

BIFOCAL VOCATIONAL COURSES

Standard - XII

Subject - ELECTRONICS (C2)

Paper - I - Applied Electronics (Theory)

page-1

25 % Reduction of Syllabus for Academic year - 2020-2021

Sr. No.	Topic	Sub-Topic	Content to be omitted for academic year - 2020-2021	Remark
1)	Instruments	Cathode Ray Oscilloscope	How CRO displays waveform , dual trace CRO. Applications- phase , amplitude measurement using lissajous figures	Self study possible , consider for internal evaluation .
		Function Generator	Basic elements of function generator, Block diagram & brief description of each block.	
		D. M. M.	*	
2)	Power Supplies	Half wave rectifier, Full wave rectifier(CT) Bridge rectifier	*	
		Filters :	*	
		Concept of regulation	*	
		Zener regulator	*	
		Transistorised Regulator :	Current limiting - basic ideas (no feedback limiting only) .	
		3-terminals IC regulators	*	
		SMPS	Basic idea of switch mode power supply and its advantages	
3)	Transducers	Classification	*	
		Selection	*	
		Types	*	
		Working of	loud speaker, gas-sensor .	
4)	Operational Amplifier	Introduction	Draw ckt. of RC coupled & direct coupled amplifiers, advantages of differential amp, need for dual power supply	
		Parameters	*	
		Linear Applications	Integrator & Differentiator (using simple OPAMP, derivation in each case is expected, numericals are expected.)	
		Non-linear Applications	Schmitt trigger (Basic circuit) , their applications. (in all above cases, practical applications should be stated)	
5)	Modern Electronic communication	Element of communication system	*	
		Types of electronic communication	*	
		Electromagnetic spectrum	*	
		Bandwidth	*	
		Modulation	*	
		AM	*	
		FM	*	
		Satellite communication	*	
		Satellite communication system	*	
		Application overview of satellites	communication (T.V & Telephony) , surveillance (military) observation (materological , monitoring earth's resources etc.) GPS (introduction only)	
Concept of digital communication	speed of data transfer (baud rate)			

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5)	Modern Electronic communication (confine---)	Modem	What is modem , its used in communication.	Self study possible , consider for internal evaluation .
		Introduction to computer network	*	
		Fibre-optic communication	Basic block dig. Of fiber optic communication system showing- i/p data to coder , light source , (transmitter) fiber optic cable, light detector, amplifier , wave shaper ,decodes & o/p data) Function of each in brief , Advantages of fibre optic cables over conventional electrical cables for communication , application of fiber optic cables (mention only).	
		FACSIMILE (Fax)	What is Fax, Basic block diagram of fax machine (Source of light, CCD, ADC, digital data compressor, modulator to telephone line interface, telephone line interface to demodulator, data expands, printer, control logic, motor control, operator control) & working in brief concept of scanning to be explained.	
		Cellular Radio (cell-phone)	Basic concept (concept of dividing geographical area in to cells each having a low power transmitter , each cell connected to master control centre & automatic switching of system from one cell to another by master control centre) , General block dig. of cellular radio (antenna , transmitter , receiver , frequency synthesizer , logic unit , control unit , hand set) , function of each block in brief.	
		Radar	General block diagram of pulsed radar & function of each block in brief.	
6)	Study of integrated circuit	IC 555	PPM , PAM , FSK .	
		IC 741	*	
		IC 317	*	

Note -Teachers can use supplementary material like e- sources , worksheets , projects , assignments , home work etc. to deal with the self - study portion.

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1)	Number System & Boolean Algebra	Decimal ; Binary & Hexadecimal number	*	Self study possible , consider for internal evaluation .
		Codes	BCD , ASCII (7-bit) , EBCDIC problems conversion not expected.	
		Binary Arithmetic	*	
2)	Logic Gates	Introduction	*	
		Basic Gates	*	
		De Morgan's Theorem's	*	
		Derived Gates	*	
		Ex-OR gate	*	
		Adders	4-bit binary adder / subtractor.	
3)	Logic Families & IC specifications	Introduction to Logic families	*	
		T T L	*	
		C M O S	Basic ckt of NAND , NOR , NOT gates & working using CMOS , Open collector TTL NAND , Tristate concept (with ckt. & working) (specification of IC numbers should not be stated but not expected in exam)	
		Characteristics	Noise margin	
4)	Combinational Logic Circuit	Multiplexers	*	
		De multiplexer	*	
		Applications	*	
		Encoder	*	
		Decoder	Seven segment display decoder driver(eg. 7446) (internal dig. Pin configurations not to be asked in exam .)	
5)	Flip-Flops	Flip-Flops	*	
		Registers	Prset & clear facility, Master slave concept (JK M/S) Concept of shift register, Left shift, right shift (using D Flip-Flop).	
		counters	Basic concept of up- down counter. Ring counter.	

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6)	A/D & D/A Converters	D/A converters	*	Self study possible , consider for internal evaluation .
		A-D converters	Successive approximation type ADC with block diagram and working.	
7)	Computer Fundamentals	Computer	*	
		I/O devices	*	
		Memory	*	
		Secondary Memory	Floppy disc, Hard disk , CD ROM, Magnetic tape . General explanation with Read/Write mechanism.	
	Specifications of PC	Clock frequency, Main memory (RAM), Secondary storage (HD) device. Input output ports, Keyboard monitor, Processor, Printer, Mouse, Floppy dis c drives. CD Drive, M O D E M, Multimedia kit with sound blaster. Cache memory, requirements of UPS (specifications of any type are to be listed & explanation is not required.)		

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