

**SEED SCIENCE AND TECHNOLOGY SYLLABUS FOR CONDUCTING WRITTEN
EXAMINATION FOR DIRECT RECRUITMENT OF TEACHING POSTS IN THE CADRE
OF ASSISTANT PROFESSORS AT UASM**

Sl. No.	Subject	Content
1.	Seed Biology	Floral biology, mode of reproduction, sporogenesis, poliration, fertilization, embryogenesis, fruit and seed development. Apomids, parthenocarp, polyembryony and somatic embryoids and synthetic secda. Seed structure of monocot and dicot Seed maturation and longevity in orthodex and recaletrant seed Chemical composition of seed. Seed dormancy types, causes and mechanisms of induction and release, factors affecting, methods to overcome dormancy and its significance in agriculture. Seed germination requirements, imbibition pattern, physiological and biochemical changes, and role of hormones
2.	Seed Production	Introduction to crop breeding methods. Variety testing, release and notification. Genetic purity concept and factors responsible for deterioration of varieties Maintenance breeding. General system of seed multiplication. Seed production agencies. Identification of seed production areas and factors affecting it. Compact area approach in seed, production Seed production planning, equipment, input and manpower requirement. Facines affecting pollination and seed set viz., temperature, humidity, wind velocity, insect pollinators, and supplementary pollimation. Male sterility, self-incompatibility and their role in hybrid seed production. Principles and methods of need production of varieties and hytirida of cereals like wheat, paddy, sorghum, pearl millet and maian, pulses like chicicpea, pigeon pes, green gram, black gram, soybean and cowpea; oilseeds like groundnut, brassica, sesame, sunflower and castor, fibre crops like cotton and jute; vegetables crops like tomato, brinjal, okta, chilli, important cole and cucurbitaceous crops; important forage legumes and grasses and seed crop management, time of harvesting and

		threshing/extraction methods. Seed production technology of plantation crops like coffee, tea, rubber, cocoa, cardamom and pepper. Disease free clonal propagation of crops like potato, sugarcane sweet potato tapioca, colocasia. betel vine, fruit crops like mango, citrus, banana, guava, sapots, pineapple, grape, apple, pear, plum, peach, apricot and seed production and clonal propagation of annual and perennial flowers like rose, gladiolus, chrysanthemum, marigold, dahlia, phlox and petunia. Clonal standard and degenerations. Micro propagation.
3.	Seed Processing	Principles of seed processing. Seed drying principles and methods. Pre-cleaning, grading, treatment, pelleting and packaging. Seed invigoration and enhancement treatment and their applications. Seed processing machines like cleaner cum grader, specific gravity separator, indented cylinder, seed treater, weighing and bagging machines, their operation and maintenance. Seed quality maintenance during processing.
4.	Seed Quality Control	Seed legislation Seeds Act 1966, Seed Rules 1969 and New Seed Bill 2004, Seed Law Enforcement. Seed certification history, concept, organization, phases and minimum certification standards Field inspection principles and methods. Inspection at harvesting, threshing and processing. Pre-and post quality testing or genetic purity. Seed Certification Schemes, concepts and procedures. Seed Testing concepts and objectives, its role in seed quality control. Seed sampling, seed moisture testing, purity analysis, germination testing, tolerance tests and equipment. Seed testing procedures for principal agricultural crops. Quick viability tests. Seed vigour, its significance and testing methods. Testing for genuineness of varieties principles and methods based on seed, seedling and plant characters, biochemical techniques namely electrophoresis of proteins and isoenzymes and DNA fingerprinting International Seed Testing Association (ISTA), its

		role in development of seed testing procedures, rules and seed quality assurance for international seed trade.
5.	Seed Storage	Requirements and types of seed storage. Factors affecting seed storage and role of moisture, temperature, RH and moisture equilibrium. Viability nomographs, Seed deterioration causes and methods of control. Physiological, biochemical and molecular changes in seed ageing. Seed drying and Packaging needs. Storage structures, Methods of stacking and their impact. Short and medium term storage. Controlled storage. Germplasm storage. Cryo preservation. Design features of short, medium and long-term seed storage buildings. Operation and management of seed stores.
6.	Seed Health.	Significance of seed health. Mode and mechanism of transmission of microorganisms' fungi, bacteria and viruses. Procedures for seed health test and rules. Externally and internally seed borne pathogens, mode of infection, development and spread, methods of detection of seed borne diseases. Important seed-borne diseases of cereals, oilseeds, pulses, fibre crops, vegetables and their control measures. Quarantine and International procedures of phytosanitary certificates. Important storage pests, their identification, monitoring and detection. ET value, nature and extent of damage, natural enemies and management. Use of pesticides, botanicals, mycotoxins for seed treatments. Carry over infestation, principles of fumigation and safe use of fumigants.
7.	Seed Industry Development and Marketing	Trends in National and International seed industry development. International Seed Trade Federation (ISF) and Indians seed associations. Economics of seed production. Market survey, demand forecasting, pricing policies, marketing channels, planning and sales promotion. Buyer behavior and role of Government, semi Government, co- operative and private sectors

		in seed trade. Responsibilities of seed companies and dealers in Seed Act. Seed import and export.
8.	Protection of Plant Varieties	Plant Variety Protection (PVP) and its significance. Protection of Plant Varieties and Farmers' Right Act, 2001, its essential features. International Union for the Protection of New Varieties of Plants (UPOV) and its role in development of Plant breeders Rights and Seed Industry Development. Impact of PVP on seed supply system. DUS testing principles and application. Biodiversity Act. Criteria for protection of Essentially Derived Varieties (EDVs) and Genetically modified (GM) varieties.