HUM-201-E
BASICS OF ECONOMICS & MANAGEMENT

L   T   P   Sessional: 50 marks
3   1   Theory: 100 marks
                                        Total: 150 marks
                                        Duration of Exams: 3 hours.

Unit – I

Meaning of Industrial Economic, production function, its types, least cost combination, law
of variable proportion, law of returns; increasing, constant & Diminishing.

Fixed & variable costs in short run & long run, opportunity costs, relation between AC & MC,

U-shaped short run AC curve.

Price &'output determination.under monopoly in short run & long run, price discrimination, price determination
under discriminating Monopoly, comparison between Monopoly & perfect competition.

Unit-II

Meaning of management, characteristics of management, management Vs administration, management – Art,
Science & Profession, Fayol's principles of management, Human relations approach, Functions of management.

Unit-III

Planning & Organizing

Planning, steps in planning, Planning prcmises, diffcrence bctween planning policy &
strategy, Authority & responsibility, centralization & decentralization.

Unit-IV

Staffing, Directing & Controlling - Manpower planning, Recruitment & section styles of leadership, communication
process and barriers, control process and steps in control I ing.
Note :- Eight questions are to be set taking two from each unit. The students are required to attempt five questions
in all taking at least one from each unit.

Text Books :

1. "Modern Economic Theory" Dewett, K.K., S. Chand & Co.
2. "Economic Analysis" K.P. Sudharam & E.N. Sudharam (Sultan Chand & Co.)
3. "Micro Economics Theory" M.L. Jhingan (Konark Pub.Pvt. Ltd.)
4. "Principles and Practices of Management" L.M. Parshad.
5. "Essentials of Management" Harold Kaontz.
6. "Organization and Management" R.D.Aggarwal, Tata McGraw Hill.

DIGITAL ELECTRONICS
IV Sem. EEcT– 202-E

L	T	P/D			
3	1		Theory	:	100 Marks
			Sessional	:	50 Marks
			Duration	:	3 hrs.

UNIT-I Number System of Codes : Decimal , Binary , octave , Hexadecimal number system , BCD codes , Excee code , grey , ASCII , Alphanumeric code , Binary arithmetic , 1's and 2's complements, Hamming code integer and floating point systems , code conversion.

Boolean Algebra: Basic theorems , commutative , associative , distributive laws , duality concept , SQP & form of Boolean expressions , minimization techniques up to six variables using K maps , QM method, variable map entered method.

UNIT-II Logic gates & Logic Families : Logic gates , transistor as a switching elements , positive and negative logic. Bipolar logic families ; DTL , TTL ,RTL , ECL , I^2L , TTL parameters , three state TTL devices , MOS logic families : NMOS , CMOS families , CMOS characteristic , TTL to CMOS to TTL interface . Various Logic Functions and their implementation , Universal Gates.

UNIT-III Combinational Logic Gates : Introduction to combinational circuits , arithmetic and logic operation, design of half adder and full adder circuit , half & full subtractor, parity generator & checker , codes converter, decoder, multiplexers, demultiplexers , comparators.

Sequential Circuits : Flip-Flops , bistable circuits: RS, JK, D, T, F/F, race around condition method, synchronous and asynchronous counters, up & down counters, shift registers , state transition diagram.

Semiconductor memory : Basic of memory, memory addressing , ROM , PROM , EPROM, RAM, state and dynamic RAM.

UNIT-IV A/D & D/A Converters : D/A Converter, accuracy and resolution , variable resistor network , binary ladder . A/D Converter , accuracy and resolution, simultaneous conversion, counter method, continuous A/D Converter dual slope, successive approximation method.

Waveform Generation : Timing circuits using 555, multivibrators , Schmitt trigger, sample and hold circuits .

NOTE:

Eight questions are to be set in total covering entire course selecting two portions from each unit . Each question will be of equal marks . Students will be required to attempt five questions in all, selecting at least one from each unit.

RECOMMENDED BOOKS: (1) R.P. Jain, Modern Digitals Electronics (TMH). (2) Malvino A.P. & Leach D.P., Principles & Application (MGH). (3) Floyd : Digital Fundamentals (UBS). (4) Charles H.Roth : Fundamentals of logic Digital . (5) H. Taub & D. Schilling : Digital Integrated Electronics (MGH). (6) Gothman : Digital Electronics (PHI) . (7) Tokhem .R. : Digital Electronic Principles and Application (TMH).(8) V.K.Puri :- Digital Electronics (TMH) (9) Virender Kumar :- Digital Electronics(New Age).

POWER APPARATUS AND MACHINES- 11
IV SEM. EEcT-204-E

L   T   P|D   Theory: 100 Marks
4   2   Sessional: 50 Marks
                                                    Duration :   3hrs

UNIT-I   Polyphase Induction Machines: Production of torque, constructional features, operation, equivalent circuit, determination of parameters, current locus diagram, effect of rotor resistant, high starting torque motors, Generator operation, starting & speed control technique, space harmonics and their effect, cogging, crawling and noise.

UNIT-II   Polyphase AC Commutator Machines: Effect of voltage injection in rotor circuit of slip ring induction motor by auxiliary Commutator machines, Kramers & scherbius arrangement, principle and operation of doubly fed Commutator motor and schrage motor.

UNIT-III Synchronous Machines: Special constructional features.
   Cylindrical rotor machine: flux & mmf waves, torque angle, impendence, voltage regulation& its estimation.
   Salient pole machine: two-reaction theory, phasor diagram, direct & quadrature-axis reactances,
   phasor diagram, voltage regulation. Determination of Xd & Xq, effect of saturation
   Synchronous motor: principal of working, phasor diagram, steady state operating
   Characteristics-curve, methods of starting, power angle characteristics of
   Cylindrical and salient pole machines, parallel operation, synchronization and load
   Division, synchronous machine connected to infinite bus bar Elementary idea
   about stability & hunting, Effect of   dampering winding.

UNIT-IV Circuit Theory of Electrical Machines: Idealized machine, equation of primitive machines, transformation to d-q variable, Park's inverse transformation, impendence of matrices of d.c., cross field, synchronous & induction machines, d-axis and q-axis equivalent circuit of synchronous machine reactances and time constants. Eletro-mechnical equation of synchronous machine, Linearized   analysis

NOTE:
Eight questions are to be set in total covering entire course selecting two portions from each unit . Each question will be of equal marks . Students will be required to attempt five questions in all, selecting at least one from each unit.

RECOMMENDED BOOKS :

1.   Nagrath & Kothari: Electrical machine (TMH)
2.   E.O.Taylor: Theory, Performance & design of AC commutator machines (WP)
3..   Langsdorf : AC machines (TMH).
4.   P.S.Bhimra: Genealised theory of machines (KP).
5.   P.S.Bhimra: Electrical machinery (KP).
6.   Nagrath & Kothari: Theory &problem of electric machines (TMH)

ANALOG INSTRUMENTS & MEASUREMENTS
IV SEM. EEcT-206-E

L	T	P|D			
3	1		Theory	:	100 Marks
			Sessional	:	50 Marks
			Duration	:	3hrs

UNIT-I   SI system of units & dimensional analy**sis.** Errors in measurements, relative, systematic and random errors, error estimation in measurement technique.
Recorders: X-Y recorder, strip chart recorder and magnetic recorder. Digital display methods display systems- LED, LCD.

UNIT-II   Principle, constructional features, analysis & performance of (i) Moving coil instruments (D'assonval galvanometer, ballistic galvanometer, vibration galvanometer, flux meter, ratio meter and meggar) (ii) Moving iron instruments. (iii) Electrodynamics instrument. (iv)Electrostatic instruments & (v) Induction instruments
Measurements of potential, current, (under D.C. and power frequency condition), power and energy. Measurement of high direct and alternating voltages and current. Measurement of transmission line parameters.

UNIT-III Measurement of resistance low, medium and high resistances.
Substitution and null methods measurements of self inductance, mutual inductance, for low Q and high Q coils and capacitance using Maxwell's Hay's, Anderson's, Campbell's, Deasuty's and Schering bridge. Shieldine and grounding of bridges.
Magnetic measurement sample forms, Lloyds-fisher square, separation of hystersis loss and eddy current losses, instrument transformers, current transformer, potential transformer   their performance characteristics.

UNIT-IV Principle of telemetry, wire link channels, radio channels, multiplexers .
Measurement of non-electrical quantities by electrical means :- Transducers for measuring position, speed, force, pressure, temperature, torque, humidity, strains, flow, velocity,(angular & linear) and vibration.

NOTE:

Eight questions are to be set in total covering entire course selecting two portions from each unit . Each question will be of equal marks . Students will be required to attempt five questions in all, selecting at least one from each unit.

RECOMMENDED BOOKS :
(1) AK Sawhney: A course in Electrical & Electronics measurement and   instrumentation (Dhanpat Rai & Sons)
(2) J.B .Gupta:- Electrical & Electronics measurement & instrumentation
(3) W.D. Copper :- Electronic instrumentation & measurement Techniques(PHI).
(4) P.W. Golding:- Electrical Measurements & Measuring Instruments (WP)

LINEAR AND IC APPLICATION
IV SEM. EEcT-208-E

L   T   P/D   Theory   : 100 Marks
3   1   Sessional :   50 Marks

Duration   :   3 hrs

UNIT-I   **Differential and Cascade Amplifier:** Balanced and unbalanced output differential amplifier, FET differential amplifier, current mirrors, level translators, cascade or CB-CE configuration of amplifier, operational amplifier, block diagram representation of op-amp, introduction to idea op-amp, characteristics, parameters, interpretation of data sheets, data specification of op-amp & main parameter like CMMR, thermal drift, offset voltage & current practical op-amp and its equivalent circuit, op-amp circuit configurations.

UNIT-II   **Frequency response of an Op-amp:** Frequency response compensating network, frequency response of internally compensated and non-compensated op-amp. High frequency op-amp equivalent circuit, open loop and closed loop frequency response, circuit stability , slew rate.

      Operational Amplifier with feedback: Block diagram representation of feedback amplifier, voltage series feedback, voltages shunt feedback, differential amplifier.

      Op-amp application: DC and AC amplifier, peaking amplifier, summing, scaling, averaging and instrumentation amplifier, differential input and output amplifier, voltage to current converter, current to voltage converter, very high input impedance circuit, integrator, diffentitor, voltage limiters, voltage regulator, voltage to frequency converter & frequency to voltage converter.

UNIT-III   **Active filters & Oscillators :** Introduction to active filters, Butter worth and Chebyshev approximation to low pass filter and high pass, band pass filters. Oscillators, criterion for oscillation, phase shift, wein bridge, quadrature, square wave, saw tooth and voltage controlled oscillator.

      Comparators & Converters:- Introduction to basic comparator, zero crossing detector, Schmitt trigger, comparator characteristics, analog to digital & digital to analog converters, sample & hold circuit, peak detector.

UNIT-IV   **Specialized IC Applications:-** Universal active filters, switched capacitor filter, the 555 & 556 timers and their applications. Phase locked loop and voltage regulators.

NOTE:

    Eight questions are to be set in total covering entire course selecting two portions from each unit . Each question will be of equal marks . Students will be required to attempt five questions in all, selecting at least one from each unit.

RECOMMENDED BOOKS:- (1) R.A.Gayakwad: Op-amp & Linear Integrated Circuits(PHI) (2) D.Roy Chodury :- Linear Integrated Circuits(New age Internation (3) Millman & Halkias : Integrated Electronics (TMH) (4) Integrated-Circuit Op-amp: George B. Rutkoswaki (PHI) (5) Conulin R.F.: OP-amp and Linear Integrated Circuit (PHI) (6) Connely J.a. : Analog Integrated Circuit, Device Circuits Systems and Application(John Wiley) (7) Hnatch : Application of Linear Integrated Circuits (John Wiley)

ANALOG ELECTRONICS
IV SEM. EEcT-210-E

L   T   P|D   Theory : 100 Marks
3   1   Sessional   : 50 Marks
                                                  Duration   :   3hrs

UNIT-I   **Transistor Biasing & Stability :** Transistor construction and its operation, Transistor biasing & Q- point Stability, CB, CE & CC configuration , h-n parameter of Transistor, expression for current gain , voltage gain I/P & O/P Impedance , Transistor as switch, Transistor amplifying action.

UNIT-II   **FET:** General description of FET, difference b/w UJT & FET, construction & characteristic   of JFET transfer characteristic & parameters MOSFET &FET biasing. FET as an amplifier   equivalent circuit JEFT and MOSFET ,UJT and it characteristic.

UNIT-III **Amplifier:** Small signal amplifier and then analysis, RC coupled, transformer coupled direct coupled amplifier and their frequency response and analysis . Wide band amplifier, tuned amplifier low frequency amplifier and their frequency, Itermidiate stage amplifier.
Power amplifier: Class A, class B and class C amplifier Calculation of efficiency and distortion push pull amplifier, and application of power amplifier.
Feed Back amplifier: Concept of +ve &-ve feedback overall gain advatage of   -ve feedback , voltage & current feedback ,series and shunt feedback, effect of feedback on frequency response and bandwidth , noise reduction using -ve feedback, effect on I/P & O/P characteristics.

UNIT-IV   **Oscillators : B**arkhausen criteria, Wein Bridge, RC phase shift, Colpitts & Hartley oscillator . Multivibrators using transistor, crystal oscillator.
 Analog Signal Processing : Clipping, clamping and rectification, filtering, Wave Shaping , circuit modulation and Electronics Demodulation.
NOTE:
Eight questions are to be set in total covering entire course selecting two portions from each unit . Each question will be of equal marks . Students will be required to attempt five questions in all, selecting at least one from each unit.

RECOMMENEDED BOOKS:
1. millman & halkias: Intigrated circuit .
2. R. Boylested & L.Nashelky : Electronics Divices & Circuit (PHI)
3. millman &halkias: Electronics Divices & Circuit (TMH)
4. Malcolm Goodage: Analog Electronics & Synthesis.
5. Malvino a paul : Electronic Principal (THM)

DIGITAL ELECTRONICS LAB
1V Sem. (EEcT-212-E)

L   T   P   Sessional : 25 Marks
-     -   2   Practical : 25 Marks
                                          Total   : 50 Marks
                                          Duration: 3hrs.

LIST OF EXPERIMENTS :

1.   Verify the truth table of AND, OR, NOT, EX-OR, gate.

2.   Verification of NAND, OR, EX-OR, NOR using 7400 IC.

3.   Design a hardware circuit to perform the operation of half &full adder.

4.   Design a hardware circuit to perform the operation of full subtractor.

5.   Verify the truth table of RS, D, T, JK Flip Flop.

6.   Study asynchronous counter in up & down mode.

7.   To study multiplexer and demultiplexer.

8.   To study decade counter.

9.   To design D/A, A/D converter.

10. To study the operation of Schmit Trigger using 741 IC.

Power Apparatus & Machine Lab-II
IV Semester (EEcT- 214-E)

L   T   P/D   Sessional : 50Marks
-    -   3   Practical :50 Marks
                                                Total   : 100 Marks
                                                Duration: 3 hrs

LIST OF EXPERIMENTS:

1. To study of running of three phase induction motor & determine of mechanical losses .
2. study & stating of a 1- phase induction motor, light & running block rotor test & hence, determine the parameter of equivalent circuit .
3. To find out of losses of transformer by Sumpener's test (Back to Back test or load test)
4. A) To perform a load test on a 3 – phase induction motor
   B) compute efficiency, torque,slip, speed, I/P p.f. and stator current . plot the graph b/w efficiency Vs Po,T Vs, Po, Il, Vs, Po, P, F Vs Po, S Vs Po , T vS N .
5. To study the various connection of 3- phase transformer .
6. To determine regulation of synchronous impedance method
   1) coduct open & short ckt. Test on a 3- phase alternator
   2) Determine & plot variation of synchronous impedance with IF
   3) Determine S.E.R.
   4) determine regulation for 0.8 lagging p.f., unity p.f.
7. To perform open & short ckt. Test on a 3- phase alternator to find regulation by mmf method .
8. V – curve of synchronous motor .
      A) to study the effect of variation of field current upon the stator current and p.f. with synchronous motor running at no load, hence draw V & inverted V curves of the motor .
9. To perform direct load Test on a 3- phase alternator for :
   1) Resistive load .
   2) Inductive load .
   3) Capacitive load .
10. To measure negative sequence reactance of a synchronous machine.
11. To measure direct – axis synchronous reactance and quadrature – axis Synchronous reactance. X_d X_q by slip test .

LINEAR IC LAB
IV SEM. (EEcT – 216-E)

L   T   P

-     -   2

Sessional: 25 Marks

Practical : 25 Marks

Total   : 50 Marks

Duration :   3 hrs

LIST OF EXPERIMENTS

1.   To study the OPAMP as inverting and non-inverting

2.   To study the OPAMP as differentiator

3.   To study the OPAMP as integrator

4.   To demonstrate the operation of low pass filter and design the second order low pass filter.

5.   To demonstrate the operation of high pass active filter

6.   To study the frequency response of band pass filter

7.   To study the notch filter

8.   To construct the astable multivibrator using IC 555

9.   To study the operation of the Schmitt trigger using the IC 741.

10.   To study the phase shift wein bridge oscillator

ANALOG ELECTRONICS
IV SEM.(EEcT- 218-E)

L   T   P   Sessional : 25Marks
-    -   2   Practical : 25 Marks
                                        Total   : 50 Marks
                                        Duration :   3 hrs.

LIST OF EXPERIMENTS:

1. To study of characteristics of photodiode & LED .

2. To study of characteristics of phototransistor.

3. To study of characteristics of VDR &LDR.

4. To study of characteristics of optocoupler .

5. To study of characteristics of Varactor diode .

6. To study Transformer coupled amplifier & determine its voltage gain.

7. To study RC coupled amplifier & determine its voltage gain, power gain & freq. response.

8. To study Hartley Oscillator .

9. To study the different types of negative feedback in two stage amplifier and to observe its effects upon the amplifier parameters.

10. To study biasing of transistor by following method :
    I)   Fixed bias .
    II)   Voltage divider bias .