

Syllabus of System/ EDP Discipline

1. Fundamental of Computers & Programming:

- a. History of Computer Generations
- b. Basic Computer Architecture
 - i. CPU
 - ii. Input/ Output Devices
 - iii. RAM
 - iv. Various storage Media
- c. Binary Numbers
 - i. Binary Addition
 - ii. Decimal to Binary Conversion
 - iii. Binary to Decimal Conversion
- d. Definitions of Multitasking, Multi-Processing, Multi-Programming, Time Sharing systems
- e. Operating System
 - i. Basic Functions
 - ii. Unix Operating System & frequently used commands (ls, cat, dd, tar, cd, mkdir, cp, rm, mv, telnet, ftp, kill, ps, grep)
 - iii. Basic concepts of "vi" editor
- f. Flowchart
 - i. Overview & Symbols used for start/end, Input/ Output, Conditions, Processes
 - ii. Flow charts for simple operations (comparison of numbers, Sum of series, finding maximum/ minimum/average, etc.)
- g. Programming Languages
 - i. Overview of Basic, Cobol and Java
 - ii. COBOL language
 - 1. Divisions of Cobol
 - 2. Picture clauses
 - 3. Valid/ Invalid data names
 - 4. Literals (Numeric, Non-Numeric, Figurative constants viz. ZEROES, SPACES etc.)
 - 5. Statements using ACCEPT, DISPLAY, OPEN, READ, WRITE, MOVE, ADD, PERFORM, PERFORM UNTIL, IF.
 - 6. Sequential & Index Files
 - iii. Programming in Oracle environment
 - 1. Structured Query Language (SQL) concepts
 - a. Data Definition Language (DDL) & simple statements using CREATE, ALTER, DROP, RENAME
 - b. Data Manipulation Language (DML) & simple statements using SELECT, INSERT, UPDATE, DELETE
 - c. Data Control Language (DCL) & statements using GRANT, REVOKE
 - d. Transaction Control Language (TCL) & functions of COMMIT, ROLLBACK, SAVEPOINT
 - 2. Procedural Language PL/SQL: Basic concepts

2. System Analysis & Design and Data Base Management System

- a. System Analysis & Design

- i. Definition of System, Elements of System, Types of System
 - ii. System Development Life Cycle
 - iii. Water Fall model of System Development Process
- b. Data Base Management System
 - i. Overview
 - ii. Data Base Types (Network, Hierarchical, Relational)
 - iii. Basic concept of Instance, table spaces, data files, log files, control files in Oracle RDBMS
 - iv. Activating Archive logs, Methodology of taking Cold & Hot Backups. Incremental Backups & Restore Procedure

3. Concepts of Business Data Processing in Coal Industry

- a. Payroll System with details of Pay Calculations
 - i. Executives
 - ii. Monthly Rated
 - iii. Daily Rated
 - iv. Piece Rated
- b. PIS/ NEIS System
 - i. Important attributes related to the employees kept in NEIS/ PIS database
 - ii. Various Reports & their purpose
 - iii. Provisions of Implementation Instruction II-76 related to resolution of Date of Birth disputes
- c. Financial Accounting System
 - i. Input Documents
 - ii. Statutory Reports/ Ledgers, Trial Balance, Balance sheet & their purpose
- d. Materials Management System
 - i. Material Codification
 - ii. Input Vouchers/ documents & their purpose
 - iii. Various Ledgers & Report and their purpose
 - iv. ABC & XYZ Analysis
- e. Sales Billing & Accounting System
 - i. Credit Sales Billing (Rail & Road)
 - ii. Cash Sales Billing (Rail & Road)
 - iii. Various Reports & Ledgers & their purpose