SYLLABUS FOR DIRECT RECRUITMENT OF SR. INSTRUCTOR (COPA), GROUP-'C' , NON-GAZETTED UNDER THE DEPARTMENT OF INDUSTRIES AND COMMERCE, GOVT. OF TRIPURA

The Examination will comprise of Two successive stages viz. (i) Written Examination (Multiple Choice Type Test) carrying 170 marks and (ii) An Interview cum Personality Test carrying 30 marks.

(A) Scheme of the Written Examination: The Written Examination will consist of one paper viz. a paper on "General knowledge & Current Affairs" and "Trade Aptitude". The paper will be of an Objective Type consisting of 170 Multiple- Choice Question. The paper will carry 170 marks and will be of Two and a half (2½) hours duration. The paper consist of Two Parts, namely 1) Part-I "General knowledge & Current Affairs" (50 questions of 01 marks each) ii) Part-II " Trade Aptitude" (120 questions of 01 marks each). There will be Negative marks for MCQ. For each question for which a wrong answer has been given by the candidate, **one-fourth** of the marks assigned to that question will be deducted as penalty.

(B) Details Syllabus for the Written Examination:

PART-I GENERAL KNOWLEDGE & CURRENT AFFAIRS

General knowledge : Question will include knowledge of Indian History , Geography & Constitution of India of such a nature which the candidate shall able to answer without any special study. Question on Tripura and North Eastern States, its historian Topography will also be included.

Knowledge of Current Affairs :-Question will include the knowledge of current events of Local, National & International important and of such matters of everyday observation and experiences in their scientific aspect as may be expected of an educated person who has not made a special study of any scientific subjects.

PART-II TRADE APTITUDE

1. Computer Organization and Architecture:

Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining. Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMA mode).

2. Programming and Data Structures:

Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

3. Digital Logic:

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

4. Microprocessor & Microcontroller:

Function of microprocessors- architecture of 8086- pin configuration and functions – tristate bus concept - generation of control signals - bus timings – demultiplexing – flags - memory decoding - interfacing of RAM and EPROM - I/O addressing - I/O mapped I/O - and memory mapped I/O schemes - instruction execution - fetch/execute cycle - instruction timings and operation status.

Microcontroller 8051 – Architecture - pin configurations - internal block schematic - PORT0, PORT1, PORT2, PORT3, idle & power down mode - power control register - program protection modes - flash programming & verification. I/O interfaces with microcontroller, Real Time Control Issues, Embedded Systems

5. Algorithms:

Searching, sorting, hashing. Asymptotic worst case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide-and-conquer. Graph search, minimum spanning trees, shortest paths. Section.

6. Theory of Computation:

Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and contex-free languages, pumping lemma. Turing machines and undecidability.

7. Compiler Design:

Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation.

8. Operating System:

Processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU scheduling. Memory management and virtual memory. File systems.

9. Computer Networks:

Concept of layering. LAN technologies (Ethernet). Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi. Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.

10. Web Technology:

Basics of Internet:- Concept of Internet, Working of Internet, Specification and technical details for establishing Internet, Types and function of Modem, Internet connectivity methods (Terminal emulation, Dial up, dedicated, Broadband, RF Link, VSAT, ISDN etc) 3. Tools and Services on internet-Email, Usenet, FTP, Telnet, IRC, Video conferencing. Search Engines, Proxy Server ,Networking Devices (NIC, bridges, Routers, Repeaters, Hubs/Switch, Gateways etc. ,Web Browsers (Netscape and Internet Explorer to surf Internet) 4. IP Addressing Internet domains, domain name server (DNS), TCP/IP protocols, Internet service providers, Intranets, IP Addressing, IP Header, Subnetting, DNS

(C) Interview cum Personality Test: A limited no. of candidates, maximum 5(five) times of total posts (in category wise) will be selected merit wise on the basis of the result of the Written Examination, subject to securing minimum qualifying marks (50% for UR candidates, 45% for Scheduled Castes candidates and 40% for Scheduled Tribes category candidates) or otherwise as fixed by the Departmental Selection Committee. **The total marks for the Personality Test will be 30.** If a candidate remains absent in the personality Test, his/her candidature will be treated as cancelled. Final Merit List will be prepared on the basis of the total marks obtained in the Written Examination and marks obtained in the Personality Test.

Signature of the Committee Members

(Debashish Barman)
Member
Principal, WITI, Indranagar

(Sri Anumoy Debbarma)
Member
Principal, ITI, Indranagar

(Sri Siddhartha Das)
Member
Asst. Professor, TIT Narsingarh

Representative of NIT, Agartala
Member

(Sri Tapan Das)
Member
Manager (Credit), Directorate of (I&C)

(Sri Subash Ch. Das)
Chairman
Addl. Directorate of (I&C)