

No: JTC/TTA/Direct Recruitment/2012 Dated: 23. 04-2013

BHARAT SANCHAR NIGAM LIMITED
(A Government of India Enterprise)
O/o CGMT,BSNL,Jharkhand Telecom Circle,Ranchi.

Direct Recruitment of Telecom Technical Assistants (TTAs) in BSNL –RECRUITMENT YEAR-2012

CLOSING DATE OF RECEIPT OF APPLICATION:13.05.2013

EXAMINATION DATE: 14.07.2013.

Bharat Sanchar Nigam Ltd. [BSNL] **Jharkhand** Telecom Circle will fill up about **27** **[subject to variation depending on the availability of vacancies]** vacancies of Telecom Technical Assistants through an open Competitive Examination likely to be held in **30.06.2013** in the following SSA as per the details given below:-

S No	Name of SSA Where vacancy exists	Category wise break up of vacancies				
		ST	SC	OBC	OC	Total
1	Dhanbad	0	0	0	5	5
2	Ranchi	4	2	2	5	13
3	Jamshedpur	2	0	1	0	3
4	Hazaribagh	1	1	0	2	4
5	Dumka	0	0	0	2	2
6	Daltonganj	0	0	0	0	0
	Total	7	3	3	14	27

In case of PH candidates, only such persons would be eligible for reservation in services/posts who suffer from not less than 40 percent of relevant disability. A person who wants to avail of benefit of reservation would have to submit a Disability Certificate issued by a competent authority in the format given in Annexure-A.

In respect of Physically Handicapped persons, candidates with following physical disability will be permitted:

(i) For Hearing Impairment:

Physical Requirements.	Category of the Disabled suitable for the Job.
(1) S-work performed by Sitting. (2) B-Work performed by Bending	(1) PD – Partially deaf.

(ii) Locomotor disability :

Physical Requirements	Category of the Disabled suitable for the Job.
(1) S-work performed by Sitting. (2) B-Work performed by Bending	(1) BL-Both Legs affected but not arms. (2) OL-One Leg affected (R or L).

1. Scale of Pay: The Telecom Technical Assistant shall be appointed in the IDA pay scale of Rs.13600-25420 with annual increment @ 3% of basic pay. In addition, HRA, Perks, Medical Benefits, LTC etc. will be admissible as per company rules.

The emolument at the minimum of the pay scale will be around Rs.23310/- excluding HRA, perks, medical benefits etc.

2. Jurisdiction: Normally selected candidates will be posted at the same SSA but under special circumstances they will be posted anywhere in Telecom Circle and anywhere in India under territorial/Army Act 1948.

3. Eligibility

3.1. Nationality: Only Indian Nationals would be eligible to apply.

3.2. Educational Qualifications:

The Applicant must possess, as on the **closing date(i.e. 13-05-2013)** of receipt of applications from candidates, the educational qualifications in any of the following disciplines from a recognized Institute/University:

- a) Three Years Engineering Diploma in
 - Telecommunications Engineering
 - Electronics Engineering
 - Electrical Engineering
 - Radio Engineering
 - Computer Engineering
 - Instruments Technology
 - Information Technology.

- b) M.Sc. (Electronics) from a recognized institution/University.

Note 1:

- I. No equivalence in the Educational qualification is provided.
- II. Candidates possessing higher qualification in the eligible stream are allowed to appear in the examination.
- III. Candidates possessing Three year Diploma certificates are eligible to appear in the Exam irrespective of percentage of marks obtained by them.

Note 2:

The appearance of the candidates in the examination will be purely on a provisional basis and failure to produce the certificate as to the above qualification at the time of scrutiny of documents will make the candidate ineligible in the examination. No extension of time in this regard or any request for relaxation in qualification would be entertained under any circumstances.

4. Age:

(a) The applicant should be between 18 to 27 years of age as on closing date (i.e. 13-05-2013) of receipt of applications from candidates. However, this age is relaxable for following categories of applications:

- (i) For Scheduled Castes & Scheduled Tribes up to 5 years;
- (ii) For OBC Candidates up to 3 years;
- (iii) For PWD candidates up to 15 years for SC/ST and 13 years for OBC;

(b) **For departmental candidates:**

- up to 45 years in respect of SC/ST candidates in accordance with the instructions or orders issued by the Central Government.
- up to 43 years in respect of OBC candidates .
- upto 40 years in respect of OC candidates.

(c) For Residents of J&K – Relaxation shall be in accordance with DOP&T O.M.No. 15012/7/1991-Estt.(D) dtd. 6.12.2005 pertaining to “Residents of State of Jammu and Kashmir (Relaxation of Upper Age Limit for Recruitment to Central Civil Services & Posts) Rules 1997”.

Note: The date of birth entered in matriculation or Secondary School Leaving Certificate or in a certificate recognized by an Indian University as equivalent to Matriculation or in an extract from a Register of Matriculates maintained by a University which extract must be certified by the proper authority of the University or in the Higher Secondary or an equivalent examination certificate.

5. Probation Period: 2 years.

6. Bond & Training: Selected candidates will have to sign a two years bond for the amount as decided by BSNL in favour of BSNL. Candidates must undergo the prescribed training of 10 weeks. During the training period they will get stipend as per rule. Appointment orders will be issued after successful completion of Training and Medical fitness.

7. Syllabus (available at Annexure “D”) & Question Paper :

(a) There shall be only one Paper of multiple choice objective type of three hours duration as per syllabus(attached) with the following details:

Part		Marks
Part- I	General Ability Test	20
Part- II	Basic Engineering	90
Part- III	Specialization	90

(b) Total number of Questions in the paper would be 200 and each question shall carry one mark. **There will be negative marking for each wrong answer and 25% of mark of that question shall be deducted.**

(c) The standard of paper in General Ability test will be such as may be expected of an Engineering Diploma holder. The standard of papers in other subject will approximately be that of Diploma level of an Indian Polytechnic. In the Specialization Part-III, a candidate has to attempt a common set of questions from the consolidated syllabus prescribed under Specialization Part-III.

(d) Syllabus attached.

8. Minimum qualifying standards

Minimum qualifying marks for different category of candidates will be as follows:

a) Minimum qualifying marks in the paper (aggregate) will be 40% for the General category(OC) and 33% for the candidates of SC/ST/OBC/PH categories.

b) Minimum qualifying marks in each of the three parts of the question paper will be 30% for OC and 20% for the candidates belonging to SC/ST/OBC categories.

c) Further relaxation of 2% in marks will be given to the physically handicapped candidates in each category viz .OC-PH, OBC-PH, SC-PH & ST-PH.

BSNL reserves the right to change the number of vacancies of TTAs.

The appearance of the name in the merit-list does not confer any right on the candidate for employment. A final call letter/ appointment letter will be issued to the candidate after completion of all other formalities.

No request for revaluation of answer books shall be entertained under any circumstance.

9. Examination Centre

The examination centre will be the Circle Headquarters city i.e. **Ranchi**. Examination Centres may be changed if required at the sole discretion of BSNL.

10. Application form and Fee for examination

(i) The specimen of the application form is included in this advertisement and the same can be downloaded from BSNL Jharkhand Telecom Circle website: **www.jharkhand.bsnl.in**

(ii) The completed application form should be sent by Registered post/Speed post or in person so as to reach **AGM (HR) O/o CGMT,BSNL,Jharkhand Telecom Circle,ARTTC Building, Near Jumar River,H.B.Road,Ranchi-835217** on or before the closing date(**13.05.2013**). The envelope containing application form should be marked "**Application for the post for TTA-2012 in BSNL**" along with the category of the candidate and SSA applied for in bold letters on the top of the envelope.

(iii) Photocopy of the application form in the advertisement published can be used for applying for the post of TTA 2012.

(iv) An examination fee of **Rs 500/-** (Rupees Five hundred only) is payable in the form of demand draft/Pay Order drawn in favour of **Accounts Officer(B & A) O/o CGMT,BSNL,Jharkhand Telecom Circle payable at Ranchi**. The amount of fee shall not be accepted in any other form.

- (v) **Fees once paid shall NOT be refunded under any circumstances nor it can be held in reserve for any other examination or selection.**
- (vi) An applicant is allowed to appear for examination against the vacancy of one SSA only.
- (vii) Selection will be through a competitive examination i.e. merit in SSA concerned followed by in medical test, pre-appointment formalities etc. Posting will be given subject to successful completion of training.

11. No Fee payable by SC/ST/PH

Applicants belonging to SC/ST/PH categories only are exempted from the examination fee. In the case of Physically handicapped candidates, this exemption will, however, be available to only those handicapped persons who would otherwise be eligible for appointment to the post on the basis of the standards of medical fitness prescribed for the post (including any concessions specifically extended to the physically handicapped) and who enclose with the application form, a necessary certificate from a Govt. Hospital/Medical Board in support of his claim for being handicapped.

12. Closing date for receipt of Application Forms

- (i) Application forms(available at Annexure 'B') complete in every respect must reach on or before **13.05.2013**. Applications received after the closing date or not accompanied by the demand draft/Pay order [wherever applicable] for the prescribed examination fee or incomplete in any respect shall be summarily rejected and no communication in respect of the rejected application forms shall be entertained.
- (ii) Any cutting or overwriting in any part of the application form will render it liable to be rejected. Candidates are, therefore, advised to take special care while filling the application form.
- (iii) The applicants would be admitted to the examination on the basis of the information furnished by them in their application form. They are, therefore, advised to ensure that they fulfil all eligibility conditions before applying. In case it is found at a later stage that the information furnished by an applicant is false or an applicant does not fulfil any of the eligibility conditions, the candidature of such applicants would be cancelled and no correspondence in this regard would be entertained. Issuance of an admit card for the examination will NOT confer any right for appointment. Appointment will be solely subject to fulfilment of all eligibility conditions. The decision of BSNL in this regard shall be final & binding.
- (iv) BSNL will NOT be responsible for postal delay or loss of application in transit.

13. Travelling Allowance to SC/ST candidates: The applicants belonging to SC/ST categories will be entitled to T.A. as per provisions of Ministry of Finance (Deptt. of Expenditure) O.M. No.19014/3/77-E.IV (B) dated 17.02.1978. SC/ST candidates shall be eligible for Travelling Allowance by second class sleeper passenger train fare by the shortest route from the railway station nearest to their normal place of residence, or from which they actually performed the journey, whichever is nearer to the place of examination centre, and back to the same station provided the distance travelled by train each way exceeds 30 K.Ms. The candidates are required to produce the following documents on the exam date.

- (a) Filled up TA Forms in the format attached (**Annexure C**).

- (b) Unemployment certificate issued by M.P./M.L.A. or Gazetted Officer of the place where the candidate normally resides;
 - (c) Original Copy of Rail/Bus Ticket of the journey performed by the candidate.
- 14. Admit Cards:** Admission card will be issued to eligible candidates only.

15 Disqualifications: No person

- 15.1 Who has entered into or contracted a marriage with a person having a spouse living, or
- 15.2 who, having a spouse living, has entered into or contracted marriage with any person, shall be eligible for appointment to the post of TTA.

Provided that BSNL may, if satisfied that such marriage is permissible under the personal law applicable to such person and the other party to the marriage and there are other grounds for so doing, exempt any person from the operation of this rule.

- 16.** No request for withdrawal of candidature received from a candidate after he has submitted his application will be entertained under any circumstances. Any dispute regarding the recruitment will be subject to the Courts/Tribunals having jurisdiction over the place of concerned Circle office of BSNL from where the candidate is appearing in the examination.

17. List of Enclosure

- a. **Four** identical passport size photographs out of which two should be pasted (not stapled or pinned) on the application form, duly attested, and the other two attached to the application (not to be pasted or attested).
- b. Two self addressed unstamped envelopes of 27 x 12 cms size.
- c. Medical certificate in respect of Physically Disabled candidates.
- d. Caste, Matric and required educational certificates duly attested by a gazetted officer.

NOTE:

- 1. Candidates in their interest are advised to refer to the BSNL circle website (www.Jharkhand.bsnl.co.in) from time to time for any further instruction/information.
- 2 For any Inquiry, the applicant may contact on telephone number **0651-2210009,2200558** during office hours.
- 3. It is mandatory to mention recruitment SSA in the Application Form otherwise the application will be rejected.
- 4. All the relevant document as mentioned in the list of enclosure is to be attached with the application form.

13. Educational Qualification (Diploma in Engg & Above).

Name of Engg Diploma/Degree with discipline	University/Institute	Month & Year of Passing	As per the Advertisement whether eligible (Yes/No)

14. Permanent Address (in capital letters)

Name	:							
Father's/Husband's Name	:							
Address	:							
		<table border="1"> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table>						

Please affix one recent passport size Photograph Duly Attested
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15. Details of Application Fee: Demand Draft/Pay Order(for OC/OBC candidates)

DD/PO No.	Date	Name of Bank/Post Office	Amount(Rs.)

16. Declaration to be given by OBC candidate only, eligible to avail reservation applicable to OBC:

Ison/daughter of Shriresident of village/town/city.....District.....State hereby declare that I belong to thecommunity which is recognized as a backward class by the Government of India for the purpose of reservation in services as per orders contained in Department of Personnel and Training Office Memorandum No. 36012/22/93-Estt.(SCT), dated 8.9.1993. It is also declared that I do not belong to persons/sections (Creamy Layer) mentioned in column 3 of the Schedule to the above referred Office Memorandum dated 8.9.1993 and amended vide OM No. 36033/3/2004-Estt. (Res.) Dated 14.10.2008.

DECLARATION TO BE SIGNED BY THE APPLICANT

I do hereby declare that all the statements made in the application are true, complete and correct to the best of my knowledge and belief. I understand that in the event of any particular information given above being found false or incorrect, my candidature for the post of Telecom Technical Assistant is liable to be rejected or cancelled and in the event of any mis-statement or discrepancy in the particulars being detected after my appointment, my services are liable to be terminated forthwith without any notice to me.

I also understand that if appointed, I would rank junior to any TTA who had been appointed earlier by the erstwhile DoT/DTS/DTO or BSNL or any other candidate who had already qualified in the TTA examination but not appointed as TTA by BSNL so far. Similarly, candidates of TTA examination held prior to my appointment will also rank en-bloc senior to me.

Place:

Date:

(Signature of the Applicant)

NAME & ADDRESS OF THE INSTITUTE/HOSPITAL

Certificate No.....

Date.....

DISABILITY CERTIFICATE

Recent Photograph of the candidate showing the disability duly attested by the Chairperson of the Medical Board.
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This is certified that Shri/Smt/Kum.....
son/wife/daughter of Shri..... age.....sex.....
identification marks(s) is suffering from permanent disability of following category:

- A. Locomotors or cerebral palsy :
 - (i) BL – Both legs affected but not arms.
 - (ii) OL – One leg affected (right or left)
 - (a) Impaired reach
 - (b) Weakness of grip
 - (c) Ataxic
 - (iii) BH - Stiff back and hips (Cannot sit or stoop)
 - (iv) MW – Muscular weakness and limited physical endurance.
- B. Blindness or Low Vision:
 - (i) B : Blind
 - (ii) PB: Partially Blind
- C. Hearing Impairment:
 - (i) D - Deaf
 - (ii) PD - Partially Deaf

(Delete the category whichever is not applicable)

2. This condition is progressive/non-progressive/likely to improve/ not likely to improve. Re-assessment of this case is not recommended/ is recommended after a period of _____ year's _____ months*.

3. Percentage of disability in his/her case is percent.

4. Sh./Smt./Kum. meets the following physical requirements for discharge of his/her duties:-

- | | | |
|--------|--|--------|
| (i) | F-can perform work by manipulating with fingers. | Yes/No |
| (ii) | PP-can perform work by pulling and pushing. | Yes/No |
| (iii) | L-can perform work by lifting. | Yes/No |
| (iv) | KC-can perform work by kneeling and crouching. | Yes/No |
| (v) | B-can perform work by bending. | Yes/No |
| (vi) | S-can perform work by sitting. | Yes/No |
| (vii) | ST-can perform work by standing. | Yes/No |
| (viii) | W-can perform work by walking. | Yes/No |
| (ix) | SE-can perform work by seeing. | Yes/No |
| (x) | H-can perform work by hearing/speaking. | Yes/No |
| (xi) | RW-can perform work by reading and writing. | Yes/No |

(Dr. _____) (Dr. _____) (Dr. _____)

Member
Medical Board

Member
Medical Board

Chairperson
Medical Board

Countersigned by the
Medical superintendent/CMO/Head of
Hospital (with seal)

***Strike out which is not applicable.**



(A Government of India Enterprise)
Office of Chief General Manager
Jharkhand Telecom. Circle

**Form for reimbursement of Travelling Allowance in respect of SC/ST candidates for attending
Written Test Exam. for the post of TTA-2012 at _____ Centre.**

1. Name of Applicant :
2. Roll Number :
3. Whether SC or ST
(Attested photocopy of the certificate enclosed) :
4. Residential Address :
(As given in Application Form)
5. Address from where journey has been
performed :
6. Whether employed or not :
7. If employed, whether in Central/State Govt. or
Central/State Govt. Corporation, Public Sector
Undertaking. Private Sector etc :
8. Details of Journey and Rail/Bus fare etc :

Date of Journey	From	To	Mode of Journey	Class of Travel Bus/ Rail	Distance travelled (one side)	Ticket number	Fare (in Rs.)

CERTIFIED THAT

- a) I am unemployed and a certificate of Unemployment issued by MP/MLA or a Gazetted Officer of the place where I normally reside is enclosed.
- b) I have not claimed/will not claim T.A. for this journey from any other source.
- c) I have actually travelled by the shortest route and by the class/mode for which I have preferred the claim.
- d) I do hereby declare that all the statements made in the application are true, complete and correct to the best of my knowledge and belief. I understand that in the event of any particular information given above found false or incorrect, necessary action as deemed fit may be taken by BSNL.

Dated:

Signature of Applicant

Note: 1. Candidate will have to submit original ticket for inward journey.
The payment will be made by BSNL through cheque.

For use of BSNL

Verified by

(Signature of Designated Officer of BSNL)

Admissible Amount Rs. _____

Signature of DDO

SCHEME & SYLLABUS FOR TTA DIRECT RECRUITMENT EXAMINATION

The standard of Paper in General ability test will be such as may be expected of an Engineering Diploma holder. The standard of papers in other subjects will approximately be that of Diploma level of an Indian Polytechnic. There shall be a single multiple choice objective type Paper of 3 hrs. duration as per details given below:

<u>Paper</u>	<u>Marks</u>	<u>Time allowed</u>
PART - I GENERAL ABILITY TEST	20	3 hrs.
PART - II BASIC ENGINEERING	90	
PART - III SPECIALIZATION	90	

Note: 1. The candidate is required to obtain minimum qualifying marks in each of these parts as may be prescribed by the BSNL.

Detailed syllabus

PART-I: GENERAL ABILITY TEST - 20 MARKS

The candidate's comprehension and understanding of General English shall be tested through simple exercise such as provision of antonyms and synonyms, fill in the blanks and multiple-choice exercise etc. This shall also include questions on current events, general knowledge and such matters of everyday observation and experiences as may be expected of Diploma holder.

PART-II: BASIC ENGINEERING - 90 MARKS

Detailed Syllabus is as under:

- Applied mathematics:** Co-ordinate Geometry; Vector Algebra; Matrix and Determinant; Differential Calculus; Integral Calculus; Differential equation of second order; Fourier series; Laplace Transform; Complex Number; Partial Differentiation.
- Applied Physics:** Measurement-Units and Dimension; Waves, Acoustics, Ultrasonic; Light; Laser and its Application, Atomic Structure and Energy Levels.
- Basic Electricity:** Electrostatics, Coulomb's law, Electric field, Gauss's theorem, concept of potential difference; concept of capacitance and capacitors; Ohm's law, power and energy, Kirchoff's voltage, current laws and their applications in simple DC circuits, Basic Magnetism; Electric Magnetism; Electromagnetic Induction; Concept of alternating voltage & current; Cells and Batteries; Voltage and Current Sources; Thevenin's theorem, Norton's theorem and their applications.

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4. Electronics Devices and Circuits: Classification of materials into conductor, semi conductor, insulator etc, electrical properties, magnetic materials, various types of relays, switches and connectors, Conventional representation of electric and electronic circuits elements. Active and passive components; semi conductor Physics; Semiconductor Diode; Bipolar transistor & their circuits; Transistor Biasing Stabilization of operating point; Single stage transistor amplifier; field effect transistor, Mosfet circuits applications.

Multistage Transistor Amplifier; Transistor Audio Power Amplifiers; Feedback in Amplifier; Sinusoidal Oscillators; Tuned Voltage Amplifiers; Opto Electronics Devices and their applications; Operational Amplifier; Wave shaping and switching circuits.

Block diagram of I.C. Timer (such as 555) and its working; Motivation Circuits; Time Base Circuits, Thyristor and UJT Regulated Power Supply.

5. Digital Techniques: Applications and advantages of digital systems; number system (binary and hexadecimal); Logic Gates; Logic Simplification; Codes and Parity; Arithmetic Circuits; Decoders, Display Devices and Associated Circuits; Multiplexers and De-multiplexers; Latches and Flip Flops; Counters; Shift Registers; Memories; A/D and D/A converters.

PART-III: SPECIALIZATION - 90 MARKS

Detailed Syllabus is as under:-

1. Electrical:

3 phases vs. single-phase supply, Star Delta connections, relation between phase & line voltage power factor and their measurements; construction and principles of working of various types of electrical measuring instruments. All types of motor and generator-AC & DC transformers, starters, rectifiers, inverters, battery charges, batteries, servo and stepper motors, contactor control circuits, switchgear, relays, protection devices & schemes, substation, protective relaying, circuit breaker, generator protection, transformer protection, feeder & lightning protection, feeder & bus bar protection, lightning arrester, earthing, voltage stabilizer & regulators, power control devices & circuits, phase controlled rectifiers, inverters, choppers dual converters, cycloconverters; power electronics application in control of drives, refrigeration & air-conditioning.

2. Communication:

Modulation and demodulation – principles and operation of various types of AM, FM and PM modulators/demodulators; pulse modulation – TDM, PAM, PPM, PWM, Multiplexing, Principles and applications of PCM.

Introduction of Basic block diagram of digital and data communication systems, Coding error detection and correction techniques; Digital Modulation Techniques – ASK, ICW, FSK, PSK; Characteristics/working of data transmission circuits; UART, USART; Modems; Protocols and their functions, brief idea of ISDN interfaces, local areas Network; Carrier Telephony – Features of carrier telephone system.

Microwave Engineering; Microwave Devices; Wave-guides; Microwave Components; Microwave Antennas; Microwave Communication Systems- Block diagram & working principal's of microwave communication link.

Prakash

3. Network, Filters and Transmission Lines:

Two port network; Attenuators; Filters; Transmission Lines and their applications; characteristic impedance of line; concept of reflection and standing waves on a transmission line; Transmission line equation; Principles of impedance matching, Bandwidth consideration of a transmission line.

4. Instruments and Measurements:

Specification of instruments – accuracy, precision, sensitivity, resolution range, Errors in measurements and loading effect; principles of voltage, current and resistance measurements; Transducers, measurement of displacement & strain, forces & torque measuring devices, pressure measuring devices, flow measuring devices, power control devices & circuits. Types of AC milli voltmeters- Amplifier rectifier and rectifier amplifier. Block diagram explanation of a basic CRO and a triggered sweep oscilloscope, front panel controls; Impedance Bridges and Q-Meters

Principles of working and specifications of logic probes, signature analyzer and logic analyzer, signal generator distortion factor meter, spectrum analyzer.

5. Control Systems:

Basic elements of control system, open and closed loop system, concept of feedback. Block diagram of control system. Time lag, hysteresis, linearity concepts. Self-regulating and non-self regulating control systems. Transfer function of simple control components, single feedback configuration.

Time response of systems.

Stability Analysis Characteristics equation, Routh's table, Nyquist criterion, Relative stability, phase margin and gain margin.

Routh Hurwitz criterion, root locus techniques, Bode plot, Power plot, Gain margin and phase margin.

6. Microprocessors:

Typical organization of a microcomputer system & functions of its various blocks; Architecture of a Microprocessors; Memories and I/O Interfacing. Brief idea of M/C assembly languages, Machines & Mnemonic codes; Instruction format and Addressing mode; concept of Instruction set; programming exercises in assembly language; concept of interrupt; Data transfer techniques – sync data transfer, interrupt driven data transfer, DMA, serial output data, serial input data.

7. Computer:

Computer and its working, types of computers, familiarization with DOS and Windows- concept of file directory, folder, Number Systems. Data representation Programming – Elements of a high level programming language, PASCAL, C: Use of basic data structures; Fundamentals of computer architecture, Processor design, Control unit design; memory organization. I/O system organization. Microprocessors- microprocessor architecture, instruction set and simple assembly level programming. Microprocessors based system design: typical examples. Personal computers and their typical uses, data communication principles, types and working principles of modems, Network principles,

S. S. S. S.

OSI model, functions of data link layer and network layer, networking components; communications protocols-X.25, TCP/IP.

Database Management System – Basic concepts, entity relationship model, relational model, DBMS based on relational model.

Asst. Prof.
[Signature]

Asst. Prof.
AOS (P-III)