ALIGARH MUSLIM UNIVERSITY, ALIGARH

Scheme of Exam for Direct Recruitment for the post of Trained Graduate Teachers in AMU Schools

The Written test is of 120 marks (120 objective type multiple choice questions) carrying 01 mark for each question. The duration of written test will be 120 minutes without any time limit for each part individually.

Section Name – Nature of Questions

Part I- Proficiency in Language **(12 marks)**

A. General English (06 questions)
B. General Hindi (06 questions)

Part II- General Awareness, Reasoning & Proficiency in Computers **(18 marks)**

4. General Awareness & Current Affairs and Aligarh movement (10 questions)
5. Reasoning Ability (04 questions)
6. Computer Literacy (04 questions)

Part III- Perspectives on Education and Leadership (25 questions) **(25 marks)**

(a) Understanding the Learner (05 questions)
(b) Understanding Teaching Learning (05 questions)
(c) Creating Conducive Learning Environment (05 questions)
(d) School Organization and Leadership (05 question)
(e) Perspectives in Education (05 questions)

Part IV-Subject-specific Syllabus **(65 marks)**

Professional Competency Test:

The Professional Competency Test is of 70 marks (Demo Teaching 70 Marks).

Note: The Weightage of Written Test & Demo Teaching in drawing the Final Merit list will be 30:70 respectively.

Syllabus of Exam for Direct Recruitment of Trained Graduate Teachers:

Part I - Proficiency in Languages **(12 marks):**

(a) General English (10 questions)
Reading comprehension, word power, Grammar & usage
(b) General Hindi (10 questions)
पठन कौशल शब्द सामर्थ्य, व्याकरण एवं प्रयुक्ति

Part II - General awareness, Reasoning & Proficiency in Computers **(18 marks):**

(a) General Awareness& Current Affairs and Aligarh movement (10 questions)
(b) Reasoning Ability (4 questions)
(c) Computer Literacy (4 questions)

Part III -Perspectives on Education and Leadership **(25 marks):**

(c) Understanding the Learner (10 questions)

- Concept of growth, maturation and development, principles and debates of development. development tasks and challenges Domains of Development: Physical, Cognitive, Socio-emotional, Moral etc., deviations in
- Development and its implications.
- Understanding Adolescence: Needs, challenges and implications for designing institutional
- Support.
- Role of Primary and Secondary Socialization agencies. Ensuring Home school continuity

(d) Understanding Teaching Learning (15 questions)

Theoretical perspectives on Learning -Behaviourism, Cognitivist and Constructivism with special reference to their implications for:

I. The role of teacher
II. The role of learner
III. Nature of teacher-student relationship
IV. Choice of teaching methods
V. Classroom environment
VI. Understanding of discipline, power etc.

- **Factors affecting learning and their implications for:**

I. Designing classroom instructions,
II. Planning student activities and,
III. Creating learning spaces in school.

- **Planning and Organization of Teaching-Learning**

I. Concept of Syllabus and Curriculum, Overt and Hidden Curriculum, Principles of curriculum organization
II. Competency based Education, Experiential learning, etc.
III. Instructional Plans: -Year Plan, Unit Plan, Lesson Plan

IV. Instructional material and resources
V. Information and Communication Technology (ICT) for teaching-learning
VI. Evaluation: Purpose, types and limitations. Continuous and Comprehensive.
VII. Evaluation, Characteristics of a good tool.
VIII. Assessment of learning, for learning and as learning: Meaning, purpose and as considerations in planning each.

- Enhancing Teaching Learning processes: Classroom Observation and Feedback, Reflections and **Dialogues as a means of constructivist teaching.**

(c.) Creating Conducive Learning Environment (06 questions).

- The concepts of Diversity, disability and Inclusion, implications of disability as social construct, types of disabilities-their identification and interventions
- Concept of School Mental Health, addressing the-curative, preventive and promotive dimensions of mental health for all students and staff. Provisioning for guidance and counselling.
- Developing School and community as a learning resource.

(d) School Organization and Leadership (06 questions)

- Leader as reflective practitioner, team builder, initiator, coach and mentor.
- Perspectives on School Leadership: instructional, distributed and transformative.
- Vision building, goal setting and creating a School development Plan.
- Using School Processes and forums for strengthening teaching learning-Annual Calendar, time
- tabling, parent teacher forums, school assembly, teacher development forums, using achievement data for improving teaching-learning, School Self-Assessment and Improvement.
- Creating partnerships with community, industry and other neighbouring schools and Higher Education Institutes - forming learning communities.

(e) Perspectives in Education (03 questions)

- Role of school in achieving aims of education.
- NEP-2020: Curriculum and Pedagogy in Schools: Holistic & Integrated Learning: Equitable and Inclusive Education: Learning for All; Competency based learning and Education.
- Guiding Principles for Child Rights, Protecting and provisioning for rights of children to safe and secure school environment, Right of Children to free and Compulsory Education Act, 2009.
- Historically studying the National Policies in education with special reference to school education;
- School Curriculum Principles: Perspective, Learning and Knowledge, Curricular Areas, School Stages, Pedagogy and Assessment

Part IV- Subject-specific Syllabus (65 marks):

Note The Weightage of Written Test & Demo Teaching in drawing the Final Merit list will be 30:70 respectively.

Syllabus for TGT (Computer)

IT Fundamentals:

Evolution of computers; Basics of computer system and its operation: Functional Components and their inter-connections; concept of Booting. Software Concepts: Types of Software - System Software, Utility Software and Application Software; System Software: Operating System, Compiler, Interpreter and Assembler; Utility Software: Anti-Virus, File Management tools, Compression tools and Disk Management tools Application software: Office Tools - Word Processor, Presentation Tool, Spreadsheet Package, Cyber Ethics: Netiquettes, Software licences, Open Source Software Movement, Intellectual property rights, plagiarism and digital property rights, Freedom of Information and the digital divide, Privacy, fraud and secure data transmission

IT Applications:

e-Governance: Definition, Benefits to citizens, e-Governance websites and their salient features; Societal impacts; e-Governance challenges.e-Business: Definition, Benefits to customers and business, e-Business websites and their salient features; Societal impacts; e-Business challenges. e-Learning : Definition; Benefits to students (Learners), teachers (Trainers) and school (Institution) Management; e-Learning websites and their salient features Societal impacts; e-Business Challenges, Impact of ICT on Society : Social and Economic benefits

Computer Architecture:

Introduction to Digital Computer, Number System, Data representation, addition, subtraction, multiplication and division of signed and unsigned numbers, Floating Point representation, Internal Storage encoding of Characters, Introduction to Instruction set, CISC and RISC characteristics. Concepts of semiconductor memory, CPU-memory interaction, Memory Organization and Structure, cache mapping algorithms, cache replacement policies, System buses, Input/Output organization and techniques.

Data structures and Algorithms:

Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs, searching, sorting, time and space complexity, algorithm design techniques: greedy, dynamic programming and divide-and-conquer, linear search, binary search.

Programming concepts:

C, C++, Java, Python: arithmetic, logical, bitwise and conditional operators, Data, Expressions, Statements, Control Flow, iteration, Functions, Lists, Tuples, Dictionaries, Files, Modules, Packages, Libraries

Object Oriented Programming Concepts:

Data hiding, Data encapsulation, Class and Object, Abstract class and Concrete class, Polymorphism; Inheritance, Advantages of Object Oriented Programming over earlier programming methodologies

Operating System:

Operating System and its function, Instruction Execution, Interrupts, Process Management, Memory Management, Deadlocks, Scheduling, Synchronization Principles, File Management, Device Management etc.

Data Communication and Computer Networks:

Fundamentals of Data Communication and Networks; Network models: OSI Model, Peer-to-peer processes, Interfaces, Layers in OSI model, TCP/IP model-Architecture, Layers in TCP/IP model, Similarities; Addressing: Physical, logical and port addressing. Signals: Analog and digital signals: Digital-to-Digital conversion: Line coding schemes; Analog-to-Digital conversion: Modulation and Demodulation; Multiplexing; Transmission Media: Wired Media: Twisted wire-pair, Co-axial Cable, Fiber optics; Wireless media: Infrared, Radio and Microwave Transmission; Satellite Communication: Orbits, Footprints, GEO, MEO and LEO; Error detection and correction; LAN technologies; Network Security, Information Security and Web Security, Firewalls.

Database Management System:

Database Systems Concepts & Architecture, Data Models, Schemas & Instances, DBMS Architecture & Data Independence, ER-model, Normalization, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees), Transactions, and concurrency control.

Information Systems and Software Engineering:

Information gathering, requirement, and feasibility analysis, data flow diagrams, process specifications, input-output design, process life cycle, planning and managing the project, design, coding, testing, implementation, maintenance.

Web Development:

HTML/ DHTML, Basic Tags of HTML, Creating Links, Tables, Form Tags, Concept and Importance of Document Object Model, Dynamic HTML document and Document Object Model, Cascading Style Sheets (CSS), Web Scripting, Extensible Markup Language (XML), Server Side Tools and languages (e.g. PHP, ASP, Python etc)

Suggested Reference Books/Materials:

1. Mano. M., "Digital Logic and Computer Design"

2. Malvino A. P., "Digital Computer Electronics"

3. Efraim Turban, R. Kelly Rainer, Richard E. Potter, "Introduction to Information Technology", John Wiley and Sons.

4. V. Rajaraman, "Introduction to Information Technology", PHI.

5. J. Hanly and E. Koffman, "Problem Solving and Program Design in C", Third Edition update, Addison Wesley.

6. Alfred V. Aho, "Data Structures and Algorithms", Pearson.

7. John V. Guttag, "Introduction to Computation and Programming Using Python", Revised and expanded edition, MIT Press, 2013.

8. Ullman J.D., "Principles of Database Systems", Galgotia Publications, New Delhi.

9. Date C.J., "An Introduction to Database Systems", Narosa Publishing House, New Delhi.

10. Rajaraman V., "Analysis and Design of Information System", Prentice Hall of India, 1989.

11. Rumbaugh J., Et al, "Object Oriented Modelling and Design", Prentice Hall of India, New Delhi, 1991.

12. D. M. Dhamdhere, "System Programming and Operating System"

13. Achyut S Godbole and Atul Kahate, "Web Technologies", Tata McGraw Hill.

14. William Stallings, "Computer Organization and Architecture Designing for Performance", Ninth Edition, 2012.

15. Morris Mano, "Computer System Architecture", Third Edition, Pearson Education.

16. Cay Horstmann, "Java Concepts", John Wiley & Sons Inc., 5th Edition.

17. Tanenbaum A. S., "Computer Networks", 4th Edition, PHI.

18. Williams Stalling, "Data Communication And Networks", 9th Edition, PHI

19. Web Resources and Relevant Text Books recommended for CBSE