GOVT. POLYTECHNIC DIGLIPUR

DEMO TOPICS FOR GUEST FACULTY SELECTION PROCESS FOR THE SESSION 2024-25 (EVEN SEM)

S.NO.	DEPARTMENT	DEMO TOPIC	
		THEORY	**PRACTICAL**
1	CSE (GL)	**Programming with Python:** (a) Data structures in Python - list, set, tuple & dictionary (b) Python packages - NumPy, Pandas, Matplotlib, Scipy **Database Management:** (a) Entity and relationship model - entities, relationships, attributes (b)Transaction in DBMS - ACID properties, states of transaction (c) Database Backup - types of failure, causes of failure, database backup **Data Communication & Computer Network:** (a) TCP/IP model (b) Multiplexing (FDM & TDM) (c)Switching (circuit switching and packet switching) **Computer Network:** (a) Network laye protocols: ARP, RARP (b) Transport layer protocols - TCP, UDP **Programming in C:** (a) Function (Call by value & call by reference) (b) Array & structures (c) Pointers	a. Create and execute DDL commands b. Create and execute DML commands c. Solve queries using operators, functions, etc. d. Implement programs in C using array & structures e. Implement C prgram to demonstrate user defined functions f. Prepare and test straight & cross cable
2	Physics (GL)	1. Ultrasonic Wave Production 2. Lasers and fibre optics 3. Air wedge- Michelsion's interferometer 4. concept of double refraction 5. Nanomaterials- its synthesis, Properties and Application 6. Non destructive testing of materials 7. Nuclear Reactor 8. Application of Hall effect in the semiconductor 9. Super conductors and its application 10. Magnetic field and magnetic field Intensity	1. To study the coefficient of thermal conductivity of bad conductor by using Lee's disc method/ 2. Determination of thickness of given piece of sample by airwedge method 3. Determination of wavelength of monochromatic light by using diffraction grating 4. Determination of elasticity of a metallic wire by using searle's apparatus 5. Determination of law resistance by using meter bridge\determination of velocity of sound by resonance column 6. To determine the radius of curvature of a planoconvex lens using newton's ring apparatus 7. To determine the refractive index of glass prism by using Pin method 8. To determine the buoyancy force on solid immersed in liquid(Archemedies principle) 9. To determine the internal resistance of primary cell by using potentiometer 10. To calculate the magnetic moment and polestrenth of a bar magnet by using vibration magnetometer.

3	Chemistry (GL)	1. Conducting polymers – classification and application 2. Protective coating and its types in terms of corrosion 3. Vulcanization –Synthetic Rubber 4. Super conductivity 5. Desalination process- reverse osmosis and Electrodyalisis 6. Moulding constituent of plastics and moulding techniques 7. Different types of crystal structures with angle. 8. Qualititive idea of line, point surface and volume defect 9. How to calculate Co-ordination number and atomic radius of FCP and HCC unit cells 10. Dielectric polarization and Mechanism	1. To determine the pH value of solution using pH meter and universal Indicator 2. Determine thinner content in oil paint 3. Estimation of vinegar 4. Estimation of available chlorine in Bleaching powder 5. Estimate the chlorine content of given water sample 6. Estimation of magnesium by EDTA 7. Determination of carbonates and bi carbonates in water 8. determination of percentage of iron present given Hematite ore by $KMnO_4$ Solytion 9. Determination of Hardness of the sample water by EDTA method 10. Estimation of ferrous by permagnometry
4	MANAGEMENT (GL)	1. Needs for instruction and direction to subordinates 2. Preparation of balance sheet and profit-loss statement 3. needs for safety management measures 4. Planning at supervisory level-planning , detailing and following each step 5. types of Organization –steps in organizing 6. Business plan preparation 7. Incubation centre- Role and Procedure 8. Intrapreuner and Entrepreuner 9. Market study procedures 10. Total quality management	