Number of new courses introduced

2020-21

Maharaja Ganga Singh University

A State University of Higher Education for Dignity and Self-Reliance
Approved by UGC under Section 12B of the UGC Act 1956

NH 15, Jaisalmer Road, Bikaner-334004 (Raj.) India
https://mgsubikaner.ac.in/

New Courses Introduced in Academic Section 2020-21

This is to certified that –

1. The syllabus of M.Sc. Cyber Security was implemented with 100% change. The minutes of Board of Studies (Computer Science) are attached herewith as support documents.
2. MA (Drawing & Painting) programme was newly introduced in session 2020. The office order regarding this is attached as supporting document.

The list of newly introduced courses (in above two courses) in the university campus are as follows-

S.No.	Name of the Course	Course Code	Year of introduction
1	Mathematical Foundation for Cyber Security	MCSEC101	**2020**
2	Cyber Crime, Cyber Laws and IPR	MCSEC 102	**2020**
3	Computer Networks	MCSEC103	**2020**
4	C++ and Data Structures	MCSEC 104	**2020**
5	Combined Practical	MCSEC 105	**2020**
6	Information Security and Cryptography	MCSEC 201	**2020**
7	Ethical Hacking	MCSEC 202	**2020**
8	DBMS	MCSEC 203	**2020**
9	Python	MCSEC 204	**2020**
10	Combined Practical	MCSEC 205	**2020**
11	Cyber Forensics, Audit and Investigation	MCSEC 301	**2020**
12	Biometric Security	MCSEC 302	**2020**
13	Wireless LAN and Mobile Computing	MCSEC 303	**2020**
14	Operating Systems	MCSEC 304	**2020**
15	Combined Practical	MCSEC 305	**2020**
16	Malware Analysis	MCSEC 401	**2020**

17	Mobile and wireless security	MCSEC 402	**2020**
18	Intrusion Detection and Prevention Systems	MCSEC 403	**2020**
19	Combined Practical	MCSEC 405	**2020**
20	Brief Studies of Eastern and Western Aesthetics	Paper I	**2020**
21	History of Indian Arts	Paper II	**2020**
22	Practical Paper(a) Landscape Painting	Practical Paper(a)	**2020**
23	Practical Paper (b) Portrait Painting Painting	Practical Paper (b)	**2020**
24	Practical Paper (C) Print Making	Practical Paper (C)	**2020**
25	History & Philosophy of Modern Art	Paper III	**2020**
26	Art in Education & Society	Paper IV	**2020**
27	History of Western Art	Paper V	**2020**
28	Study from life (Full figure)	Practical Paper (D)	**2020**
29	Graphic (Etching or Litho Serigraph)	Practical Paper (E)	**2020**
30	Composition	Practical Paper (F)	**2020**

REGISTRAR
M.G.S. UNIVERSITY
BIKANER

महाराजा गंगा सिंह विश्वविद्यालय, बीकानेर

दूरभाष: 0151-2970177 ई-मेल: registrar@mgsubikaner.ac.in

प.7(112)मगंसिविवी/शैक्षणिक/विद्या.परिषद-19/2020/ 10238 दिनांक : 17/7/2020

कार्यालय आदेश

विद्या परिषद् की 19वीं बैठक दिनांक 29 जून, 2020 के विनिर्णय संख्या 08 की पालना में राज्य सरकार द्वारा स्वीकृत नवीन विभाग यथा वाणिज्य एवं प्रबन्धन, भूगोल एवं फाइन आर्ट्स (ड्राइंग एण्ड पेन्टिंग) को सत्र 2020-21 से प्रारम्भ करने की स्वीकृति प्रदान की जाती है।

(A) वाणिज्य एवं प्रबन्धन विभाग में प्रथमतः आगामी सत्र 2020-21 से स्नातकोत्तर स्तर पर व्यवसायिक प्रशासन विषय एवं प्रबन्धन विषय प्रारम्भ किये जाएंगे। आगामी सत्रों से ए. बी.एस.टी. एवं ई.ए.एफ.एम. पाठ्यक्रम प्रारम्भ करने की सैद्धान्तिक सहमति प्रदान की जाती है।

(B) भूगोल विभाग में स्नातकोत्तर स्तर पर भूगोल विषय प्रारम्भ किया जाएगा।

(C) फाइन आर्ट्स (ड्राइंग एण्ड पेन्टिंग) विभाग में पाठ्यक्रम प्रारम्भ करने के लिए सुझाव प्रस्तुत करने हेतु निम्नानुसार समिति गठित करने की निर्णय लिया गया :-

1. प्रो. सुरेश कुमार अग्रवाल-संकायाध्यक्ष कला
2. डॉ. इन्द्रसिंह राजपुरोहित - संयोजक चित्रकला
3. डॉ. राकेश हर्ष,प्रतिनिधि, शासन सचिव, उच्च शिक्षा
4. विशेष आमंत्रित विषय विशेषज्ञ
5. उप कुलसचिव, शैक्षणिक - सदस्य सचिव

समिति शीघ्रातिशीघ्र रिपोर्ट माननीय कुलपति महोदय को प्रस्तुत करेगी।

(भंवर सिंह चारण)
कुलसचिव

दिनांक :

प.7(112)मगंसिविवी/शैक्षणिक/विद्या परिषद-19/2020/

प्रतिलिपि : निम्नलिखित को सूचनार्थ एवं आवश्यक कार्यवाही बाबत -

1. निजी सचिव-कुलपति, महाराजा गंगा सिंह विश्वविद्यालय, बीकानेर।
2. निजी सहायक-कुलसचिव/वरि. निजी सहायक-वित्त नियंत्रक, महाराजा गंगा सिंह विश्वविद्यालय, बीकानेर।
3. समस्त सदस्यगण को पालनार्थ।
4. निदेशक-शोध, महाराजा गंगा सिंह विश्वविद्यालय, बीकानेर
5. परीक्षा नियंत्रक, महाराजा गंगा सिंह विश्वविद्यालय, बीकानेर
6. सहायक कुलसचिव, संस्थापन, महाराजा गंगा सिंह विश्वविद्यालय, बीकानेर
7. रक्षित पत्रावली।

(डॉ. बिट्ठल बिस्सा)
उप कुलसचिव, शैक्षणिक

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महाराजा गंगा सिंह विश्वविद्यालय
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A meeting of Board of Studies/ Committee of Courses in Computer Science. Was held on 18/02/2020. Following members were present at the meeting :

1. Dr. Subhash Panwar
2. DR. Narpat Singh Shekhawat.
3. Dr. Jyoti Saraswat (Convener)
4. Amresh Kumar — 18.2.2020
5.
6.
7.

MINUTES OF THE MEETING

1. The syllabus of BA/BCom/BSc vocation computer, MSC(CS) Annual system, MSc(CS) Semester system, BCA, PGDCA, MSc. (Cyber-Security), MSc(LE), MSc (IT) and Elementary Computer has been reviewed and revised as follows -

① BA/BCom/BSc vocational computer - No change

② BCA - BCA-105 paper is replaced with new paper and contents of BCA-103, BCA-109 (NAME Changed), BCA-203, BCA-206(A) and BCA 304(B) is changed.

③ MSC (Comp. Sc.) Annual System - Contents of MCS-102 and MCS-204(C) is changed.

④ MSc (IT) - No Change

⑤ MSC. CS (LE) - Contents of MCSLE-104 is changed.

⑥ PGDCA - Shuffling of PGDCA-106 to theory and contents of PGDCA-102 is changed.

⑦ MSC.(CS) Semester System - MCS-104, MCS-202(A) & MCS-202(B), MCS-402(A) contents changed.

⑧ MSc (Cyber security) - Completely changed.

⑨ Elementary Computer - also change

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M.Sc. Computer Sc. (Cyber Security)
Session 2020-21
Examination 2021-22

ELIGIBILITY FOR ADMISSION

Graduates possessing 50% marks in any faculty of any statutory university who have studied Computer Science/ Computer Application as a main or vocational subject for three years shall be eligible for admission to the M.Sc. Cyber Security Course (Relaxation to SC/ST etc. as per Prevailing Rules)

PASS CRITERIA

For passing in the examination, a candidate is required to obtain at least 25% in each paper (Internal + External) and 36% marks in the total aggregate in theory and 36% marks in practical separately (in each semester examination).

CLASSIFICATION OF SUCCESSFUL CANDIDATES

As per university norms

Scheme of Examination

1. English shall be the medium of instructions and examination.
2. Examinations shall be conducted at the end of course as per the Academic Calendar notified by the Maharaja Ganga Singh University of Bikaner.

Instructions for Paper setters

3. The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).
4. The word limit of part A, B and C are 50, 200 and 500 respectively

4.1 The duration of written examination for each paper shall be of three hours and Practical examination shall be for 3 hours duration.

4.2 The minimum attendance required by a candidate will be as per university rules.

5. With regard to dissertation/project/training, the scheme of evaluation shall be as follows:

5.1.1 The candidate has to submit a dissertation in a bound form in three copies at the end of course which would be evaluated by an external examiner. Total marks for dissertation shall be 50 (40 external + 10 internal marks).

5.1.2 The dissertation/case study/project/training/review will be evaluated at the end of course by an external examiner.

5.1.3 Students are advised to complete dissertation/project/training (Review or experimental) preferably in some outside research institute or industry or otherwise in the University.

6. An educational tour may be organized for students within or outside the State under the supervision of faculty members of the department. Traveling expenses of the teacher/s will be borne by the university as per rules.

Teaching and Examination scheme for
M.Sc. Cyber Security
Semester I

Paper Code	Paper Name	Exam Hours	Maximum Marks		Minimum passing Marks
			Internal Marks	External Marks	
MCSEC 101	Mathematical Foundations for Cyber Security	3	10	40	13
MCSEC 102	Cyber Crime, Cyber Laws and IPR	3	10	40	13
MCSEC 103	Computer Networks	3	10	40	13
MCSEC 104	C++ and Data Structures	3	10	40	13
MCSEC 105	Combined Practical	3	25	75	36
Grand Total(Theory+ Practical)				**300**	

Teaching and Examination scheme for
M.Sc. Cyber Security
Semester II

Paper Code	Paper Name	Exam Hours	Maximum Marks		Minimum passing Marks
			Internal	External	
MCSEC 201	Information Security and Cryptography	3	10	40	13
MCSEC 202	Ethical Hacking	3	10	40	13
MCSEC 203	DBMS	3	10	40	13
MCSEC 204	Python	3	10	40	13
MCSEC 205	Combined Practical	3	25	75	36
Grand Total(Theory+ Practical)				**300**	

Teaching and Examination scheme for
M.Sc. Cyber Security
Semester III

Paper Code	Paper Name	Exam Hours	Maximum Marks		Minimum passing Marks
			Internal	External	
MCSEC 301	Cyber Forensics, Audit and Investigation	3	10	40	13
MCSEC 302	Biometric Security	3	10	40	13
MCSEC 303	Wireless LAN and Mobile Computing	3	10	40	13

MCSEC 304	Operating Systems	3	10	40	13
MCSEC 305	Combined Practical	3	25	75	36
Grand Total(Theory+ Practical)				**300**	

Teaching and Examination scheme for
M.Sc. Cyber Security
Semester IV

Paper Code	Paper Name	Exam Hours	Maximum Marks		Minimum Passing Marks
			Internal	External	
MCSEC 401	Malware Analysis	3	10	40	13
MCSEC 402	Mobile and wireless security	3	10	40	13
MCSEC 403	Intrusion Detection and Prevention Systems	3	10	40	13
MCSEC 404	Project/Dissertation	3	10	40	13
MCSEC 405	Combined Practical	3	25	75	36
Grand Total(Theory+ Practical)				**300**	

Note:

Instructions for Paper setters

1. The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).
2. Each practical exam is to be conducted by two examiners one External and one Internal. External examiner should be senior lecturer from jurisdiction of other universities. Marks distribution for Practical of 40 marks is as under
   a) Practical Examination exercise of 3 questions 30 marks
   b) Viva-Voce 5 marks
   c) Laboratory Exercise File 5 marks
3. Marks distribution for Project of 40 marks is as under
   a. External Evaluation-
      i. Project Dissertation 30 marks
      ii. Presentation 5 marks
      iii. External Viva Voce 5 marks
   b. Internal Evaluation- Dissertation 10 marks
4. The student has to complete two months career oriented summer training from any firm/organization. If the student does not get a chance to go for training, he/she can choose a research topic and can complete dissertation under the supervision of any of the faculty in his college.
5. The student who has opted training, has to provide a signed certificate from the firm/ organization authority stating that the student has spent two months as a trainee in his organization/firm. The student who has opted for dissertation, has to submit his/her dissertation report with a certificate from his supervisor.
6. In both the cases a student has to present his work in front of all the faculty members and fellow students at the starting of the next session.
7. At least 3 hours for lectures and one hour for tutorial should be allotted per week for each theory paper.
8. A slot of at least 2 hours per week should be allotted for each practical paper.

Duration: 3 Hours | Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-101 Mathematical Foundations for Cyber Security

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Note: Scientific Calculator may be allowed in the examination.

Unit I

Overview of Sets, Basics of counting, Permutations and Combinations, Relations-equivalence and partial orders. Concept of time complexity and asymptotic notations . **Graph Theory**: Euler graphs, Hamiltonian paths and circuits, planar graphs, rooted and binary trees, cut sets, graph colorings and applications, chromatic number, chromatic partitioning and polynomial, matching.

Unit II

Analytic Number Theory: Prime numbers, Euclid's lemma, Euclidean algorithm, basic properties of congruences, residue classes and complete residue systems, Euler-Fermat theorem, Lagrange's theorem and its applications, Chinese remainder theorem, primitive roots. Algebra: groups, cyclic groups, rings, fields, finite fields, lattices and their applications to cryptography.

Unit III

Linear Algebra: vector spaces and subspaces, linear independence, basis and dimensions, linear transformations and applications. **Probability theory**: basics, conditional probability, Bayes theorem, random variables – discrete and continuous, normal probability distribution, central limit theorem, stochastic process, Markov chain. **Coding Theory**: equivalence of codes, linear codes. Overview of Pseudorandom Number Generation.

Suggested Readings:

1. Discrete Mathematics and its applications by K. H. Rosen, seventh edition, TMH
2. Ivan Niven, Herbert S. Zuckerman, and Hugh L. Montgomery, 'An introduction to the theory of numbers', John Wiley and Sons 2004.
3. Douglas Stinson, 'Cryptography – Theory and Practice', CRC Press, 2006.
4. Sheldon M Ross, "Introduction to Probability Models", Academic Press, 2003.
5. H. Anton, "Elementary Linear Algebra", John Wiley & Sons, 2010.
6. C.L. Liu, 'Elements of Discrete mathematics', McGraw Hill, 2008.
7. Fraleigh J. B., 'A first course in abstract algebra', Narosa, 1990.
8. Joseph A. Gallian, ''Contemporary Abstract Algebra', Narosa, 1998.
9. D.S. Malik, J. Mordeson, M.K.Sen, Fundamentals of abstract algebra,TataMcGrawHill

Minimum Passing Marks: 13

MCSEC-102 Cyber Crime, Cyber Laws and IPR

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Introduction to cyber crime and cyber law, cyberspace and information technology, Nature and scope of cyber crime, Jurisdiction of cybercrime. Important definitions under IT Act 2000, Cyber crime issues: unauthorized access, White collar crimes, viruses, malwares, worms, Trojans, logic bomb, Cyberstalking, voyeurism, obscenity in internet, Software piracy

Unit II

IT Act 2000, offences under IT Act and IT(amendment) Act, 2008. CRPC overview, Role Of Intermediaries, Electronic Evidence, Cyberterrorism, espionage, warfare and protection system. Overview of amended laws by the IT Act, 2000: The Indian Penal Code, 1860, The Reserve Bank of India Act 1934, Cyber Theft and the Indian Telegraph Act,1885. Digital Signatures and certificate-legal issues.

Unit III

Intellectual Property rights: Introduction to IP, Copyright, Related Rights, Trademarks, Geographical Indications, Industrial Design, Patents, Licensing and transfer of technology, WIPO Treaties , CopyrightsAct, PatentsAct, Trademark Act.

Suggested Readings:

1. Cyber Security, Cyber Crime and Cyber Forensics: Applications and Perspectives, Raghu Santanam, M. Sethumadhavan, Information Science Reference.
2. Pfleeger, Charles P.and ShariL. Pfleeger.Security in Computing, 4th Edition. Upper Saddle River, NJ:Prentice Hall,2008.
3. Cyber crime:Security and Surveillance in the Information Age,Douglas Thomas; Brian Loader.
4. Computer Crime:A Crime-Fighters Handbook by David Icove.
5. Crime in the Digital Age: Controlling Telecommunications and Cyber space Illegalities,Peter N. Grabosky.
6. Cyber law–The Indian Perspective By Pavan Duggal,Saakshar Law Publications.
7. Jonathan Rosenoer,“Cyber Law:The law of the Internet”, Springer-Verlag, 1997.
8. Mark F Grady,Fransesco Parisi,“The Law and Economics of Cyber Security”,Cambridge University Press,2006.

Duration: 3 Hours Maximum Marks: 50

Minimum Passing Marks: 13

MCSEC-103 Computer Networks

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Introductory Concepts: Goals and Applications of Networks, Network structure and architecture, the OSI reference model, services, networks topology. Physical Layer: The Physical Layer, Theoretical Basis for Data Communication, Guided Transmission Media, Wireless Transmission, Overview of Digital Signal Encoding Formats, Digital Modulation – ASK, FSK, PSK, PSK, Digitization – Sampling Theorem, PCM, DM, Analog Modulation – Introducing AM, FM, PM, The Mobile Telephone System.

Unit II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correlation, Flow Control Protocols, Stop-and-wait Flow Control, Sliding – Window Flow Control, Error Control, Stop-and-wait ARQ, Go-back-N; Example of Data Link Protocols-HDLC Medium access sub layer: Channel allocations, ALOHA Protocols, Carrier Sense Multiple Access Protocols, Ethernet, wireless LANs, BlueTooth, Data Link Layer Switching.

Unit III

Network Layer: Point-to-Point network, routing algorithms, congestion control, internetworking, Quality Control, Internetworking, The Network Layer in the Internet, IP packet, IP addresses, IPv6. Transport Layer: Design Issue, connection management, TCP window management, User Datagram Protocol, Transmission Control Protocol, Performance Issues. Application Layer: DNS, E-Mail, WWW, Multimedia, application layer protocols.

Suggested Readings

1. Forouzan, “Data Communication and Networking”, TMH, 4th Edition.

2. A.S. Tanenbaum, “Computer Networks”, PHI, 4th Edition.

3. W. Stallings, “Data and Computer Communication”, Macmillan Press.

4. Comer, “Computer Networks and Internet”, PHI. 5.Comer, “Internetworking with TCP/IP”, PHI.
5. W. Stallings, “Data and Computer Communication”, McMillan.

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-104 C++ and Data Structures

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Basics : Overview of OOPs, if-else statements, loops (for, while). **Functions** : Overview, passing arguments by value and reference, recursive function, pointers. **Arrays**: Overview, array and function, array and pointers. **Class**: Overview, static data members, Inline Function, Constructors and Destructors.

Unit II

Inheritance: usage, types, compile time and run time polymorphism, overloading and overriding, virtual function, friend function, abstract class. String handling, String class, Overview of Templates. **Searching**: Linear Search, Binary Search. **Sorting:** Insertion Sort, Quick sort.

Unit III

Algorithm: Time and Space complexity of Algorithm. **Overview and applications of abstract data types:** Linked List, Stack, Queue. **Trees :** Basic terminologies. **Binary Tree** : Representation as Array, Basic operations, **Tree Traversal** : Inorder, Preorder, Postorder, Application of Binary Tree.

Suggested Readings

1. Object Oriented Programming With C++ By E. Balagurusamy (Tata Mcgraw Hill)
2. C++ The Complete Reference By Herbert Schildt (Tata Mcgraw Hill)
3. Object Oriented Programming With C++ By Schaum Series (Tata Mcgraw Hill)
4. C++11 for Programmers (Deitel Developer) by Paul J. Deitel (Author), Harvey M. Deitel, Prentice Hall; 2nd edition
5. Professional C++ by Marc Gregoire, Nicholas A. Solter and Scott J.Kleper (Goodreads Publications)
6. A Tour of C++ by Bjarne Stroustrup, 2018
7. C++17 in Detail by Bartłomiej Filipek
8. Expert Data Structure with 'C' By R.B Patel (Khana Book Publishing Co.(P))
9. Data structure By Lipschutz (Tata McGraw Hill)
10. Data Structure By Yashvant Kanitkar (BPB)
11. An Introduction to Data Structures with Applications By Jean-Paul Tremblay, Paul G.Sarerson (Tata McGraw Hill)

12. Data Structure Using C and C++ By Yedidyah Langsam, Moshe J.Augenstein, Arora M. Tenenbaum (Prentice- Hall India)

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-201 Information Security and Cryptography

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Information Security: Introduction, CNSS Security Model, Components of Information System, Approaches to Information Security Implementation, The Security Systems Development Life Cycle. **Cryptography**: Concept, traditional ciphers like Caesar, Substitution, Vigenere, Transposition.

Unit II

Symmetric key Ciphers: Concept and Types, Structure and analysis of DES, Security of DES, Structure and analysis of AES. **Asymmetric key Ciphers**: Concept of public key cryptosystems, RSA algorithm, Diffie-Hellman Key exchange. **Message Authentication and Hash Functions:** Authentication requirements and functions, MAC and Hash Functions.

Unit III

MAC Algorithms: Secure Hash Algorithm, Digital signatures, Kerberos. Concept and applications of IPSec, SSL, TLS, SET, PGP and S/MIME. Concept of steganography. **Cryptanalysis:** Concept, Linear Cryptanalysis, Differential Cryptanalysis.

Suggested Readings:

1. Principles of Information Security : Michael E. Whitman, Herbert J. Mattord, CENGAGE Learning, 4th Edition.
2. Cryptography and Network Security : William Stallings, Pearson Education, 4th Edition.
3. Cryptography and Network Security : Forouzan Mukhopadhyay, McGraw Hill, 2nd Edition.

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-202 Ethical Hacking

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Section I

Introducing Hacking, Different types of hacking, Phases of hacking, Installation and configuration of Kali Linux, Overview of directory structure, Usage of basic commands; Malwares – Virus , Worms, Trojan; Information gathering using NMAP and ZenMAP .

Section II

Metasploit: Exploiting System Software and Privilege, Metasploit Social Engineering Attack. Working and Network analysis with Wireshark , Network and web scanning about target , Packet captures and man-in-the-Middle attacks. Hacking using different social Engineering techniques.

Section III

DoS and DDoS attacks, Hardware hacking, Hijack sessions, Hacking web servers, Website Hacking , SQL Injection and SQLMAP, Database assessment , Router and Wi-Fi attacks, different types of password attacks, phishing attacks.

Suggested Readings:

1. Basic Security Testing with Kali Linux, by Daniel Dieterle, freely available online.

2. Gray Hat Hacking The Ethical Hacker's Handbook, Branko Spasojevic, TMH, 2018.

2. Ethical Hacking and Penetration Testing Guide, by Rafay Baloch , Auerbach Publications.

3. Kali Linux Revealed,by Raphaël Hertzog, JimO'Gorman, and Mati Aharoni, offsec press,https://kali.training/downloads/Kali-Linux-Revealed-1st-edition.pdf

5. Kali Linux - An Ethical Hacker's Cookbook, by Himanshu Sharma , Packt Publishing Limited

Web resources:

1. https://nptel.ac.in/courses/106/105/106105217/

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-203 DBMS

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Introduction: Characteristics of database approach, Advantages, Database system architecture, Overview of different types of Data Models and data independence, Schemas and instances, Database languages and interfaces; **E-R Model** : Entities, Attributes,keys, Relationships, Roles, Dependencies, E-R Diagram; Normalization: Definition, Functional dependencies and inference rules, 1NF, 2NF, 3NF and BCNF.

Unit II

Introduction to Relational model, Constraints: Domain, Key, Entity integrity, Referential integrity; Keys: Primary, Super, Candidate, Foreign; **Relational algebra**: select, project, union, intersection, minus, cross product, different types of join , division operations; aggregate functions and grouping**; SQL**: Data Types, statements: select, insert, update,delete, create, alter, drop; views, SQL algebraic operations, nested queries; Stored procedures: Advantages, Variables, creating and calling procedures, if and case statements, loops, Cursors, Functions, Triggers.

Unit III

Transactions processing: Definition , desirable properties of transactions, serial and non-serial schedules ,concept of serializability , conflict-serializable schedules; **Concurrency Control:** Two-phase locking techniques, dealing with Deadlock and starvation, deadlock prevention protocols, basic timestamp ordering algorithm; Overview of database recovery techniques; concept of data warehousing.

Suggested Readings:

1. Fundamentals of Database Systems,Ramez A. Elmasri, Shamkant Navathe,5th Ed(Pearson)

2. Database System Concepts By Korth, Silberschatz, Sudarshan (Mcgraw Hill)

3. An Introduction to Database Systems By Bipin C. Desai (Galgotia Publication.)

4. SQL, PL/SQL Programming By Ivan Bayross (BPB)

5. Commercial Application Development Using Oracle Developer 2000 By Ivan Bayross (BPB)

Web Resources

1. http://www.mysqltutorial.org/mysql-stored-procedure-tutorial.aspx

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-204 Python

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Basics: Python Interpreter, writing code in Jupyter Notebook, Indentation, comments, importing a module, binary operators, standard scalar data types, type casting, if-else statements, loops(while, for), pass, range, ternary expressions. Data Structures and Sequences: Tuples, Lists and slicing, Built-in Sequence functions, Dictionary, Sets; List, Set, and Dict Comprehensions.

Unit II

Functions: Namespaces, Scope, and Local Functions; Returning Multiple Values, Anonymous (Lambda) Functions, Partial Argument Application, Generators, Errors and Exception handling. Basic File Handling. Objects and Methods in Python. NumPy: creating N-dimensional arrays, arithmetic with NumPy arrays, basic indexing and slicing, Psuedorandom number generation.

Unit III

Pandas: Overview of Series and DataFrames, reading data from csv file, DataFrame operations- working with data using functions like head, tail , info, shape, reshape, columns, isnull, dropna, mean, sum, describe, value_counts, corr, loc, iloc, apply. Matplotlib- plotting basic figures, subplots, line plots, bar plots, histograms, scatter plots. Overview of Scikit-learn, SciPy, networkx. Applications of python.

Suggested Readings:

1. Python for Data Analysis: Data Wrangling with Pandas, NumPy, and Ipython, by Wes McKinney, O'Reilly Media, 2017
2. Python All-in-One for Dummies, by John Shovic and Alan Simpson, John Wiley & Sons, Inc., 2019
3. Programming in Python 3: A Complete Introduction to the Python Language, Mark Summerfield, Pearson.
4. Swaroop, C. H. (2003). A Byte of Python. Python Tutorial.
5. Introduction to Computation and Programming Using Python. By John V. Guttag, MIT Press.
6. Learning Python , Mark Lutz, David Ascher, O'Reilly
7. T. Budd, Exploring Python, TMH, 1st Ed, 2011

Web Resources

1. https://www.learnpython.org/
2. https://nptel.ac.in/courses/106/106/106106212/
3. http://greenteapress.com/thinkpython/thinkpython.pdf
4. Python tutorial: https://docs.python.org/3/tutorial/index.html

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-301 Cyber Forensics, Audit and Investigation

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Filesystem: CHS, LBA, HPA, write blockers, Extracting & recovering partitions, MBR, DOS partition table, Extended partition table, RAID; NTFS file system:Architecture, File creation,File deletion, Compression, encryption and indexing; Extended file systems: EXT4, Architecture, File creation, File deletion and Journaling; Other Disk structures; Windows and Linux boot process;File system acquisition and recovery.

Unit II

Windows Forensic Analysis: Window artifacts, Evidence volatility,System time, Logged on user(s), Open files, MRUs, Network information, Process information, Service information, Windows Registry, Startup tasks, Memory dumping; Document Forensics:PDF structure,PDF analysis, MS Office Document structure and analysis, Macros, Windows thumbnails.

Unit III

Mobile Forensics: SIM Card, Android architecture, Android File System, Android application; Virtual Machines, Network Forensics; Cyber crime investigation: Pre investigation,SOP for Investigation; Case scenarios:social media crime, Email investigation; CDR Analysis. Auditing: Internal Audit and IT Audit Function, IT Governance, Frameworks, Standards, and Regulations, Identifying information assets, Risk assessment and management.

Suggested Readings:

1. Computer Evidence-Collection and Preservation. Brown,C.L.T. Course Technology Cengage Learning.
2. Guide to Computer Forensics And Investigations Nelson, Bill; Phillips, Amelia; Enfinger,Frank;Steuat,Christopher Thomson Course Technology.
3. Computer Forensics–Computer Crime Scene Investigation. Vacca, John R. Charles River Media
4. Bunting, Steveand William Wei.EnCase Computer Forensics:The Official EnCE: EnCase Certified Examiner Study Guide.Sybex, 2006
5. Incident Response: Computer Forensics, Prosise, Chris, Kevin Mandia, and Matt Pepe, McGraw-Hill,2014
6. IT Security Risk Control Management:An Audit Preparation Plan,Raymond Pompon,Apress 2016
7. Carrier, Brian.File System Forensic Analysis. Addison- Wesley Professional.

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-302 Biometric Security

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Biometrics: Introduction, benefits of biometrics over traditional authentication systems, benefits of biometrics in identification systems, selecting a biometric for a system, Applications, Key biometric terms and processes, biometric matching methods, Accuracy in biometric systems.

Unit II

Physiological Biometric Technologies: Fingerprints- characteristics, strengths and weaknesses; Facial scan- characteristics, strengths and weaknesses; Iris scan- characteristics, strengths and weaknesses; Retina vascular pattern- characteristics, strengths and weaknesses; Hand scan - characteristics, strengths and weaknesses; DNA biometrics.

Unit III

Behavioral Biometric Technologies: Handprint Biometrics, overview of DNA Biometrics. Signature and handwriting technology- description, classification, keyboard/keystroke dynamics; Voice- data acquisition, feature extraction, characteristics, strengths and weaknesses. Multi biometrics and multi factor biometrics.

Suggested Readings:

1. Samir Nanavathi, Michel Thieme, and Raj Nanavathi : "Biometrics -Identity verification in a network", 1st Edition, Wiley Eastern, 2002.
2. John Chirillo and Scott Blaul :"Implementing Biometric Security", 1st Edition, Wiley Eastern Publication, 2005.
3. John Berger: "Biometrics for Network Security", 1st Edition, Prentice Hall, 2004.
4. Paul Reid, Biometrics for network security, Hand book of Pearson, 2004

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-303 Wireless LAN and Mobile Computing

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Wireless Networks: Introduction, Architecture, Wireless SwitchingTechnology, Wireless Communication problem, Wireless Network Reference Model, Wireless, Wireless LAN: Infrared vs radio transmission, Infrastructure and Ad-hoc Network, IEEE 802.11:System Architecture,Protocol Architecture, 802.11b, 802.11a, Bluetooth: User Scenarios, Architecture.

Unit II

Global System for Mobile Communications (GSM): Mobile Services, SystemArchitecture, Protocols, Localization & Calling, Handover, Security. GPRS: GPRS System, Architecture, UMTS: UMTS System Architecture. LTE: Long Term Evolution. Mobile Computing: Mobile communication, Mobile computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Mobility Management;

Unit III

Mobile Network Layer: Mobile IP: Goals, Assumptions, Entities and Terminology, IP Packet Delivery, Agent Discovery, Registration, Tunneling and Encapsulation, Optimizations, DHCP. Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP, TCP over 2.5G/3G Wireless Networks.

Suggested Readings:

1. Schiller, J. 2008. Mobile Communications. 2nd ed. India: Pearson Education.
2. Kumar,S. and Kakkasageri, M.S. “Wireless and Mobile Networks: Concepts and Protocols”, Wiley India.
3.Kamal R. 2011. “Mobile Computing”, 2ndEd.Oxford University Press.
4. Talukder, A. K., Ahmed, H. andYavagal,R.R. 2010.Mobile Computing: Technology, Applications and Service Creation, 2ndEd. Tata McGraw Hill
5.Gast, M.S. “802.11 Wireless Networks: The Definitive Guide”, O'Reilly Media.

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-304 Operating Systems

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Introduction to Operating System, layered Structure, Functions, Types; Process: Concept, Process States, PCB; Threads, System calls; Process Scheduling: types of schedulers, context switch, CPU Scheduling, Pre-Emptive Scheduling, Scheduling Criteria- CPU Utilization, Throughput, Turnaround Time, Waiting Time, Response Time; Scheduling Algorithms- FCFS, SJF, Priority Scheduling, Round Robin Scheduling, MLQ Scheduling, MLQ With Feedback.

Unit II

Synchronization: Critical Section Problem, Requirements for a solution to the critical section problem; Semaphores,simple solution to Readers-Writers Problem. Deadlock: Characterization, Prevention, Avoidance, Banker's Algorithm, Recovery from Deadlock. Memory Management: Physical and virtual address space, Paging, Overview of Segmentation;Virtual Memory Management: Concept,Page Replacement techniques- FIFO, LRU, Optimal

Unit III

Linux:features of Linux, steps of Installation, Shell and kernel, Directory structure, Users and groups,file permissions, commands- ls, cat, cd, pwd, chmod, mkdir, rm, rmdir, mv, cp, man, apt, cal, uname, history etc. ; Installing packages; Shell scripts: writing and executing a shell script,shell variables, read and expr, decision making (if else,case), for and while loops.

Suggested Readings

1. Operating System Principles By Abraham Silberschatz, Peter Baer Galvin (John Wiley And Sons Inc.)
2. Operating System Concepts And Design By Milan Milen Kovic (Tata Mcgraw Hill)
3. Modern Operating System Andrew S. Tanenbaum, Herbert Bos
4. Linux in easy steps, Mike McGrath, in easy steps limited
5. Unix concepts and applications , TMH, Sumitabha Das

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-401 Malware Analysis

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Introduction to malware, Types of malwares, Basic Static and Dynamic Analysis, Overview of Windows file format, PEView.exe, Patching Binaries , Disassembly(objdump, IDA Pro), Introduction to IDA, Introduction to Reverse Engineering, Extended Reverse Engineering using GDB and IDA;

Unit II

Advanced Dynamic Analysis - debugging tools and concepts, Malware Behavior - malicious activities and techniques, Analyzing Windows programs – WinAPI, Handles ,Networking , COM, Data Encoding, Malware Countermeasures , Covert Launching and Execution, Anti Analysis - Anti Disassembly, VM, Debugging;

Unit III

Packers – packing and unpacking, Intro to Kernel – Kernel basics, Windows Kernel API, Windows Drivers, Kernel Debugging, Rootkit Techniques- Hooking, Patching, Kernel Object Manipulation , Rootkit Anti-forensics , Covert analysis.

Suggested Readings:

1. Michael Sikorski and Andrew Honig, " Practical Malware Analysis", No Starch Press,2012
2. Jamie Butler and Greg Hoglund, "Rootkits: Subverting the Windows Kernel", Addison-Wesley, 2005
3. Dang, Gazet and Bachaalany, "Practical Reverse Engineering",Wiley,2014
4. Reverend Bill Blunden, "The Rootkit Arsenal: Escape and Evasion in the Dark Corners of the System" Second Edition,Jones& Bartlett, 2012.

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-402 Mobile and Wireless Security

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

INTRODUCTION: Security and Privacy for Mobile and Wireless Networks: Introduction- State of the Art- Areas for Future Research- General Recommendation for Research. Pervasive Systems: Enhancing Trust Negotiation with Privacy Support: Trust Negotiation- Weakness of Trust Negotiation- Extending Trust Negotiation to Support Privacy.

Unit II

MOBILE SECURITY: Mobile system architectures, Overview of mobile cellular systems, GSM and UMTS Security & Attacks, Vulnerabilities in Cellular Services, Cellular Jamming Attacks & Mitigation, Security in Cellular VoIP Services, Mobile application security. SECURING WIRELESS NETWORKS: Overview of Wireless security, Scanning and Enumerating 802.11 Networks, Attacking 802.11 Networks, Attacking WPA protected 802.11 Networks;

Unit III

Bluetooth Scanning and Reconnaissance, Bluetooth Eavesdropping, Attacking and Exploiting Bluetooth, Zigbee Security, Zigbee Attacks; ADHOC NETWORK SECURITY: Security in Ad Hoc Wireless Networks, Network Security Requirements, Issues and Challenges in Security Provisioning, Network Security Attacks, Key Management in Adhoc Wireless Networks, Secure Routing in Adhoc Wireless Networks

Suggested Readings:

1. C. Siva Ram Murthy, B.S. Manoj, “Adhoc Wireless Networks Architectures and Protocols”, Prentice Hall, x ISBN 9788131706885, 2007.
2. Noureddine Boudriga,”Security of Mobile Communications”, ISBN 9780849379413, 2010
3. KMakki, PReiher, et. al. “Mobile and Wireless Network Security and Privacy”, Springer, 2007
4. Levente Buttyan, JPHubaux. “Security and Cooperationin Wireless Networks”,Cambridge University Press,2008.

Duration: 3 Hours

Maximum Marks: 50
Minimum Passing Marks: 13

MCSEC-403 Intrusion Detection and Prevention Systems

Instructions for Paper setters

The question paper contains 3 sections. **Section-A** consists of 10 questions (at least 3 questions from each unit of syllabus). **Section-B** will consist of 9 questions (3 questions from each unit of syllabus). **Section-C** will consist of 6 questions (2 questions from each unit of syllabus).

Unit I

Concept and definition , Internal and external threats to data, attacks, Need and types of IDS, Information sources Host based information sources, Network based information sources. Intrusion Prevention Systems, Network IDs protocol based IDs ,Hybrid IDs, Analysis schemes, thinking about intrusion.

Unit II

A model for intrusion analysis , techniques, types of responses mapping, responses to policy Vulnerability analysis, credential analysis, non credential analysis; Introduction to Snort, Snort Installation Scenarios, Installing Snort, Running Snort on Multiple Network Interfaces, Snort Command Line Options. Step-By-Step Procedure to Compile and Install Snort Location of Snort Files, Snort Modes Snort Alert Modes.

Unit III

Working with Snort Rules, Rule Headers, Rule Options, The SnortConfiguration File etc. Plugins, Preprocessors and Output Modules, Using Snort with MySQL,Using ACID and Snort Snarf with Snort, Agent development for intrusion detection, Architecture models of IDs and IPs.

Suggested Readings:

1. Rafeeq Rehman : " Intrusion Detection with SNORT, Apache, MySQL, PHP and ACID," 1st Edition, Prentice Hall , 2003.
2. Christopher Kruegel,Fredrik Valeur, Giovanni Vigna: "IntrusionDetection and Correlation Challenges and Solutions", 1st Edition, Springer, 2005.
3. Carl Endorf, Eugene Schultz and Jim Mellander "Intrusion Detection & Prevention", 1st Edition, Tata McGraw-Hill, 2004.
4. Stephen Northcutt, Judy Novak : "Network Intrusion Detection", 3rdEdition, New Riders Publishing, 2002.
5. T. Fahringer, R. Prodan, "A Text book on Grid Application Development and Computing Environment". 6th Edition, Khanna Publishers, 2012.

6. Ali A. Ghorbani, Wei Lu, “Network Intrusion Detection and Prevention: Concepts and Techniques”, Springer, 2010
7. Paul E. Proctor, “The Practical Intrusion Detection Handbook “,Prentice Hall , 2001.
8. Ankit Fadia and Mnu Zacharia, “Intrusion Alert”, Vikas Publishing house Pvt., Ltd, 2007
9. Earl Carter, Jonathan Hogue, “Intrusion Prevention Fundamentals”, Pearson Education, 2006.

Duration: 3 Hours Maximum Marks: 50

Minimum Passing Marks: 13

Practical Training and Project Work:

1. Project Work may be done individually or in groups in case of bigger projects. However if the project is done in a group each student must be given a responsibility for a distinct module and care should be taken to monitor the individual student.
2. Project Work can be carried out in the college or outside with prior permission of college.
3. The Student must submit a synopsis of the project report to the college for approval. The Project Guide can accept the project or suggest modification for resubmission. Only on acceptance of the draft project report the student should make the final copies.
4. **The Project Report should be hand written**

Submission Copy:

The Student should submit a spiral bound copy of the project report.

Format of the Project:

(a) Paper:

The Report shall be typed on White Paper of A4 size.

(b) Final Submission:

The Report to be submitted must be original.

(c) Typing:

Font:- Times New Roman
Heading:- 16 pt., Bold
Subheading:- 14 pt, Bold
Content:- 12 pt.
Line Spacing:- 1.5 line.
Typing Side :-One Side
Font Color:- Black.

(d) Margins:

The typing must be done in the following margin:
Left : 0.75”
Right: 0.75”
Top: 1”
Bottom: 1”
Left Gutter: 0.5”

(e) Binding:

The report shall be Spiral Bound.

(f) Title Cover:

The Title cover should contain the following details:
Top: Project Title in block capitals of 16pt.
Centre: Name of project developer’s and Guide name.
Bottom: Name of the university, Year of submission all in block capitals of 14pt letters on separate lines with proper spacing and centering.

(g) Blank sheets:

At the beginning and end of the report, two white blank papers should be provided, one for the Purpose of Binding and other to be left blank.

(h) Content:

I). Acknowledgement
II). Institute/College/Organization certificate where the project is being developed.

III). Table of contents
IV). A brief overview of project
V). Profiles of problem assigned
VI). Study of Existing System
VII). System Requirement
VIII). Project plan

- Team Structure
- Development Schedule
- Programming language and Development Tools

IX). Requirement Specification
X). Design

- Detailed DFD and Structure Diagram
- Data structure, Database and File Specification

XI). Project Legacy

- Current Status of project
- Remaining Areas of concern
- Technical and Managerial Lessons Learnt
- Future Recommendations

XII). Nomenclature and Abbreviations.
XIII). Bibliography
XIV). Source Code.

M.G.S. UNIVERSITY,

BIKANER

SYLLABUS

SCHEME OF EXAMINATION AND COURSES OF STUDY

FACULTY OF ARTS

M.A. DRAWING & PAINTING

M.A. PREVIOUS EXAMINATION – 2021
M.A. FINAL EXAMINATION - 2022

SCHEME OF EXAMINATION

Each theory paper 3 Hrs. duration 100 Marks
Dissertation If any 100 Marks

1. The number of paper and the maximum marks for each paper practical shall be shown in the syllabus for the subject concerned. It will be necessary for a candidate to pass in the theory part as well as in the practical part (Whenever Prescribed) of a subject/Paper sepa rately.
2. A candidate for a pass at each of the Pervious and the Final Examination shall be required to obtain (i) at least 36% marks in the aggregate of all the paper prescribed for the examination and (ii) at least 36% marks in practical (s) whenever prescribed the examina tion, provided that if a candidate fails to at least 25% marks in each individual paper work. Wherever prescribed, he shall be deemed to have failed at the examination not with standing his having obtained the minimum percentage of marks required in the aggregate for the examination. No division will be awarded at the Pervious Examination; Division shall be awarded at the end of the Final Examination com bined marks obtained at the Pervious and the Final Examination taken together, as noted below:
   First Division 60% of the aggregate marks taken together
   Second Division 48% of the Pervious and the final Examination.
   All the rest shall be declared to have passed the examination.
3. If a candidate clears any paper (s) Practical(s)/Dissertation Prescribed at the Pervious and or/final Examination after a continuous period of three years, then for the purpose of working out his division the mini mum pass marks only viz 25% (36% in the case of practical) shall be taken into account in respect of such paper(s) Particle(S) Disserta tion are cleared after the expert of the aforesaid period of three year, provided that in case where a candidate require more than 25% marks in order to reach the minimum aggregate as many marks out of those actually secured by him will be taken into account as would enable him to make the deficiency in the requisite minimum aggregate.
4. The Thesis/Dissertation/Survey Report/Field Work shall be types & written and submitted in triplicate so as to reach the office of the Register at least 3 weeks before the commencement of the theory examinations. Only such candidates shall be permitted to offer dis sertation/Fields work/Survey Report/Thesis (if provided in the scheme of examination) in lieu of a paper as have secured at least 55% marks in the aggregate of all scheme and I and II semester examination taken in the case of semester scheme, irrespective of the number of paper in which a candidate actually appeared at the examination.

M.A DRAWING AND PAINTING
M.A. PREVIOUS

Time: 3 Hours
Theory Paper
Paper I Brief Studies of Eastern and Western Aesthetics 100 Marks
Paper II History of Indian Arts 100 Marks

Practical Paper (Any Two from the Following):
(a) Landscape Painting 80 Marks
(b) Portrait Painting 80 Marks
(C) Print Making 80 Marks
Submission of Work 40 Marks

M.A. Final

Theory Paper (Any two from the Following):

Paper III History & Philosophy of Modern Art 100 Marks
Paper IV Art in Education & Society 100 Marks
Paper V History of Western Art
100 Marks
Dissertation in lieu of Paper 100 Marks

Practical Paper (Any Two from the following):

(D) Study from life (Full figure) 80 Marks
(E) Graphic (Etching or Litho Serigraph) 80 Marks
(F) Composition 80 Marks
Submission of Work 40 Marks
Case Studies 100 marks

M.A. PREVIOUS
PAPER-I BRIEF STUDIES OF EASTERN AND WESTERN AESTHETICS

Time: 3 Hours **100 Marks**

UNITS I

1. Definition of Aesthetics for Eastern and Western Concept of Beauty. सौन्दर्य की पश्चिमी, और पूर्वीय धारणाऐं ।
2. Plato प्लेटो। Aristotle अरस्तु। Auguastine ऑगस्टाइन। Leonardo da vinci. लियोनादो द विनसी। Baumgarten बॉमगार्टन। Hegel हीगेल ।
3. Schelling षैलिंग। Kant कान्ट। Freud फ्रायड Tolsoty टाल्सटाय। Moorris Weitz मूरिज वेज।
4. Croce क्रोचे। G. Santayana जार्ज सेन्टाइना । S.K. Longer एस. के. लौगंर। I.A. Richards आई. ए. रिचर्डस। Roger Fry रोजर फ्राय।
5. Naty Shastra नाट्यषास्त्र। Ras Siddhant रस सिद्धान्त। Vatsyayana वात्स्यायन। Vishnu Dharmottram विश्णु धर्मोत्तरम्। Shaiva षैव । Buddha बुद्ध। Rabindra Nath Tagore रवीन्द्र नाथ टैगोर। A.K. Coomaraswamy आनन्द कुमार स्वामी।

Books Recommended :

1. History of Westerm Aesthetics- by K.G. Gillbert
2. History of Westerm Aesthetics- by K. C. Pandey
3. History of Oriental Aesthetics- by Dr. K.C. Pandey
4. History or Aesthetic by Katherine Gilbert.
5. A Modern Book of Aesthetes by Melvin Rader.
6. Aesthetic Adventure-by William Gaunt.
7. Christian and Oriental Philosophy or Art-By A.K. Coomaraswamy.
8. Transformation of Nature Art-by A.K. Coomaraswamy.
9. Western Aesthetics-by Dr. K.D. Pandey.
10. Estern Aesthetics-by Dr. K.D. Pandey.

PAPER-II-HISTORY OF INDIAN ART
UNITS

Time 3 Hrs. **100 Marks**

1. Indian Painting-Pre-Historic, Mohanjodaroh and Harapa, Jogimara.
2. Ajanta, Bagh, Sigirya, Pal and Jain School.
3. Rajasthani School, Pahari and Mughal.
4. Patna School, Raja Ravi verma, Renaissance, Amrita Shergill. Bengal School Rabindra Nath Tagore, Avnindra Nath Tagore, Yamini Roy, Nand Lal Bose
5. Bombay Group Bendre, K.K. Hebber, S. Chavda, Contemporay Artists, M.F. Husain, K.H. Ara, F.N Suja, Ramkumar, Ramgopal Vijayvargiya.

Books Recommended :

1. Indian Painting-by Percy Brown

2. Indian Painting-by M.S. Randhawa
3. The Art of India-by Stella Kramrisch
4. Indian Painting-by Galbraith
5. कला विकास : डॉ आर.ए. अग्रवाल
6. भारतीय चित्रकला का इतिहास : लेखक अविनाष बहादुर वर्मा
7. भारतीय चित्रकला : लेखक रायकृश्ण दास
8. भारतीय चित्रकला का इतिहास : प्रेमचन्द गोस्वामी
9. भारतीय चित्रकला एवं मूर्तिकला का इतिहास : रीता प्रताप

M.A. PREVIOUS

PRACTICAL PAPER A- LANDSCAPE PAINTING

80 Marks

Time 10 Hours two sessions 2½ hours in two consecutive Days, Landscape painting from sight in oil or water colour with proper handling of medium and Perspective Landscapes of Lanes. City scapes. Sky scapes and Hills capes should be painted. Study of bridges, Lake and light & shadows The Examiner should reach at the centre one hour before the beginning well. Whole the Exam. Should be conducted on the spot.
Size of the Paper : ½ Imperial
Medium - Oil Colour or water Colour

PAPER B- PORTRAIL PAINTING

80 Marks

Time 10 hours. Two Sessions of 2½ hours in two consecutive days. Two sittings every day with a break of 1 hour in between.
The examiner will send in instruction paper to the principal tope opened 24 hours before the fixed date for Examination, in which he or she will clearly explain about the model background etc. The Principal before Head of department of Drawing and Painting will open the instruction paper and handover him so that he or she can make arrangements for the same. Examiner should reach at the centre before the beginning of the of the exams.
size of the paper ½ imperial
Medium : Oil Colour or Water Colour

PAPER -C PRINT MAKING (LINO OR WOOD AND COLOGRAPH)

80 Marks

Size :Size of the graphic should not exceed. 10" × 8"/25×20cm
Time : 10 Hours Two sessions of 2½ hours in two consecutive days two sittings every day with a break of 1 hour in between. Examiner should reach at the centre before the beginning of the Examination. External Examiner and Internal Examiner will prepare the question paper. Which they put at best five topics from daily life.
Candidate will choose one topic form them and prepare a lay-Out on given drawing sheet in Black and white colour and submit to the Examiner in the first sitting and in the end the candidates will Submit their Preliminary Sketches and Block with the Final Prints.

Submission of Works : **40 Marks**

Every Candidate Will have to Submit the following work one month before the commencement of the Annual Examination.
(i) 10 Submission of each practical Paper offered executed either in oil colour or water colour.
Size : Near about ½ Imp. Or larger.
(ii) In Paper B Submission, the candidate will submit 3 cast study in pencil, 2 In Monochrome and 5 in two colours Portraits studied from living models.
(iii) A Sketch-book Containing not less than 50 (Sketches) Paper, Pencil or Colour,-Sketches of Human, animal Study of trees, Lanes, Huts, Rocks Hills & human faces. Size : ¼ Imperial.
Marks on the submission work will be awarded internally by the Head of the Department of Drawing and Painting. The Work of the candidate will be retained by him for one month after the declaration of result and then returned. to the Candidate.
Examination answer sheets (Paintings) will be retained in the department and will be preserved at least for twelve months after the declaration of result. These should not be returned to the candidates.

General Instructions :

(a) Candidate should Pass in Practical as well as in theory papers separately.

(b) Practical Examinations Should be arranged one Month before the commencement of theory Examination paper and three periods for sketching in a week.

(d) The practical Answer books shall be examined by one external and one internal examiner appointed on the recommended of the Head of the department as per exiting Practice.

M.A. FINAL

ANY TWO FROM THE FOLLOWING

Theory Paper III-History and Philosophy of Modern Art

UNITS

Time : 3 Hours **100 marks**

1. The turning point in the 19th century, Neo-classicism, Romanticism
2. Impressionism, Neo-Impressionism and Nabism.
3. Post Impressionist Painting, Fauvism, Cubism and Expressionism
4. Constructivism and Other Significant Post- Cubist Movement
5. Metaphysical Painting. Dada, Surrealism, Abstract art and significant Contemporary Movement.

Books Recomended :

1 Dictionary of 12lth century Art by Phaidon.
2. History of Impressionism-By John Rewalot.
3. Masters of Modern Art-by Alfred H.Bars.
4. Story of Modern Art by Sheldon Cheney
5. Modern Movements Art by R.H. Wilenski
6. Main Streams of Modern art-by John Canaday.
7. आधुनिक चित्रकला का इतिहास और दर्षन लेखक श्री र.वि. साखलकर
8. आधुनिक कला के प्रेणता, लेखक डॉ राजेन्द्र वाजपेयी

PAPER IV-ART IN EDUCATION AND SOCIETY

UNITS

Time 3 Hours **100 marks**

1. The Place of art In General Education. The Educational Value of Art Principles and aims of Teaching art and Art appreciation. What is good Art ?
2. planning art experiences, Visit to museums, Art Galleries Centers of art for painting and new concepts of art education. Organizing are exhibitions. Art and the Community. Art and International Understanding. The Place of art in society. Is art really so useless ?
3. The need and Methods of making society art-conscious social functions of art. How art has served man form the childhood of the human race. Art and Democracy. Democratic value of art.
4. Duties in the artists towards society. How art has helped in modern social life and thought ?
5. Importance of Art of Modern Industry. Art in the homes. Importance of art as a hobby. Art as an instrument for educating the mind.

Book Recommended :

1. Education art Art : Zeigfeld Edwin (UNESCO) 1953
2. Education Through Art : Herbet Read 3. Child Art : Viola
4. Creative and Mental growth : V. Lower elt. (Macmillian & Co.)
5. Sadial function Art: R.K.Mukherji
6. Art of Society : Herbern Read
7. Art in Industry : Herbern Read

PAPER V-STUDY OF WESTERN ART

UNITS

Time 3 Hours **100 marks**

1. Pre historic Painting, Art of Egypt, Art of Crete and mycenia,Greek

Art- Geometrical period to Hellenistic Period.

2. Etruscan and Roman Art, Early Christian Art, Byzantine Art Romanesque Art, Gothic Art.
3. Early Renaissance Period and High Renaissance Period.
4. Baroque Art, Classical Baroque Art of France, British Painting Baroque Art, Rococo Art
5 Neoclassicism, British landscape Painting, Romanticism, Realism, Pre-Raphaelism.

Book Recommended :

1. The Birth of Greek Art- Adre- malraux & Geroge Salles.
3. The Story of Art- Gombrich E.H.
4. The Rock pictures of Europe - Kuhn H.
5. A History of Western Art- Johnlay Sewell.
6. A History of Westen Art - Michaese levey.

Practical Papers

Practical (Any Two of the following) 80 Marks
Paper D Study form life (Full figure) 15 Hours

Duration: 15 Hours in 6 Sitting of 2½ hours each of 3 consecutive days. Two sitting every day with a break of 1 hour in between.
Size of Paper : Imperial size.
Medium : Oil Colour of water colour

Note : The External Examiner will send Practical question papers along with directions before commencement of Practical examination. The Internal examiner and the external Practical examiner will evaluate the practical work on the last day practical examination.

Paper E-GRAPHIC or Litho or Serigraph

80 Marks

Duration : 15 Hours 6 sittings of 2½ each on 3 consecutive days. Two sitting every day with a break of 1 hour in between.
Size of the graphic should not exceed 10"×8"/25×20cms
Candidate will submit their preliminary sketches and block along with the final prints.

Paper-F- Composition (Pictorial)

80 Marks

Duration : 15 Hours 6 Sitting of 2½ hours each consecutive days. Two sittings every day with a break of 1 hour in between. Medium : Oil Water colour or tempera.
The candidate will prepare a composition on a given subject primary sketch of the final composition will be done and submitted after sitting which will be attached to the final composition. Treatment many additional realistic or Modern. At least three figures should be arranged.

Note : The External Examiner will send Practical question papers along with directions before commencement of Practical examination. The Internal examiner and the external Practical examiner will evaluate the practical work on the last day practical examination.

Dissertation Work :

The Dissertation shall be submitted in triplicate to the Head of department at least three weeks before the commencement of the examination only such candidates shall be permitted to offer dissertation who have secured at least 55% Marks in the aggregate in M.A. Previous examination

Submission of Work: 40 Marks

Each Candidate will have to submit the following work one month before the commencement of the annual examination (Final)

(i) 10 Submission of each practical papers offered executed either in oil colour or water colour.

Size Near about full imperial of larger:

(ii) Five Original Compositions based on different modern trends on Imperial size paper or canvas.
(iii) A Sketch book Containing not Less than 50 Pencil or Colour Sketches group of human, Animals figures, huts lanes, Group trees and creative sketches .Size : ¼ Imperial :

Marks On the submission work will be awarded internal by the head of the department of Drawing & Painting. The work of the candidate will be retained by him for one Month after the declaration of the result and then returned to the candidate.

Case Studies : 100 Marks

The Subject of Case Studies work will allotted by the department on base of syllabus for post graduation course. The Students will study on detail through the year under the supervision of lecturer of the department. The student submit the detail analytical Case Studies report with photographs in three copies.

The report must be hand written and it should not be more then 100 pages. This report should be submit 15 days before to the commencement of the practical exam at the department

General Instructions:

(a) Candidate should Pass Practical as well as in theory Paper separately.

(b) Practical Examination should be arranged one month before the commencement of theory examinations. Examination answer sheets will be retained in the department and will be pre served at least for twelve months after the declaration of result. These should not be returned to the candidates.

(c) Three should be 12 Period for each Practical and 6 Period for each Theory Papers plus three period for sketching in a week.

(d) The Practical answer books shall be examined by one external and one internal examiner to be appointed on the recommendation of the Head of the department as per exiting Practice.

(e) The department should also arrange for an educational tour to ancient and modern art centers like ajanta. Elora Elephanta, Khajurao Mahablipuram ,National exhibitions, Modern art galleries, Art College and Places suitable for outdoor