए ।  
(OR)  
b) रेडियो समाचारों में प्रयुक्त हिन्दी का विश्लेषण कीजिए ।
9. a) पटकथा लेखन तथा संवाद लेखन की भाषा की विशेषताओं को स्पष्ट कीजिए ।  
(OR)  
b) दृश्य एवं श्रव्य माध्यमों की भाषा के स्वरूप को समझाइए ।
10. a) विज्ञापनों में हिंदी के प्रयोग को बताइए ।  
(OR)  
b) जनसंचार प्रौद्योगिकी की चुनौतियों का विस्तृत विवरण प्रस्तुत कीजिए ।

FACULTY OF SOCIAL SCIENCES

MA (Mass Communication) III – SEMESTER REGULAR EXAMINATIONS, DEC- 2017

**PRINT MEDIA**

**PAPER – V**

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Tabloids and eveningers
2. News analysis
3. Special Sections
4. Online Stories
5. Editorial Page

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) What is the role played by the Ombudsman – Explain?  
(OR)  
b) What are the problems of small district news papers?
7. a) Explain about the sourcing of news from foreign newspapers, their need relevance?  
(OR)  
b) How would you supplement the hard news with analysis – Explain?
8. a) What are the different steps followed in the magazine desk?  
(OR)  
b) Explain in detail about the magazine editing and tabloid editing process?
9. a) Explain in detail about the structuring of online stories?  
(OR)  
b) What are the different types of info graphics?
10. a) Explain in your own words, what is the future of newspapers?  
(OR)  
b) Explain about the Socio – Cultural Change in India, after the emergence of press i.e. print media?

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FACULTY OF ARTS  
M.A.(TSD) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
STUDY OF COMPARATIVE LITERATURE

**PAPER – V**

Time: 3 hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

**Section – A**

సూచన: క్రింది ప్రశ్నలకు ఒకపేజీ మించకుండా సమాధానాలు వ్రాయండి. (5x4=20)

1. తులనాత్మక సాహిత్యం నిర్వచనం.
2. తులనాత్మక సాహిత్యం సమాజం.
3. తులనాత్మక సాహిత్యం ప్రత్యక్ష అనుభూతి.
4. తులనాత్మక సాహిత్యం ప్రాచీన కవిత్వం.
5. తులనాత్మక సాహిత్యం మానవీయ విలువలు.

**Section – B**

సూచన: క్రింది ప్రశ్నలకు నాలుగు పేజీలు మించకుండా సమాధానాలు వ్రాయండి. (5x10=50)

6. a) తులనాత్మక సాహిత్యంలోని వివిధ సిద్ధాంతాలను పరిచయం చేయండి.  
(లేదా)  
b) తులనాత్మక సాహిత్య విభాగాలను పరిచయం చేయండి.
7. a) తులనాత్మక సాహిత్యం సాంస్కృతిక పరిశోధనల ప్రయోజనాలను వివరించండి.  
(లేదా)  
b) తులనాత్మక సాహిత్యంలో రచయిత, రచన, సమాజ స్థాయిని పరిశీలించండి.
8. a) తులనాత్మక సాహిత్యంలో అన్య భాషా సంస్కృతుల ప్రభావాలను పరిశీలించండి.  
(లేదా)  
b) తులనాత్మక అధ్యయనంలో వివిధ దృక్పథాలను వివరించండి.
9. a) తులనాత్మక అధ్యయనంలో ప్రక్రియా విభజనను గుర్తించండి.  
(లేదా)  
b) తులనాత్మక అధ్యయనంలో వైస్ట్, నార్త్వే, రోడ్ వే సిద్ధాంతాలను పరిచయం చేయండి.
10. a) విశ్వవిద్యాలయాల స్థాయిలో తులనాత్మక సాహిత్య పరిశోధనల తీరుతెన్నులను వివరించండి.  
(లేదా)  
b) తులనాత్మక అధ్యయనంలో జానపద విజ్ఞాన విభాగాలను గుర్తించండి.

FACULTY OF ARTS  
M.A. (URDU) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
QUSUSI MUTALIYA "SIR SYED AHMED KHAN"

## PAPER – V

Time: 3 hours]

[Max. Marks: 70

## سیکشن - A - Section

نوٹ: ۱۔ ذیل میں دیئے گئے تمام سوالوں کے جوابات مطلوب ہیں۔  
جواب ایک صفحہ سے زائد نہ ہو۔  
(5X4=20)

- ۱۔ سر سید احمد خان کے عہد کے سیاسی حالات پر روشنی ڈالئے۔
- ۲۔ علی گڑھ تحریک سے کیا مراد ہے۔ تحریر کیجئے۔
- ۳۔ سر سید احمد خان کے اسلوب بیان کی انفرادیت واضح کیجئے۔
- ۴۔ "سائنٹفک سوسائٹی" پر اپنے خیالات کا اظہار کیجئے۔
- ۵۔ سر سید احمد خان کی تصانیف کی نت نئی مثالیں دئے ہوئے مختصر نوٹ لکھئے۔

## سیکشن - B - Section

نوٹ: ۱۔ تمام سوالات کے جوابات مطلوب ہیں۔ ہر سوال کا جواب  
چار صفحات سے زائد نہ ہو۔  
(5X10=50)

- ۶۔ سر سید احمد خان کے علمی اور ادبی خدمات کا احاطہ کیجئے۔  
یا۔  
سر سید کی صحافتی خدمات کا احاطہ کرتے ہوئے رسالہ "تہذیب الاخلاق"  
پر جامع نوٹ لکھئے۔
- ۷۔ سر سید احمد خان کے حالات زندگی قلم بند کیجئے۔  
یا۔  
رسالہ "اسباب بغاوت ہند" کی اہمیت واضح کیجئے۔

8 :- علی گڑھ تحریک کے اغراض و مقاصد پر روشنی ڈالئے۔

یا  
سر سید کی تاریخ نگاری پر جامع نوٹ لکھئے۔

9 :- سر سید احمد خان کے رفقا پر تفصیلی روشنی ڈالئے۔

یا  
اردو نثر کے فروغ میں علی گڑھ تحریک کی نمایاں خدمات کا محاسبہ کیئے۔

10 :- سر سید احمد خان کے سیاسی، سماجی اور تہذیبی پس منظر پر  
روشنی ڈالئے۔

یا  
سر سید احمد خان کی نثر نگاری کی خصوصیات بیان کیئے۔

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FACULTY OF SOCIAL SCIENCES  
M.A (Economics) III– SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**ECONOMICS OF SOCIAL SECTOR**  
PAPER – V (A)

Time: 3 hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

**Section – A**

Answer the following questions in not more than **ONE** page each: (5x4=20)

1. Scope of Economics of Education
2. Social benefits of Education
3. Brain drain
4. Malnutrition
5. Health Sector

**Section – B**

Answer the following questions in not more than **FOUR** pages each: (5x10=50)

6. a) Discuss the concept and components of human capital.  
(OR)  
b) How human capital are essential for human development.
7. a) Discuss the cost-benefit analysis in Education.  
(OR)  
b) Explain the expenditure on education leads to reduce the poverty.
8. a) Explain the role of Financing in the development of education.  
(OR)  
b) Discuss the Financing of Education in India.
9. a) Elucidate of Education and Health in India.  
(OR)  
b) Discuss the Demand and Supply of Health Care.
10. a) Explain the Institutional Issues in Health Care Delivery.  
(OR)  
b) Discuss the implications of GATS for Health Sector.

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FACULTY OF SOCIAL SCIENCES  
M.A (Economics) III– SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**ECONOMICS OF ENVIRONMENT**  
PAPER – V(B)

Time: 3 hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

**Section – A**

Answer the following questions in not more than **ONE** page each: (5x4=20)

1. Market failure
2. Exhaustible resources
3. Coase theorem
4. Green national income
5. Environmental laws

**Section – B**

Answer the following questions in not more than **FOUR** pages each: (5x10=50)

6. a) Explain relationship between economics and environment with the help of flow-chart.  
(OR)  
b) Critically examine the Input-Output Models of the environment.
7. a) Explain in detail the optimal depletion of renewable resources.  
(OR)  
b) Define the sustainable development and explain its importance in present era.
8. a) Critically examine the Pigovian taxes and subsidies.  
(OR)  
b) Explain the role of Government in controlling pollution through pollution permits.
9. a) Explain the Cost-benefit analysis of environment and its limitations.  
(OR)  
b) Critically examine the UN system of integrated environmental accounts in assessment of environmental degradation.
10. a) Explain the impact of Natural resource depletion on environment in developing countries like India.  
(OR)  
b) Critically explain the role of Ministry of environment and environmental laws in controlling pollutions in the context of India.

FACULTY OF SOCIAL SCIENCES  
M.A. (Political Science) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**HUMAN RIGHTS**  
PAPER – V

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Magna Carta
2. Economic Rights
3. Human Trafficking
4. Amnesty International
5. NHRC (National Human Right Commission)

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Explain the different generations of Human Rights.  
(OR)  
b) Examine the History of Human Rights.
7. a) Discuss the Feminist Theory of Rights.  
(OR)  
b) Write an essay on the Liberal Theory of Rights.
8. a) Write a note on Convention Against Torture.  
(OR)  
b) Examine the Civil and Political Rights enshrined in the International Covenant on civil and Political Rights.
9. a) Examine the role of UN in the Protection of Rights.  
(OR)  
b) Write a critical note on the activities undertaken by Human Rights Watch.
10. a) Write an essay on the Mandate of SC Commission.  
(OR)  
b) What are measures do you suggest to strengthen Human Rights in India.

FACULTY OF SOCIAL SCIENCES  
M.A. (Public Administration)  
III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**GLOBALIZATION, PUBLIC ADMINISTRATION & GOVERNANCE**  
PAPER – V

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Concept of Globalization
2. Meaning of Civil Society
3. Social Audit
4. Characteristics of Governance
5. Concept of Rolling Back State

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Meaning, nature and scope of the globalization – Discuss.  
(OR)  
b) Critically examine the theories of the governance.
7. a) Write an essay on challenges on Global Administration.  
(OR)  
b) Discuss the concept and the important of Rolling Back State.
8. a) Discuss the New Public Management brought changes in governance.  
(OR)  
b) Role of ICT in Public Administration.
9. a) Write an essay on Re-Inventing Government.  
(OR)  
b) Critically examine the concept of Modern State.
- 10.a) Discuss the causes of crisis in Public Sector Services.  
(OR)  
b) Write an essay on issues and challenges of Governance.

FACULTY OF SOCIAL SCIENCES  
M.S.W. III – SEMESTER REGULAR EXAMINATIONS, DEC -2017  
**TRIBAL COMMUNITY DEVELOPEMENT-I**  
PAPER – V (a)

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Mention the Tribal groups in Telangana State.
2. Explain the approaches of tribal development.
3. Explain the impact of Industrialization on tribal development.
4. Discuss the ideology of tribal community development.
5. Weaker Sections? Explain.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Define tribe? Discuss its characteristics.  
(OR)  
b) Explain the major tribal classifications in India.
7. a) What is tribal development? Explain the tribal development in post independence era.  
(OR)  
b) Explain the impact of tribal development on Indigenous communities.
8. a) State the impact of modernization and urbanization in tribal areas.  
(OR)  
b) Discuss the influence of polices, contractors and forest departments on tribal development.
9. a) Give a detailed picture on tribal movement in India.  
(OR)  
b) Discuss the role of voluntary organization and its impact on tribal community development.
10. a) Explain the constitutional provisions to tribes.  
(OR)  
b) Write essay on welfare and development programmes of tribal community in Telangana State.

FACULTY OF SOCIAL SCIENCES  
M.S.W. III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**SOCIAL WORK WITH ELDERLY**  
PAPER – V (b)

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. What is the difference between sex and gender?
2. State the concept of mental and emotional health.
3. What do you mean by “geriatric social work”?
4. Social Security.
5. Explain intervention needs of elderly.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Explain what are the practices related to death counseling.  
(OR)  
b) Describe historical norms and practices related its death and bereavement.
7. a) Elucidate the policies and programmes of central and state government in care giving.  
(OR)  
b) Explain with suitable observation on the problem of shelter less elderly people in urban India.
8. a) Explain the role of social media in bringing about health intervention information and awareness about prevention the problem of elderly.  
(OR)  
b) Explain the advantages and dis-advantages of growing old age homes in contemporary society.
9. a) Explain the Constitutional Social Security measures for elderly in India.  
(OR)  
b) Discuss the role of professional social worker towards elderly in Indian Society.
10. a) Old age homes, is it a Boon or Bane-Discuss.  
(OR)  
b) Write about the interventions for the elderly with Parents, Spouse and grand children's.

FACULTY OF SOCIAL SCIENCES  
M.S.W. III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**COMMUNITY HEALTH - I**  
PAPER –V (c)

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Concept of health.
2. National health programmes.
3. Health Promotion in Specific Settings.
4. Stress management.
5. Fertilization.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Discuss about levels of Prevention in Community health.  
(OR)  
b) Describe the role of Community health worker.
7. a) Highlight the various health Promotion programmes in the field of community health.  
(OR)  
b) Critically evaluate the Health Policy in India.
8. a) Comment about the principles of health education protected in India.  
(OR)  
b) Bring out the importance and relevance of communication and Training in health education.
9. a) Write about the impact of environmental stress on human population.  
(OR)  
b) Describe the individual's reactions to change and stress.
10. a) Write about the National Family Welfare Programmes.  
(OR)  
b) Discuss the importance of Postnatal Care.

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FACULTY OF BUSINESS MANAGEMENT  
MBA III – SEMESTER REGULAR EXAMINATIONS, DEC- 2017  
**SECURITIES ANALYSIS AND PORTFOLIO MANAGEMENT**  
PAPER – V(A)

Time: 3 Hours]

[Max. Marks: 70

**Section – A**Answer the following questions in not more than **ONE** page each:

(5x3=15)

1. Investment Vs. Speculation.
2. EMH.
3. Leveraged Portfolio.
4. YTM.
5. Fama's Decomposition.

**Section – B**Answer the following questions in not more than **FOUR** pages each:

(5x8=40)

6. a) Explain briefly about attributes of investible investment instrument.  
(OR)  
b) Define the Speculation and explain about causes for Speculation?
7. a) Discuss on the EIC analysis in Fundamental approach to investment valuation.  
(OR)  
b)  $D_0 = \text{Rs.}2.75$   
 $g = 5\%$  for 3 years and 6% afterwards  
 $P_0 = \text{Rs.}125$   
Holding period is 5 years,  
Compute the value of share.
8. a) Explain the features and types of Debt Instruments.  
(OR)  
b) A Bond issued with the face value of Rs.100 at a coupon rate of 8%p.a. is issued for 5 years tenure as maturity period. The prevailing interest rate in the market or expect rate is 9%. Calculate the duration of the Bond.
9. a) Discuss on the critical part of the Modern Portfolio Theory.  
(OR)  
b) From the following details compute the portfolio Return and Risk with the consideration of equal weightage.

Returns of X (%)	Returns of Y (%)	Probability
10	12	0.3
-12	18	0.2
15	25	0.1
18	21	0.2
9	19	0.2

- 10.a) Explain about Fama's Decomposition concept and its distinguish features.

(OR)

- b) Evaluate the following portfolios with suitable measures and rank them.

Portfolios	R (%)	B	SD ( $\sigma$ )
AB	18	1.25	6%
BC	24	0.98	12%
CD	16	1.51	5%
DE	21	0.70	12%

Risk free interest rate is 8%.

Section – C (Compulsory)

(1x15=15)

From the given details by Mr. Raghu advise him the best weightage of investment in X and Y securities through which a portfolio is created.

Mean of X is = 15.4

Mean of Y is = 23.5

SD of X = 6.8

SD of Y = 8.25

Co-efficient of correlation between

X & Y is 0.89.

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FACULTY OF BUSINESS MANAGEMENT  
MBA III – SEMESTER REGULAR EXAMINATIONS, DEC- 2017  
**PRODUCT AND BRAND MANAGEMENT**  
PAPER – V (b)

Time: 3 Hours]

[Max. Marks: 70

**Section – A**Answer the following questions in not more than **ONE** page each:

(5x3=15)

1. FMCG
2. STARS
3. Test Marketing
4. Brand Strategy
5. Brand Image

**Section – B**Answer the following questions in not more than **FOUR** pages each: (5x8=40)

6. a) Write short notes on the following using suitable examples:
    - i) Line Stretching
    - ii) Line Pruning

(OR)

  - b) Briefly describe the role and responsibilities of a successful product manager.
7. a) Compare and contrast between the BCG and GE portfolio matrices.
 

(OR)

  - b) Briefly describe the sales forecasting methods.
8. a) Explain the term positioning and using suitable example describe repositioning.
 

(OR)

  - b) Describe the market analysis strategy for packaged drinking water.
9. a) Define brand and describe the benefits of branding a product.
 

(OR)

  - b) Differentiate between Brand Identify and Brand Image.
10. a) Briefly describe the implications of building a strong brand.
 

(OR)

  - b) Write short notes on the following
    - i) Brand Equity
    - ii) Brand Value.

**Section – C (Compulsory)**

(1x15=15)

Unilever's INR 55 billion (\$1.36 billion) brand-Rexona, internationally spans across 90 markets worldwide commanding 14.5% share of the global deodorant market. In India, as one of the pioneer brands of Hindustan Unilever Limited (HUL), Rexona soap was launched in India in 1947. It is one of the well known brand in the 4500 crore soap market. Although the brand does not have any significant market share, it has a loyal customer base. Rexona soap was positioned as natural skin care soap for a silky glowing skin. With its excellent quality and good communication, initially the brand was well received by Indian consumer. In 1989, the brand came out with Coconut based ingredient which was one of its kinds at that period.

But over the period this product lost its way and was competing with HLL's own brand Hamam. In 2003 HLL as a part of the "Power Brand" strategy decided to merge this brand with Lux. Thus came the variant "Rexona with Lux cream". In 2005 HLL again decided to make Rexona independent.

Rexona was worth INR.1.78 billion in 2006. With an annual growth rate of 28%, Rexona continued to complete as one of the core brands in HUL's brand portfolio. Launched as a soap brand, Rexona's journey through Indian fast moving consumer goods market has been a dramatic one. At the end of 2006, the brand managed to emerge as a mass deodorant brand, albeit with some hiccups, Post 2006, the brand saw a steady decline in its growth. The brand underwent a repositioning strategy.

**Questions:**

- i) Discuss the positioning strategy of Rexona per 2006.
- ii) Discuss the repositioning strategy of Rexona and the reasons that prompted repositioning.

FACULTY OF BUSINESS MANAGEMENT  
MBA III – SEMESTER REGULAR EXAMINATIONS, DEC- 2017  
**ORGANIZATIONAL DEVELOPMENT AND CHANGE MANAGEMENT**  
PAPER – V(C)

Time: 3 Hours]

[Max. Marks: 70

**Section – A**Answer the following questions in not more than **ONE** page each: (5x3=15)

1. What do you mean by organizational development skill stimulation?
2. Explain force field analysis.
3. Explain the organizational development process.
4. What do you mean by T groups?
5. What do you mean by BPR?

**Section – B**Answer the following questions in not more than **FOUR** pages each: (5x8=40)

6. a) Explain the meaning and characteristics of organizational development.  
(OR)  
b) Discuss the relevance of organizational development in the present economic scenario.
7. a) Give an overview of Classification of organizational development interventions.  
(OR)  
b) What are the techno structural interventions? Explain.
8. a) Explain the Conditions for Optimal success of Leadership Development Program.  
(OR)  
b) Explain the Leadership Challenges in Managing Transformational Change in a Strategic Organisation.
9. a) Explain need for change and forces for change in detail.  
(OR)  
b) What are the types of Change? Explain with examples.
10. a) What is the meaning, nature and models of Change Management?  
(OR)  
b) Explain Key Roles in Organisational Change.

**Section – C (Compulsory)**

(1x15=15)

Powermat Inc, has encountered difficulty over the last few years in filling its middle-management positions. The company, which manufactures and sells complex machinery, is organized into six semi-autonomous manufacturing departments. Top management believes that it is necessary for these departmental managers to know the product lines and the manufacturing process, because many managerial decisions must be made at the level. Therefore, the company originally recruited employees from within. However, they soon found that employees elevated to the middle-management level often lack the skills necessary to discharge their new duties.

A decision then was made to recruit from outside, particularly from educational Institutes with good industrial management programs.

Through the services of a professional recruiter, the company was provided with a pool of well qualified management graduates. Some of them were hired and placed in lower management positions as preparation for advancement to the middle-management jobs. They all left the company, however, within two years of their recruitment.

Management reverted to its former policy of promoting employees from within and experienced basically the same results as before. Faced with the imminent retirement of employees in several key middle-management positions, the company decided to call in a consultant who could suggest solutions.

**Discussion Questions:**

- i) What is the problem of recruiting in this company?
- ii) If you were the consultant, what would you recommend?

FACULTY OF BUSINESS MANAGEMENT  
MBA III – SEMESTER REGULAR EXAMINATIONS, DEC- 2017  
**CONCEPTS OF ENTERPRISE RESOURCE PLANNING (ERP)**  
PAPER – V(D)

Time: 3 Hours]

[Max. Marks: 70

**Section – A**Answer the following questions in not more than **ONE** page each: (5x3=15)

1. Define Enterprise Resource Planning (ERP).
2. Change Management.
3. Distinguish E-Commerce and E-Business.
4. ERP Applications.
5. Computer Aided Manufacturing (CAM).

**Section – B**Answer the following questions in not more than **FOUR** pages each: (5x8=40)

6. a) i) What do you mean by Middleware? Give an example.  
ii) Explain a Two tier client or server structure for ERP with a sketch or diagram.  
(OR)
- b) i) List out the features of ERP.  
ii) What are the expected return on investment for ERP?
7. a) What do you mean by methodology under ERP implementation?  
(OR)
- b) How does Business Process Re-Engineering is related to ERP?
8. a) Explain the customer relationship management process and the steps involved.  
(OR)
- b) Explain the architectural components of Inventory Control.
9. a) Explain about Portal and Content Management.  
(OR)
- b) Discuss about Business Intelligence and Analytics.
10. a) List out Information Systems associated with specific functional areas. Explain any two of them.  
(OR)
- b) Explain about Manufacturing Resource Planning.

**Section – C (Compulsory)**

(1x15=15)

**Enterprise Process Integration Analysis.**

- i) Management at one of the Automobile Battery plant has been dissatisfied with production planning. No doubt, experienced people were at the helm. But production plans were created for each year with their experience guessing the likely demand for each product based on the previous year's figures by the customers. The main problem they faced was if a customer places an unexpected huge order or requests a change to an existing order after it has been placed; there is no scientific way to adjust the production plans. Further, the batteries are of varied sizes and for different types of vehicles.

In the case of any change the company has to adjust the new production plan quickly. No mathematical formula could help them. Under the circumstances, the company may have to tell their customers it can't full their orders or may run up extra costs maintaining additional inventory to prevent stock outs.

- ii) At the end of each month, orders are reviewed, totaled and manually keyed into the company's production planning system. Data from the previous months productions and inventory systems are manually entered into the firms order management system. Analysis from both sales and production departments analyse the data from their respective systems to determine the sales and production targets for the subsequent month. Their estimates are usually different. They sit together at a high level meeting thereafter and revise the sales/production targets to take into account senior management's goals for market share, revenues and profits. The outcome of the meeting is a finalized production master schedule.

In view of the implications, the entire production planning process took 15 business days to complete. Nine of these days are required to enter and validate the data. The remaining days are spent developing and reconciling the production and sales targets finalizing the production master schedule.

**Questions:**

1. Draw a diagram of the production planning process.
2. Analyse the problems this process creates for the company.
3. How could an Enterprise System (ERP) solve these problems? In what ways could it lower costs? Diagram what this process might look like if the company implemented the enterprise software.

FACULTY OF BUSINESS MANAGEMENT  
IM.B.A. (5YIPGP) III – SEMESTER REGULAR EXAMINATION, DEC- 2017  
**BUSINESS STATISTICS**  
PAPER – 05

Time: 3 Hours]

[Max. Marks: 70

**Section – A**

1. Answer any five of the following question in not more than **ONE** page each. (5x4=20)
- Scope of Statistics
  - Types of data
  - Significance of tabulation
  - Importance of measures of Central Tendency
  - Non-Parametric Tests
  - Frequency distribution
  - Steps of hypothesis testing
  - Forecasting techniques

**Section – B**

Answer the following question in not more than **FOUR** pages each. (5x8=40)

- 2 a) Define Statistics. Explain the role of statistics in managerial decision making.

(OR)

- b) Explain different sources of primary data collection.
- 3 a) Find mean, median and mode for the following data.

Class:	0-5	5-10	10-15	15-20	20-25	25-30	30-35
Frequency:	1	2	6	8	10	9	2

(OR)

- b) For a certain frequency table which has only been partly produced here, the mean was found to be 1.46.

No. & accidents	0	1	2	3	4	5	Total
Frequency	46	?	?	25	10	5	200

Calculate missing frequencies.

- 4 a) Find Quartile Deviation and Co-efficient of Q.D. from the following data.

Income:	Less than 50	50-70	70-90	90-110	110-130	130-150	Above 150
No. of Persons:	54	100	140	300	230	125	51

(OR)

- b) Calculate Mean Deviation and Co-efficient of Mean Deviation for the following data.

Class	0-10	10-20	20-30	30-40	40-50
Frequency	4	7	8	6	5

- 5 a) Define Sampling. Explain different methods of sampling.

(OR)

- b) Calculate the Kruskal-Walli's Test statistic for the following data.

College-A	25	70	60	85	95	90	80
College-B	60	20	30	15	40	35	-
College-C	50	70	60	80	90	70	75

- 6 a) Find Co-efficient of correlation for the following data.

X	5	8	9	11	12	15
Y	8	7	10	13	11	17

(OR)

- b) Find two regression equations from the following data.

X	2	6	4	8	10
Y	3	5	6	9	12

**Section – C (compulsory)**

(1x10=10)

If the ranks of 5 students in the two subjects are as follows.  
Find Spearman's Rank Correlation.

Student	Accountancy Rank	Statistics Rank
1	2	3
2	4	2
3	1	1
4	3	5
5	5	4

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FACULTY OF COMMERCE  
M.Com (GENERAL) III–SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**SECURITIES ANALYSIS AND PORTFOLIO MANAGEMENT**  
PAPER – V(A)

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. What are the objectives of fundamental analysis?
2. What is deep discount bond?
3. What are the assumptions of capital market theory?
4. What is differential return?
5. What is the need of portfolio revision?

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) What do you mean by efficient market hypothesis? Bring out its various forms.  
(OR)  
b) What are Charts? How are they interpreted in technical analysis?
  7. a) Explain in detail the method of valuation of an equity shares.  
(OR)  
b) Face value of a Debenture = Rs.1,000  
Annual interest rate of Debenture =12%  
Maturity period =5 years  
What is the value of the debenture, if: (a) required rate of return is 12%; (b) required rate of return is 15%; and (iii) required rate of return is 10%.
  8. a) Describe some of the problems associated with the empirical testing of APT?  
(OR)  
b) Ruthvik is considering several investments. The risk free of return is currently 6.75%, and the expected return for the market is 12%. What should be the required rates of return for each investment using the CAPM?
- |          |      |      |      |      |      |
|----------|------|------|------|------|------|
| Security | A    | B    | C    | D    | E    |
| Beta     | 1.20 | 0.80 | 1.50 | 0.60 | 1.25 |
9. a) What is a market index? Outline its utility for security analysis.  
(OR)  
b) With a risk-free rate of 5%, and with the market portfolio having an expected return of 10% with a standard deviation of 5%, what is the Sharpe Index for portfolio-A, with a return of 8% and a standard of 10%? For portfolio-B, having a return of 12% and a standard deviation of 8%? Would you rather be in the market portfolio or one of the other two portfolios?
  10. a) Explain the formula plans for the purchase and sale of securities.  
(OR)  
b) What is international portfolio diversification?

**FACULTY OF COMMERCE**  
**M.Com. (Gen/ECM) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017**  
**ACCOUNTING FOR SERVICE ORGANISATIONS**  
**PAPER – V (b)**

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Explain the accounting books maintained by accountants.
2. Explain the procedure of accounting for sales in hospital.
3. What do you mean by accrual in Government?
4. What are the features of farm accounting?
5. Explain the general balance sheet.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Elucidate the provisions of income tax act relating to lawyers and engineers.

(OR)

- b) Dr. Vasudeva commenced practice as a dental surgeon, investing Rs.25,000 in equipment on 1<sup>st</sup> January 2014.

The receipts and payments Account for the year was as follows:

	Rs.		Rs.
To fees	60,000	By Salaries to assistants	8,000
To Miscellaneous receipts	500	By Rent	4,800
To Equipment sold	2,000	By Journals	1,000
		By Purchase of drugs	5,000
		By Equipment purchased	4,000
		By Drawings	20,000
		By Library books	4,000
		By Conveyance	2,000
		By Balance: At bank	12,700
		In hand	1,000
	<b>62,500</b>		<b>62,500</b>

Rs.2,000 of the fees were still outstanding. Equipment sold and purchased was on 1<sup>st</sup> October, 2014, the cost of equipment sold being Rs.3,000. Depreciation of equipment is 20%. Salaries to assistants still payable is Rs.1000. 30% of conveyance is for domestic purpose. Stock of drugs on 31<sup>st</sup> December, 2014 is Rs.1500.

You are required to prepare the Receipts and Expenditure Account and the Balance Sheet relating to the year 2014.

7. a) Explain the procedure of receipts and payments accounts and income and expenditure accounts of a University in India.

(OR)

- b) From the following particulars relating to Rama Krishna Mission Charitable Hospital, prepare Income and Expenditure Account for the year ended 31<sup>st</sup> December, 2012 and Balance Sheet as on that date:

**Receipts & Payments Account**  
For the year ended 31<sup>st</sup> December, 2012.

Receipts	Rs.	Payments	Rs.
To Cash in hand on 1 <sup>st</sup> January, 2012.	7,130	By Medicines	30,590
To Subscriptions	47,996	By Doctor's honorarium	9,000
To Donations	14,500	By Salaries	27,500
To Interest on investments @ 7% for full year	7,000	By Petty expenses	461
To Proceeds from charity show	10,450	By Equipment	15,000
Inventories (stores & supplies)(1-4-11)		By Expenses on charity show	750
		By Cash in hand on 31 <sup>st</sup> Dec, 2012.	3,775
	<b>87,076</b>		<b>87,076</b>

	On Jan, 2012.	On 31 <sup>st</sup> Dec, 2012.
(i) Subscription Due	240	280
(ii) Subscription received in advance	64	100
(iii) Stock of medicines	8,810	9,740
(iv) Estimated value of Equipment	21,200	31,600
(v) Buildings (Cost less depreciation)	40,000	38,000

8. a) Explain about the functions of comptroller and auditor general of India.

(OR)

b) State the compilation of Indian government accounts.

9. a) How would you maintain different books of accounts of farm?

(OR)

b) Form the following figures, prepare the Farm Accounts.

Stock	Opening Stock (Rs.)	Closing (Rs.)
Crops	7,500	9,000
Growing Crops	5,500	8,000
Seeds	4,000	5,000
Cattle	1,40,000	2,00,000
Cattle Food	19,000	10,000
Poultry	17,000	25,000
Poultry Food	2,000	4,000
Fertilizers	8,000	6,000
<b>Purchases during the year:</b>	<b>Rs.</b>	
Poultry	29,000	
Seeds	2,000	
Cattle	78,000	
Cattle Food	25,000	
Poultry Food	5,000	
Fertilizers	6,000	
<b>Sales during the year:</b>	<b>Rs.</b>	
Crops	41,000	
Milk	19,000	
Eggs	25,000	
Cattle	70,000	
Poultry	24,000	
<b>Expenses during the year:</b>		
Wages	45,000	
Depreciation	3,000	
Insurance	3,000	

Worker and proprietor have consumed the following items:

	Workers	Proprietor
Poultry	2,000	1,000
Milk	3,000	2,500
Crops	4,500	2,000

10. a) Explain the nature and features of double account system.

(OR)

b) The following balances are extracted from the books M/s. Flashlight Electric Company Ltd:

(i) Fixed assets: Expenditure up to 1.1.2004:

a) Land and Buildings Rs.10,00,000; b) Machinery Rs.15,00,000.

(ii) Additions during the year – Machinery Rs.3,50,000.

(iii) Depreciation Fund: a) Machinery Rs.3,00,000; b) Building Rs.1,00,000.

(iv) Authorized Capital Rs.50,00,000 divided into equity shares of Rs.100 each.

(v) Issued and fully paid – up 20,000 equity shares of Rs.100 each (including 2,500 equity shares issued during the year).

(vi) 7.5% Debentures Rs.10,00,000 secured by a charge on Fixed Assets.

(vii) Sundry Creditors Rs.2,50,000; Reserve Fund Rs.5,00,000; Reserve Fund Investment at cost Rs.5,00,000; (Market value Rs.5,25,000).

(viii) Stock Rs.3,02,500; Sundry Debtors Rs.4,50,000; Cash at Bank Rs.2,00,000; Cash in hand Rs.50,000.

(ix) Profit and Loss Account (Cr.) Rs.2,02,500.

Your are instructed to prepare:

(i) a) Capital Account

b) General Balance Sheet as on the same date under the Double Account System.

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FACULTY OF COMMERCE  
M.Com. (E-Commerce) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**SECURITIES ANALYSIS AND PORTFOLIO MANAGEMENT**  
PAPER –V (a)

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Economic Investment.
2. Impulse Waves.
3. Exercise Price.
4. Security Market Line.
5. Risk Adjusted Returns.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Give an account of the reforms introduced by SEBI in primary and secondary market in India.

(OR)

- b) What factors should an investor consider while making investment decisions?

7. a) What do you mean by security analysis? Describe the basic approaches to security analysis.

(OR)

- b) Differentiate between:

- i) Bar Chart and Candlestick chart
- ii) Primary Trend and Secondary Trend.

8. a) Explain the basic valuation model used in investment management. How is it used for valuation of bonds?

(OR)

- b) A firm had paid dividend at Rs.2 per share last year. The estimated growth of the dividends from the company is estimated to be 5% p.a., Determine the estimated market price of the equity share if the estimated growth rate of dividends (i) rises to 8% and (ii) falls to 3%. Also find out the present market price of the share, given that the required rate of return of the equity investors is 15.5%.

9. a) Describe the different phases in portfolio management.

(OR)

- b) The following information is available from Mr. X in respect of his portfolio:

Security	Weight (%)	Expected Returns (%)	SD (%)
A	50	20	24
B	50	12	16

Find out the correlation between the returns if the S.D. of the portfolio is 20% or 18%.

10. a) Describe the different situations where evaluation of performance of portfolios becomes necessary.

(OR)

- b) Information regarding two mutual funds and a market index are given below:

Fund	Returns (%)	S.D. (%)	Beta
Gold	7	15	0.72
Platinum	16	35	1.33
Market Index	10	24	1.00

Assuming the risk-free return as 5%, calculate the differential returns for the two funds.

**FACULTY OF COMMERCE**  
**M.Com. (Gen/ECM) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017**  
**ACCOUNTING FOR SERVICE ORGANISATIONS**  
**PAPER – V (B)**

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

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2. Explain the procedure of accounting for sales in hospital.
3. What do you mean by accrual in Government?
4. What are the features of farm accounting?
5. Explain the general balance sheet.

Section – B

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On Jan, 2012.      On 31<sup>st</sup> Dec, 2012.

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(ii) Subscription received in advance	64	100
(iii) Stock of medicines	8,810	9,740
(iv) Estimated value of Equipment	21,200	31,600
(v) Buildings (Cost less depreciation)	40,000	38,000

8. a) Explain about the functions of comptroller and auditor general of India.

(OR)

b) State the compilation of Indian government accounts.

9. a) How would you maintain different books of accounts of farm?

(OR)

b) Form the following figures, prepare the Farm Accounts.

Stock	Opening Stock (Rs.)	Closing (Rs.)
Crops	7,500	9,000
Growing Crops	5,500	8,000
Seeds	4,000	5,000
Cattle	1,40,000	2,00,000
Cattle Food	19,000	10,000
Poultry	17,000	25,000
Poultry Food	2,000	4,000
Fertilizers	8,000	6,000
<b>Purchases during the year:</b>	<b>Rs.</b>	
Poultry	29,000	
Seeds	2,000	
Cattle	78,000	
Cattle Food	25,000	
Poultry Food	5,000	
Fertilizers	6,000	
<b>Sales during the year:</b>	<b>Rs.</b>	
Crops	41,000	
Milk	19,000	
Eggs	25,000	
Cattle	70,000	
Poultry	24,000	
<b>Expenses during the year:</b>		
Wages	45,000	
Depreciation	3,000	
Insurance	3,000	

Worker and proprietor have consumed the following items:

	Workers	Proprietor
Poultry	2,000	1,000
Milk	3,000	2,500
Crops	4,500	2,000

10. a) Explain the nature and features of double account system.

(OR)

b) The following balances are extracted from the books M/s. Flashlight Electric Company Ltd:

(i) Fixed assets: Expenditure up to 1.1.2004:

a) Land and Buildings Rs.10,00,000; b) Machinery Rs.15,00,000.

(ii) Additions during the year – Machinery Rs.3,50,000.

(iii) Depreciation Fund: a) Machinery Rs.3,00,000; b) Building Rs.1,00,000.

(iv) Authorized Capital Rs.50,00,000 divided into equity shares of Rs.100 each.

(v) Issued and fully paid – up 20,000 equity shares of Rs.100 each (including 2,500 equity shares issued during the year).

(vi) 7.5% Debentures Rs.10,00,000 secured by a charge on Fixed Assets.

(vii) Sundry Creditors Rs.2,50,000; Reserve Fund Rs.5,00,000; Reserve Fund Investment at cost Rs.5,00,000; (Market value Rs.5,25,000).

(viii) Stock Rs.3,02,500; Sundry Debtors Rs.4,50,000; Cash at Bank Rs.2,00,000; Cash in hand Rs.50,000.

(ix) Profit and Loss Account (Cr.) Rs.2,02,500.

Your are instructed to prepare:

(i) a) Capital Account

b) General Balance Sheet as on the same date under the Double Account System.

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## FACULTY OF SCIENCE

M.Sc. (PCH-5YIPGP) III-SEMESTER REGULAR EXAMINATIONS, DEC-2017

**CELL AND MOLECULAR BIOLOGY**

## PAPER – V

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all the following questions from Section-A and Section-B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Write a note on membrane fluidity.
2. Explain the mechanism of apoptosis.
3. Describe the role of secondary messengers in signal transduction?
4. Write a note on Polyploidy?
5. Describe briefly about DNA sequence variation?

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

- 6 a) Describe the structure of a membrane? Add a note on its function.  
(OR)
- b) Explain the structures of golgi apparatus and endoplasmic reticulum and their functions.
- 7 a) What is gametogenesis? Explain the mitotic and meiotic nondisjunction and its Consequences?  
(OR)
- b) What is cell cycle? Write about the mechanism of regulation of cell cycle.
- 8 a) Explain signal transduction by G protein coupled receptors and RTKs with suitable examples.  
(OR)
- b) Write about the different types of cell signaling systems. Add a note on signaling pathway.
- 9 a) What are chromosomal aberrations? Describe the various numerical aberrations of chromosomes.  
(OR)
- b) Describe the structure of chromosome? Add a note on the separation of chromosomes.
- 10 a) Write about the kinetics of denaturation, renaturation and reassociation of the genome.  
(OR)
- b) Write about the applications of genome analysis in medicine.

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FACULTY OF SCIENCE  
M.Sc. (PHYSICS/PE) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017

**ELECTRONIC INSTRUMENTATION**  
PAPER – V

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all the following questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. What is dynamic response of a system?
2. Explain the operation of logarithmic amplifier.
3. Explain the significance of modulation index of AM wave.
4. Explain the working principle of phase meter.
5. Enumerate the differences between the active and passive transducers.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

- 6 a) Discuss the frequency response of first and second order systems to ramp input signal.  
(OR)  
b) What is a transducer? Explain the construction and working of capacitive transducer.
- 7 a) Discuss the construction and working of isolation amplifier with a neat diagram.  
(OR)  
b) Distinguish the passive and active filters and explain the construction and frequency response of Band-pass filter.
- 8 a) Explain the construction and working of RF signal generator and discuss its limitations.  
(OR)  
b) What is Modulation? Explain the frequency spectrum of AM wave.
- 9 a) Discuss the construction and working of digital voltmeter with a neat diagram.  
(OR)  
b) Enumerate the characteristics of dot-matrix and seven-segment display systems.
- 10 a) Explain the principle and working of piezo-electric transducer.  
(OR)  
b) Explain the construction and working of magnetic tape recorder.

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FACULTY OF SCIENCE  
M.Sc. (MATHEMATICS) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017  
**ALGEBRAIC NUMBER THEORY**  
PAPER – V (a)

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all the following questions from Section-A and Section-B

Section – AAnswer the following questions in not more than **ONE** page each: (5x4=20)

1. Suppose  $\alpha \in \mathbb{Z}[i]$ , prove that  $\alpha$  is a unit in  $\mathbb{Z}[i]$  if and only if  $N(\alpha) = 1$ , hence reduce that the only units of  $\mathbb{Z}[i]$  are  $\pm 1, \pm i$ .
2. Suppose  $M_1 = \{1, \sqrt{3}\}$  and  $M_2 = \{5 + 17\sqrt{3}, 2 + 7\sqrt{3}\}$  and  $\Delta M_2$  and show that they are equal.
3. Find  $\theta_M$  for the module M associated with the form  $2x^2 + 3xy - y^2$ .
4. Suppose  $M_1$  and  $M_2$  are modules of  $\theta(\sqrt{d})$ . Prove that  $M_1 M_2$  is also a module of  $\theta(\sqrt{d})$ .
5. Define Coefficient ring of a module M. Prove that  $\theta_M$  is its own coefficient ring.

Section – BAnswer the following questions in not more than **FOUR** pages each: (5x10=50)

- 6 a) Define a Gaussian Prime. If  $\pi$  is a Gaussian integer such that  $N(\pi) = P$  a rational prime P such that  $\pi/p$ .  
(OR)  
b) State and Prove division algorithm for Gaussian Integers.
- 7 a) Suppose  $\alpha, \beta \in \theta(\sqrt{d})$ . Define  $\Delta(\alpha, \beta)$  the discriminant of  $\alpha$  and  $\beta$ . Also prove the following:
  - i)  $\Delta(\alpha, \beta)$  is a rational number
  - ii) if  $\alpha, \beta \in I_d$  then  $\Delta(\alpha, \beta)$  is rational integer.
  - iii)  $\alpha, \beta$  is a basis of  $\theta(\sqrt{d})$ , it and only if and only if  $\Delta(\alpha, \beta) \neq 0$ .
 (OR)  
b) Let M be a Subset of  $\theta(\sqrt{d})$  Prove that M is a module if and only if the following conditions holds.
  - i) M contains a basis of  $\theta(\sqrt{d})$
  - ii) if  $\theta, \xi \in M$  then  $0 \pm \xi \in M$
  - iii) There exist a rational integer K such that  $KM \leq I_d$ .
- 8 a) Let  $\alpha$  – be a non zero non-unit in  $I_d$  prove that  $\alpha$  can be written as a product of irreducible elements of  $I_d$ .  
(OR)  
b) Suppose that  $\theta_M = \{1, Lw_d\}$  with  $d > 0$  prove the following:
  - i) There exists infinite number of units in  $\theta_M$
  - ii) limits of  $\theta_M$  form a group
  - iii) For any real number  $B > 0$  there exists only finite number of units  $\epsilon$  such that  $1 < \epsilon < B$ . Hence prove that the fundamental unit exists.
- 9 a) Let M, A be such that  $M \subseteq A$  where  $A = \{\alpha, \beta\}$  Let  $a > 0$  be the least positive integer such that  $a\alpha \in M$ . Let  $b\alpha + c\beta$  be that element of M for which  $c > 0$  is as small as possible. Prove that  $M = \{a\alpha, b\alpha + c\beta\}$ .  
(OR)  
b) State and prove the fundamental factorization theorem.
- 10 a) State and prove unit theorem  $d < 0$ .  
(OR)  
b) i) Define sum of modules. Prove that sum of two modules is again a module.  
ii) If  $M_1$  and  $M_2$  belongs to  $\theta$ . Prove that  $M_1 + M_2$  has a coefficient ring containing  $\theta$ .

## FACULTY OF SCIENCE

M.Sc. (MATHEMATICS) III – SEMESTER REGULAR EXAMINATIONS, DEC-2017

## NUMERICAL TECHNIQUES

## PAPER – V (b)

Time: 3 Hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

Section – A

(5x4=20)

Answer the following questions in not more than **ONE** page each:

1. Write algorithm of Chebyshev method.
2. Find the value of 'a' for which the matrix:  $\begin{bmatrix} 2 & 2 & 0 \\ 3 & 8 & 5 \\ 1 & 6 & 10 \end{bmatrix}$  is positive definite.
3. Derive Everette's formula.
4. Explain Eulers method.
5. Find the rate of convergence for Secant method by deriving it.

Section – B

(5x10=50)

Answer the following questions in not more than **FOUR** pages each:

6. a) Write algorithm of bisection method and use it to find the smallest positive root of the equation  $f(x) = x^3 - 5x + 1 = 0$ .  
(OR)  
b) Explain Regula-falsi method and use it to find a real root of the equation  $f(x) = x - e^x = 0$ .
7. a) Solve  $10x_1 - x_2 + 2x_3 = 4$   
 $x_1 + 10x_2 - x_3 = 3$   
 $2x_1 + 3x_2 + 20x_3 = 7$   
Using Gauss elimination method.

(OR)

- b) Find the inverse of the matrix  $\begin{bmatrix} 1 & 2 & 1 \\ 2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$  using the Gauss-Jordan method.
8. a) Estimate the values of  $f(-0.5)$  and  $f(0.5)$  using the Hermite interpolation for the following values of  $f(x)$  and  $f'(x)$ .

$x$	$f(x)$	$f'(x)$
-1	1	-5
0	1	1
1	3	7

(OR)

- b) Determine constants  $a$  and  $b$  by the least square method such that  $y = ae^{bx}$ , for the following:

X	1.0	1.2	1.4	1.6
Y	40.170	73.196	133.372	243.02

9. a) Solve the initial value problem  $u' = -2tu^2, u(0) = 1$  with  $h = 0.2$  on the interval  $[0, 0.4]$  using predictor corrector method.

(OR)

- b) Evaluate  $\int_0^1 \frac{1}{1+x^2} dx$  by using trapezoidal rule when  $h = 0.5$  and  $h = 0.25$ .
10. a) Use Runge-Kutta 4<sup>th</sup> order method to find the value of  $y$  when  $x = 1$ , given that  $y = 1$  when  $x = 0$  and  $\frac{dy}{dx} = \frac{y-x}{y+x}$ .

(OR)

- b) Derive Lagranges interpolation formula and use it to the form of the function  $y(x)$  from the following:

X	0	1	3	4
$f(x)$	-12	0	12	24

FACULTY OF SCIENCES  
MCA III – SEMESTER REGULAR EXAMINATIONS, DEC- 2017  
**OPERATIONS RESEARCH**  
**PAPER – V**

Time: 3 hours]

[Max. Marks: 70

Note: Answer all questions from Section – A and Section – B

**Section – A**Answer the following questions in not more than **ONE** page each:

(5x4=20)

1. Define slack variables and surplus variable in Linear Programming problem.
2. Define Feasible solution, Basic feasible solution, Non-degenerate Basic feasible solution in transportation problem.
3. Explain briefly cutting plane algorithm.
4. Explain state variable, recursive function, best recursive function, backward recursive function.
5. Define two-person zero sum game, optimal strategy, pure strategy.

**Section – B**Answer the following questions in not more than **FOUR** page each:

(5x10=50)

6. (a) Using Big-M Method solve the LPP.

Minimize  $Z = 2X_1 + 5X_2$

Subject to the constraints

$X_1 + 4X_2 \leq 24$

$3X_1 + X_2 \leq 21$

$X_1 + X_2 \leq 9$

$X_1, X_2 \geq 0$

(OR)

- (b) Solve the LPP.

Maximize  $Z = 5X_1 - 2X_2 + 3X_3$

Subject to the constraints

$2X_1 + 2X_2 - X_3 \geq 2$

$3X_1 - 4X_2 \leq 3$

$X_1 + 3X_3 \leq 5$

$X_1, X_2, X_3 \geq 0$

7. (a) Find the initial basic feasible solution to the following transportation problem using North West corner rule.

						Availability
	4	3	1	2	6	80
	5	2	3	4	5	60
	3	5	6	3	2	40
	2	4	4	5	3	20
Requirement	60	60	30	40	20	

(OR)

- (b) Find the optimal solution for the following transportation problem.

	Destinations				
	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
O <sub>1</sub>	6	4	1	5	14
O <sub>2</sub>	8	9	2	7	16
O <sub>3</sub>	4	3	6	4	5
Required	6	10	15	4	

[PTO]

8. (a) Maximize by Branch and Bound Technique

$$Z = 7X_1 + 9X_2$$

Subject to

$$-X_1 + 3X_2 \leq 6$$

$$7X_1 + X_2 \leq 35$$

$$0 \leq X_1, X_2 \leq 7$$

$X_1, X_2$  are integers.

**(OR)**

(b) Find the optimal solution of the Assignment Problem

	I	II	III	IV
A	5	3	1	8
B	7	9	2	6
C	6	4	5	7
D	5	7	7	6

9. (a) Minimize  $y_1^2 + y_2^2 + y_3^2$   
Subject to  $y_1 + y_2 + y_3 = 10$   
 $y_1, y_2, y_3$  are non-negative integers.

**(OR)**

(b) Solve LPP by the method of dynamic programming

$$\text{Maximize } Z = 2X_1 + 5X_2$$

$$\text{Subject to } 2X_1 + X_2 \leq 430$$

$$2X_2 \leq 460$$

$$X_1, X_2 \geq 0$$

10. (a) Solve the following game.

	B <sub>1</sub>	B <sub>2</sub>
A <sub>1</sub>	30	2
A <sub>2</sub>	4	14
A <sub>3</sub>	6	9

**(OR)**

(b) Explain the method to solve  $2 \times n$  game graphically.

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