JSS MAHAVIDYAPEETHA JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED, MYSURU-06

CIRRICULUM STRUCTURE

III Semester Scheme of Studies-Diploma in Electronics and Communication Engineering (C-21)

SI.	Sl. Course Category / Course		()	Hou	rs per V	Veek	tal tact s per ek	eek edits	CIE Marks		SEE Marks		tal rks	1 arks ıssing iding E)	gned ade	ade int	PA bd PA
No.	Teaching Department	Code	Course 1ittle		Т	Р	To con hour we	Cre	Max	Min	Max	Min	To Ma	Min N for Pa (inch CI	Assiţ Gra	Po	SG ar CG
	INTEGRATED COURSES																
1	PC/EC	5431	Analog Electronics	3	1	4	8	6	60	24	40	16	100	40			
2	PC/EC	5432	Logic Design using Verilog	3	1	4	8	6	60	24	40	16	100	40			meste
3	PC/EC	5433	Communication Systems	3	1	4	8	6	60	24	40	16	100	40			t Se
4	PC/EC	5434	Electronic Measurements and Testing Techniques	3	1	4	8	6	60	24	40	16	100	40			A for 1s
						AU	DIT CO	URSES									GP
5	AU/KA		Kannada-II/ Á»vÀå ¹AZÀ£À-2 /§¼ÀPÉ PÀ£ÀßqÀ-2	2	0	0	2	2	50	20	-	-	50	20			Only S ⁽
			Total	14	4	16	34	26	290	116	160	64	450	180			

L-Lecture T-Tutorial P-Practical PC-Programme Core AU-Audit Course KA-Kannada

Note:

1. Assigned Grade, Grade Point, SGPA and CGPA to be recorded in the Grade / Marks Card.

2. Practical course CIE and SEE is conducted for the 100 marks (3 Hours Duration)

Programme Coordinator

Principal

Government of Karnataka

Department of Collegiate and Technical Education
JSS Polytechnic for the Differently Abled, Mysuru (AUTONOMOUS)

Programme	Electronics and Communication	Semester	III
Course Code	5431	Type of Course	Programme Core
Course Name	Analog Electronics	Contact Hours	8 hours/week 128 hours/semester
Teaching Scheme	L:T:P :: 3:1:4	Credits	6
CIE Marks	60	SEE Marks	40

1. Rationale

Analog electronics is a branch of electronics that deals with a continuously variable signal. It is widely used in radio and audio equipment along with other applications where signals are derived from analog sensors before being converted into digital signals for subsequent storage and processing. Analog Electronics offers a very elegant design with many components and would effectively act as an impetus to the digital world.

2. Course Outcomes/Skill Sets: On successful completion of the course, the students will be able to:

CO-01	Identify the components in a given analog electronic circuit and list their characteristics and uses.							
CO-02	Study the given analog circuit and using the data sheets/specification sheets, list alternative electronic components for the given circuit.							
CO-03	Construct an analog electronic circuit for a given application and demonstrate the working of that circuit either in Real or Simulated environment.							
CO-04	Test a given circuit for a desired result/outcome, identify the problem and troubleshoot to obtain the desired result/outcome.							

Course	COs	POs PSOs									
Course	005	1	2	3	4	5	6	7	1	2	3
	CO1	1	-	I	-	1	1	3	1	-	I
Analog	CO2	1	-	I	-	1	1	3	1	-	I
Electronics	CO3	1	-	3	2	2	1	3	3	-	-
	CO4	1	-	3	2	2	1	3	3	I	-
AV	ERAGE	1	-	3	2	1.5	1	3	2	-	-

CO-PO/PSO Mapping Matrix:

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0-Not Mapped

Week	CO	РО	Lecture (Knowledge Criteria)	Tutorial (Activity Criteria)	Practice (Performance Criteria)
			3 hours/week	1 hour/week	4 hours/week (2 hours/batch twice in a week)
1	1,3,4	1,3, 4,6, 7	Power Supplies 1.Need, Types – Unregulated, Regulated – Linear, Switched, Battery, Selection Criteria of different power supplies 2. RPS & UPS – Online & Offline – Block Diagram and its working principle 3. SMPS – Block diagram and its working principle	Refer Table 1	 Build 5V/12V Regulated Power Supply. 2a) Identify the components in a SMPS. 2b) Identify front panel control & indicators of UPS.
2	1,3,4	1,3, 4,6, 7	Wave Shaping Circuits.1. RC Integrator & RC Differentiator.2. Clippers - Series, Shunt & Biased.	Refer Table 1	 Generate the following waveforms from sinusoidal waveform. a. Trapezoidal waveform b. Positive Cycle.
3	1,3,4	1,3, 4,6, 7	1.Clampers – Positive Voltage & Negative Voltage, Voltage Multipliers – doubler, Tripler	Refer Table 1	1. Construct and verify voltage doubler and tripler circuit to multiply the input voltage.
4	1,2,3,4	1,3, 4,6, 7	SpecialPurposeDevices.1.1.Features&Applications of TunnelDiode, Varactor Diode.2.Features&Applications of Gunndiodediode& PINdiode,Solar cellSolar cell	Refer Table 1	 Identify & test all special purpose diodes and interpret their datasheets. Simulate/Analyse Schottky diode/PIN diode/Gunn Diode/Varactor Diode application circuits.

3. Course Content

			3. Features & Applications of Schottkydiode & UJT.		
5	1,2,3,4	2,3, 4,6, 7	 Transistor Amplifiers. 1. Introduction, DC load line, Operating point, Need for biasing, Stabilization, stability factor. 2. Types of biasing-voltage divider bias for BJT. 	Refer Table 1	 1a. Demonstrate Numbering System of Semiconductor Devices. 1b. Identify Transistors in different packages and interpret their datasheets. 2.Construct/Simulate a AND/OR Gate using transistors
6	1,2,3,4	2,3, 4,6, 7	1. Classification of Amplifiers-based on use, frequency, coupling methods & mode of operations (advantages, disadvantages)	Refer Table 1	1.Design and construct voltage divider biasing circuit to fix an operating point and test the voltages
7	3,4	1,3, 4,6	 Common Emitter Transistor Amplifier- Working, Voltage gain, phase reversal. RC Coupled transistor amplifier- frequency response. Power amplifiers- classification, principle & performance criteria of power amplifiers. 	Refer Table 1	 Construct voltage divider biased single-stage RC coupled CE amplifier and plot frequency response. Simulate the RC coupled amplifier using BJT. Verify the same using FET.
8	3,4	1,2, 5,6, 7	 Working of Class A–Series-fed amplifier and transformer- coupled amplifier. Expression for output power and maximum power efficiency 2.Class B- Push pull Amplifier and complementary- symmetry push-pull 	Refer Table 1	1. Demonstrate and document the working of a power amplifier using video or simulator.

11 3,4 1,4,6 1. Op-amp arameters: Input offset current, power supplications, disadvantages. 1. Construct and test an op-amp and comparation inverting, non-inverting, amplifier. 11 3,4 1,4,6 1. Op-amp arameters: Input offset current, power supply rejection ratio. CMRR, Input and output impedance, summing & difference amplifier. 1. Construct and test an op-amp curver inverting, non-inverting, non-inverting, amplifier. 11 3,4 1,4,6 1. Op-amp canders: Inverting, non-inverting, non-inverting, amplifier. Refer Table 1 11 3,4 1,4,6 1. Op-amp canders: Inverting, amplifier. Refer Table 1 1. Identify Op-amp IC, its pins and Interpret its data sheet. 11 3,4 1,4,6 1. Op-amp parameters: Input offset current, power supply rejection ratio. CMRR, Input and output impedance, input offset current, power supply rejections, disadvantages. 1. Construct and test an op-amp configurations. disadvantages. 11 3,4 1,4,6 1. Ope-loop configurations. disadvantages. Refer Table 1 1. Construct a circuit to obtain Inverting amplifier. 12 3,4 1,3 1. Construct a circuit to obtain Inverting amplifier. 3. Voltage follower, summing & difference amplifier. 12 3,4 1,3 I. Construct a circuit to obtain input wate set and on the sum of the						
9 3,4 1,2, 1.Working of Class AB and Class C amplifiers. 7 1.Construct and Demonstrate/Simulate the working of push pull amplifier. Verify the same using FET. 10 1,2,3 1,4,6 1. Op-amp: multistage amplifier. Concept Refer Table 1 1. Identify Op-amp IC, its pins and Interpret its data sheet. 10 1,2,3 1,4,6 1. Op-amp: diagram, Symbol, Basic Refer Table 1 1. Identify Op-amp IC, its pins and Interpret its data sheet. 10 1,2,3 1,4,6 1. Op-amp Parameters: Input offset voltage, input offset voltage, inverting, non-inverting, applications, disadvantages. 1. Construct and test an op- amp circuit to obtain Inverting & Non inverting amplifier. 11 3,4 1,4,6 1.Open-loop configuration: inverting, non-inverting, amplifier. Refer Table 1 1. Construct a circuit to obtain the SumDifference of all input voltages. 12 3,4 1,3 </td <td></td> <td></td> <td></td> <td>amplifier. Expression for output power and</td> <td></td> <td></td>				amplifier. Expression for output power and		
9 3,4 1,2, 5,6, 7 1.Working of Class AB and Class C amplifiers. 7 1.Construct and Demonstrate/Simulate the working of push pull amplifier. Verify the same using FET. 10 1,2,3 1,4,6 1. Op-amp: Block diagram, Symbol, Basic Refer Table 1 1. Identify Op-amp IC, its pins and Interpret its data sheet. 10 1,2,3 1,4,6 1. Op-amp: Block diagram, Symbol, Basic 1. Identify Op-amp IC, its pins and Interpret its data sheet. 2. Modes of operation- Single ended, Common mode & Differential mode, Ideal and practical characteristics. 2. Conduct an experiment to find the practical compare them with ideal characteristics. 3. Op-amp parameters: Input offset current, power supply rejection ratio, CMRR, Input and output impedance, gain, gain- bandwidth product, slew-rate 1. Construct and test an op- amp circuit to obtain Inverting wonting, applications, disadvantages. 11 3,4 1,4,6 1.Open-loop configuration: inverting, non-inverting, applications, disadvantages. Refer Table 1 1. Construct a circuit to obtain the SumDifference of all input voltages. 12 3,4 1,3, 1.Construct and verify On-pann Refer Table 1 1. Construct a circuit to obtain triangular wave and enter form				maximum power efficiency.		
10 1,2,3 1,4,6 1. Op-amp: Block diagram. Symbol, Basic differential amplifier- Working principle. 1. Identify Op-amp IC, its pins and Interpret its data sheet. 2. Modes of operation-Single ended, Common mode & Differential mode, Ideal and practical characteristics. Refer Table 1 2. Conduct an experiment to find the practical characteristics of Op-amp and compare them with ideal characteristics. 3. Op-amp parameters: Input offset current, power supply rejection ratio, CMRR, Input and output impedance, gain, gain- bandwidth product, slew-rate 1. Construct and test an op-amp configuration: Comparator-inverting, non-inverting, applications, disadvantages. 11 3,4 1,4,6 1.Open-loop configuration: virtual ground, applications - inverting, applications - inverting, applications - inverting, anplifier. Refer Table 1 12 3,4 1,3 1.Construct and verify output and output inpedance, gain, gain- bandwidth product, slew-rate 11 3,4 1,4,6 1.Open-loop configuration: virtual ground, applications - inverting, applications - inverting, applications - inverting, and applications - inverting, and and first and applifier. 1. Construct a circuit to obtain inverting output. 12 3,4 1,3 1.Construct and verify on an and and applifiers. Refer Table 1 12 3,4 1,3 1.Construct and verify on an output and output and output and output and output and	9	3,4	1,2, 5,6, 7	1.Working of Class AB and Class C amplifiers. Stages of practical power amplifier, Concept and expression for voltage gain of multistage amplifiers.	Refer Table 1	1.ConstructandDemonstrate/Simulatetheworking of push pull amplifier.Verify the same using FET.
11 3,4 1,4,6 1.Open-loop configuration: Comparator-inverting, non-inverting, applications, disadvantages. 1. Construct and test an op-amp circuit to obtain Inverting & Non inverting output. 2.Closed-loop configuration: virtual ground, applications - inverting, non-inverting amplifier. 2.Closed-loop configuration: virtual ground, applications - inverting amplifier. 2. Construct a circuit to obtain the Sum/Difference of all input voltages. 12 3,4 1,3, 1.Construct and verify On-amp Refer Table 1 1. Construct a circuit to obtain the Sum/Difference of all input voltages.	10	1,2,3	1,4,6	 Op-amp: Block diagram, Symbol, Basic differential amplifier- Working principle. Modes of operation- Single ended, Common mode & Differential mode, Ideal and practical characteristics. Op-amp parameters: Input offset voltage, input offset current, power supply rejection ratio, CMRR, Input and output impedance, gain, gain- bandwidth product, slew-rate 	Refer Table 1	 Identify Op-amp IC, its pins and Interpret its data sheet. Conduct an experiment to find the practical characteristics of Op-amp and compare them with ideal characteristics.
12 3,4 1,3, 1.Construct and verify 4.6 On-amp as Refer Table 1 1. Construct a circuit to obtain triangular wave and spike from	11	3,4	1,4,6	 1.Open-loop configuration: Comparator-inverting, non-inverting, applications, disadvantages. 2.Closed-loop configuration: virtual ground, applications - inverting, non-inverting amplifier. 3.Voltage follower, summing & difference amplifiers. 	Refer Table 1	 Construct and test an op- amp circuit to obtain Inverting & Non inverting output. Construct a circuit to obtain the Sum/Difference of all input voltages.
	12	3,4	1,3,	1.Construct and verify	Refer Table 1	1. Construct a circuit to obtain triangular wave and spike from

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			Differentiator,		square wave.
			Integrator. 2. Op-amp as Schmitt trigger and precision rectifier, Gain of Multistage Op-Amp Circuits.		2. Build an op-amp circuit to generate clock pulses and verify its working.
			3.Sinusoidal Oscillators, Types of Oscillations, LC Tank circuit and stability.		
13	3,4	1,3, 4,6	1.Concept of feedback and types, Barkhausen criteria.		1. Construct/Simulate Hartley oscillator using BJT. Verify the same using op-amp.
			2.Types of Oscillators, Working of Hartley oscillator using BJT/Op-amp and its applications.	Refer Table 1	2.Construct, test and Troubleshoot Colpitts oscillator using BJT/op-amp.
			3.Working of Colpitts and crystal oscillator using BJT/Op-amp and their applications		
14	3,4	1,3, 4,6	1.Working of RC phase-shift and Wein- bridge oscillators using Op-amp and their applications.		1. Design and implement /Simulate RC phase shift oscillator for generating a frequency of 1khz using BJT. Verify the same using op-amp.
			2.Filters: Classification, Applications & Advantages of Active over Passive Filters.	Refer Table 1	2. Conduct an experiment to plot the frequency response of LPF & HPF.
			3.Filter Terminology, frequency response of 1st order Butterworth LPF, HPF (No Derivation).		
15	3,4	1,3, 4,7	1.Frequencyresponseof 1st order ButterworthBPFandBandElimination Filter, BEF	Refer Table 1	1. Video demo on an Instrumentation Amplifier Circuit to detect and Amplify Analog/Bio- Potential Signals

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			 (No Derivation). 2.Instrumentation amplifier-Need for instrumentation amplifier, Working of instrumentation amplifier circuit. 3.Phase Locked Loop (PLL): voltage to frequency converter, PLL operation with mention of its applications. 		(using simulator or video to be displayed)2. Verify the working of PLL using a simulator.
16	1,3,4	1,3,4	 1.IC 555 Timer: Internal diagram, Pin Configuration. Interpret Datasheets. 2.IC 555 timer as Astable multivibrator 3.IC 555 timer as Monostable multivibrator 	Refer Table 1	 Verify the working of IC 555 timer as astable multivibrator. Verify the working of IC 555 timer as monostable multivibrator.
Total in hours		rs	48	16	64

Note: 1) In Practice sessions Video demonstration should be followed by MCQs/Quiz/Subjective questions and the evaluation has to be documented.

2) In Practice sessions, all discrete circuits should be simulated using suitable software before its construction and verification.

TABLE 1: Suggested activities for tutorials

The list is shared as an example and not inclusive of all possible activities of the course. The list of activities for one week can be shared among teams in a batch of students.

Week.No.	Suggested activities for tutorials									
	1. Gather knowledge and give a presentation on the type of power supply									
01	used in mobile charger, desktop computer and laptop with its specifications and Justify.									
	2. Build a Notch Filter to reject 50 Hz noise in power supplies and demonstrate it in the class.									

	3. Identify the type of UPS used in the lab, its specifications, analyze its load carrying capacity related to its power factor and prepare a report on it.			
02	1. Design and build a circuit that can store maximum voltage of the input signal (Peak Detector) and demonstrate it in the class.			
	2. Prepare a report on any one application of peak detector in daily life, also compare the nature of output of a rectifier and a peak detector.			
03	 Prepare a video of a circuit which increases the input voltage 4 times. (Quadrupler). 			
	2. Prepare a report on applications of Clampers and Clipper.			
04	1. Give a presentation on the use of opto isolator to detect DC or control AC signals and data.			
04	2. Demonstrate the use of PIN diode as a switch in domestic applications.3. Build a power supply switching circuit using optocouplers.			
05	 Prepare a report on applications of each type of amplifier and present it. Demonstrate any one real life application of an amplifier. 			
	1. Prepare a report on Classification of Amplifiers-based on use, frequency.			
06 2. Prepare a report on Classification of Amplifiers-, coupling meth mode of operations.				
07	1. Prepare a report and explain a specific application of emitter follower in daily life. (Ex: as switching circuit, isolator circuit, voltage buffer, impedance matching circuit).			
	2. Prepare a presentation on comparison of power amplifiers.			
08	 Prepare a video/report on any one real life application of a power amplifier. Prepare a video/report on radio player amplifier circuit. 			
	1. Give a presentation on low noise amplifiers.			
09	2. Prepare a report on multi stage amplifier.			
	1. Explain the criteria for selecting an op-amp for a given application.			
10	2. Identify at least 5 electronic circuits using op-amp and present the details of its working.			

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	1. Prepare a report on comparison of transistor amplifier and op-amp.
11	2. Demonstrate the operation of auto cut for manual stabilisers using 741
	IC.
	1. Explain how an op-amp can be used in applications such as A/D
10	converters, wave shaping circuits etc.
12	2. Prepare a report on Schmitt trigger applications such as switch
	debouncing, noise removaletc.
	1. Demonstrate the operation of a variable audio frequency oscillator using
13	op-amp 741.
	2. Explain the working of FM radio jammer.
1.4	1. Discuss the problems to design and analyse 1st order butter worth filters.
14	2. Demonstrate how LEDs can be made to blink on the beats of music.
	1. Prepare a report on different applications of instrumentation amplifier
15	2. Explain the operation of Frequency Shift Keying (FSK) generator using
	PLL 565.
	1. Study the latest technological changes in this course and present the
	impact of these changeson industry.
16	2. Demonstrate the use of IC 555 timer in traffic light controller.
	3. List the real life applications of IC 555 timer and explain any one
	application.

LINKS FOR REFERENCE.

- 1. https://www.teamwavelength.com/power-supply-basics/
- 2. https://www.tutorialspoint.com/electronic circuits/electronic circuits smps.htm
- 3. <u>www.electronicshub.org</u>
- 4. <u>https://images.app.goo.gl/xb2JnuqBKyaLgwi6A</u> (Tutorial 6)
- 5. https://youtu.be/mgoCeOCjiBI (Experiment 7)
- 6. https://www.circuitstoday.com/
- 7. https://elec-club-iitb.github.io/blog/2016/09/get-electrified-2/
- 8. <u>https://bestengineeringprojects.com/frequency-shift-keying-fsk-generator-using-pll-565/</u>
- 9. https://images.app.goo.gl/cbkCDCHJngANwiyF6
- 10.http://www.allaboutcircuits.com
- 11.<u>http://www.allaboutcircuits.com/videos</u>

E-WEBSITES FOR REFERENCE

- 1. Electronic Tutorials
- 2. Spark fun-Learning section
- 3. All about circuits
- 4. Electronics theory
- 5. Electronics Lab
- 6. Instructables

4.CIE and SEE Assessment Methodologies

Sl.	Assessment	Test Week	Duration	Max marks	Conversion
No			In minutes		
1	CIE-1 Written Test	6	80	30	Average of three
2	CIE-2 Written Test	10	80	30	tests 30
3	CIE-3 Written Test	15	80	30	
4	CIE-4 Skill Test-Practice	CIE-4 Skill Test-Practice 8		100	Average of two
5	CIE-5 Skill Test-Practice	13	180	100	skilltests 20
6	CIE-6 Portfolio	1-16		10	10
continuous evaluation					
of Activity through					
	Rubrics				
Total CIE Marks 60				60	
Semester End Examination		ination	180	100	40
	(Practice)				
	Total Marks 100				

5.Format for CIE (1, 2, 3) Written Test

Course		Analog Electronics	Test	I/II/III	Sem	III
Name						
Cours	e Code	5431	Duration	80 Min	Marks	30
Note:	Answer an	ny one full question from each see	ction. Each fi	all question ca	arries 10 marks	•
Secti		Assessment Questions		Cognitive	Course	Marks
on				Levels	Outcome	
Ι	1					
	2					
II	3					
	4					
III	5					
	6					
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, Cognitive level and course outcomes.						

SL.	COs	Particulars/Dimensi	Marks
No.		on	
1	1,2	Identify and test the given Electronic components - 10 MarksInterpret	20
		datasheet of any one Electronic component -10 Marks	
2	3	Test the working of electronic circuit using simulation.	20
3	3,4	Conduct an experiment on analog circuit a)Writing the circuit diagram, tabular column, formula- 10 Marks b)Build the circuit-10 Marks c)Test, troubleshoot and demonstrate working of the circuit- 10 Marks d)Result- 10 Marks	40
4	1,2,3, 4	Port Folio evaluation of Practice sessions through rubrics	20
		Total Marks	100

5.(a)Format for CIE-(4,5) Skill Test –Practice

6. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
				Avera	ge Marks=(8-	+6+2+2)/4=4.5	5

7.Reference:

Sl. No.	Description	
1	1. Electronic Devices and Circuits, S. Salivahanan, N. Sereshkumar, McGraw Hill Education	
	(India)Private Limited, ISBN - 9781259051357	
2	Op-amps and linear integrated circuits, Ramakanth A. Gayakwad, ISBN- 9780132808682	
3	Principles of Electronics, Rohit Mehta and V K Mehta, S. Chand and Company Publishing,	
	ISBN-9788121924504	
4	Electronic Devices and Circuits, David A. Bell, Oxford University Press, ISBN9780195693409	
5	Fundamentals of Electrical and Electronics Engineering, B. L. Theraja, S. Chand and	
	Company	
	Publishing. REPRINT 2013, ISBN-8121926602.	

8.SEE Scheme of Evaluation

SL.	COs	Particulars/Dimension	Marks
No.			
1	1.2	Identify and test the given Electronic components - 10 Marks	20
		Interpret datasheet of any one Electronic component -10 Marks	
2	3	Test the working of electronic circuit using simulation.	20
3	3,4	Conduct an experiment on analog circuita) Writing the circuit diagram, tabular column, formula- 10 Marksb) Build the circuit-10 Marksc) Test, troubleshoot and demonstrate working of the circuit - 10 Marksd) Result- 10 Marks	40
4	1,2,3, 4	Viva-Voce	20
		Total Marks	100

9.Equipment/software list with Specification for a batch of 20 students

Sl. No.	Particulars	Specification Quar	
1	Computers	Intel Core i5 11th 20 gen/8GBRAM/1 TB HDD/256GB SSD/ Graphics 2 GB	
2	MATLAB /PSPICE/Electronic WorkbenchSoftware for simulation		
3	Regulated Power Supply (Single)	1A/2A 0-30V	10
4	Regulated Power Supply (Dual)	1A/2A 0-30V	10
5	DC Voltage supply	(+/-5v, +/-12V, +/-15V	10
6	Digital multimeters		10
7	Function/Signal generator		10
8	Dual trace oscilloscope	Upto 20-30MHz	10

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9	Electronic consumables (Diode, Transistor(npn and pnp), Resistors, Inductors, Capacitors, Special purpose diodes, etc)		Consumables as required
10	Step down transformers	6-0-6v 12-0-12v	10 each
11	OP-amps	741 IC	20
12	IC 555		10
13	Single strand wire/ patch cards	Different lengths	
14	Probes		10
15	Breadboard/Analog trainer kit		10

Government of Karnataka

J	JSS Polytechnic for the Differently Abled, Mysuru (AUTONOMOUS)				
Programme	Electronics and Communication	Semester	III		
Course Code	5432	Type of Course	Program Core		
Course Name	Logic Design using Verilog	Contact Hours	8 hours/week 128 hours/semester		
Teaching Scheme	L:T:P :: 3:1:4	Credits	6		
CIE Marks	60	SEE Marks	40		

Department of Collegiate and Technical Education

1.Rationale

Digital Electronics is a field of electronics involving the study of digital signals and engineering of devices that use or produce them. It is very important in today's life because if digital circuits are used instead of analog circuits the signals can be transmitted without degradation due to noise. Also in a digital system information stored is easier than that of analog systems. The functionality of digital circuits can be changed easily with the help of software without changing the actual circuit. Verilog, a Hardware Description Language, is used for describing digital electronic circuits and systems. It is used for verification of digital circuits through simulation, for timing analysis, for test analysis and for logic synthesis.

2.Course Outcomes: On successful completion of the course, the students will be able to

CO-01	List the types of Verilog modeling and the use of each model for specific application
CO-02	Design and construct a sequential circuit for a given application and test the circuit to obtain the desired result/output.
CO-03	Compare and contrast combinational and sequential circuits and simulate a given circuit using Verilog descriptions to test to obtain the desired result/output
CO-04	List the various types of A to D, D to A converters along with memory and for a given application select the appropriate converters and/or memory types to be used to obtain the given result/output.

Course	COs	Programme Outcomes(POs)				Programme Specific Outcomes (PSOs)					
		1	2	3	4	5	6	7	1	2	3
	CO1	3	-	-	2	2	1	1	-	2	3
I. D.	CO2	3	2	3	2	-	-	1	1	2	-
Logic Design	CO3	3	2	3	2	-	-	1	1	2	3
using vernog	CO4	3	2	3	-	-	1	1	1	2	3
Average		3	2	3	2	2	1	1	1	2	3

MAPPING OF CO WITH PO and PSO

Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0-Not Mapped

			Lecture (Knowledge	Tutorial	Practice (Performance
			Criteria)	(Activity	Criteria)
Week	CO	PO		Criteria)	
			3 hours/week	1 hour/week	4 hours/week (2 hours/batch twice in a week)
1	1	1,4,5,	1. VLSI - Introduction,		
		6,7	Importance & Need.		
			HDL- Introduction,		1. Familiarization of
			Importance, Need &		Xilinx software.
			Types.		
					2. Familiarization of
			2. Introduction to Verilog		FPGA/CPLD KIT.
			HDL, Types of	Pofor Table 1	
			modeling- Switch level,		
			Structural, Data flow and		
			Behavioral.		
			3. Basic Concepts-		
			Lexical conventions,		
			comments, keywords,		
	1	1.0.4	identifiers, strings.		1.D. () 1
2	I	1,2,4	1. Data types - Value Set,		1. Demonstrate and
			Wires, Nets, Registers,		Practice simple examples
			Time Deremeters Arrous		using different data types.
			Strings		2 Compute the output for
			Sumgs.		expressions having
			2. Operators- Arithmetic.		different operators using
			Logical Relational Bit-	Refer Table 1	simple programs.
			wise.		simple programs.
			3. Reduction, Shift,		
			Concatenation, Replication,		
			Conditional operators.		
	1.0	1.0.0	Operator Precedence.		
3	1,3	1,2,3,	1. Program structure-		Write the verilog code,
		6	Module declaration, port		simulate and download
			declaration, portconnection.		the following
			2 Gate level modeling	Refer Table 1	the following
			2. Oate level modeling		1.2 input basic gates
					1. 2 input basic gates
			3. Gate level Verilog		modelling
			description forhalf adder.		g.
			full adder.		2. Full adder and full
					subtractor using gate
					levelmodelling.

3.Course Content

4	1,3	1,2,3, 4,6	 Data flow modeling- Continuous assignment, Module instantiations, net declaration, delays, expressions. Data flow Verilog description of multiplexer and demultiplexer. 	Refer Table 1	 Write the verilog code, simulate and download to FPGA/CPLD kit for the following. 1. 4:1 Mux and 1:4 Demux using data flow modeling. 2. Comparator using
			3. Data flow Verilog description for 4-bit comparator		dataflow modeling.
5	1,3	2,3,4,	 System tasks-display, strobe, monitor, reset, stop, finish. Compiler directives- include, define. Behavioral modeling- Always and Initial statements. Procedural Assignments- Blocking and non- blocking assignments. Timing Control-Delay, Event 3. Conditional statements-if, if- else, Case, Loops- While, For, Repeat, Forever. 	Refer Table 1	 1a.Write and execute simpleprograms to illustrate conditional statements. 1b. Write and execute simple programs to illustrate loops. 2. Write the verilog code, simulate and download to FPGA/CPLD kit for a 4-bit ALU with any 2 arithmetic and logical operations.
6	1,3	1,2,3, 4,6	 Behavioral Verilog description for BCD to seven segment decoder for common anode display using if-else, Case. Traffic light controller using Behavioral description. Test bench- Need, Importance, testbench for half adder. 	Refer Table 1	 Write the verilog code, simulate and download to FPGA/CPLD kit for a BCD to seven segment decoder using case statement. Write and simulate a Test bench for half adder.
7	2	1,2,3, 4,6,7	 Sequential circuits - Introduction. Flip flops- types, SR flip flop- Gate level circuit using NAND gates, truth table, working, timing diagram. JK, JK-MS flip flops- Logic circuit, truth table, working, timing diagram. 		1. Construct and test clocked SR Flip flop using NAND gates in digital trainer kit.
8	2	1,2,3,4, 6,7	1.D, T flip flops-Logic circuit, truthtable, working,		2. Implement D and T Flip flops using JK flip flop in

			timing diagram. Relevance of Asynchronous inputs to flip-flops		digital trainer kit and observe the timing diagram
9	2,3	1,2,3, 4	 Verilog description of SR flipflops using data flow modeling. Verilog description of JK flip flopusing behavioral modeling. Registers- Classification of registers, realization of simple (3 or 	Refer Table 1	Write the verilog code, simulate and download toFPGA/CPLD / Simulation kit for the following. 1. SR, JK flip flops using dataflow modeling 2.D, T flip flops using behavioral modeling
10	2,3	1,2,3, 4,6,7	 Concept of universal shift- register. Ring counter and Johnson's counter (3 bit). Verilog description of any one shift register using any modeling. 	Refer Table 1	Construct and verify the working of the following using suitable IC in digitaltrainer kit 1. Ring and Johnsoncounter(4- bit).
11	2,3	1,2,3, 4,6,7	Realization of SIPO, PISO and PIPO using flip flops		1.SISO, SIPO, PISO and PIPO(4-bit) shift registers
12	3	1,3,4, 6,7	 Counters - definition, classification, modulus. Working and realization of asynchronous (3 bit/4 bit) counters using flip- flops. Working and realization of synchronous (3-bit/ 4-bit) countersand their comparison. 		Construct and verify the working of the following using digital trainer kit 1. 3 bit ripple counter using IC 7476. 4 bit counter as a frequency divider.
13	3,4	1,2, 6 , 7	 Realization of higher-mod counters using lower-mod counters. Concept of up/ down counters. Verilog description of any one counter using any modeling. 	Refer Table 1	 Write the verilog code, simulate and download toFPGA/CPLD kit for an up/down counter using behavioral modeling. Construct/Simulate and verify the up/down counter using behavioral modeling
	3,4	1,2,6,	1. Data converters- Need for	Refer Table 1	2. Construct/Simulate

15 4 1,2,3, 4,6,7 1. ADC specifications. types, working of Flash ADC. 1. Construct/Simulate a verify the working of F ADC. 2. Working of Successive approximation and dual slope ADCs. 3. Memory devices- Introduction, classification based on different criteria, read and write operations. 1. Construct/Simulate a verify the working of F ADC. 16 4 1,2,3, 4,7 1. Introduction to PLDs- PAL, PLA, CPLD, FPGA, ASIC. IC Design Verification – Types & Stages. 1.Construct/Simulate an verify the working of PAL,PLA 2. PAL- Architecture, Implementation of a Booleanexpressions using PAL. 2. PAL- Architecture, Implementation of a Refer Table 1	14		7	DAC and ADC, DAC specifications, types, working of Weighted resistor		and verify the working of R-2RDAC.
16 4 1,2,3, 4,7 1. Introduction to PLDs- PAL, PLA, CPLD, FPGA, ASIC. IC Design Verification – Types & Stages. 1. Construct/Simulate an verify the working of PAL,PLA 2. PAL- Architecture, Implementation of a Booleanexpressions using PAL. Refer Table 1 3. PLA-Architecture, Implementation of a 3. PLA-Architecture, Implementation of a	15	4	1,2,3, 4,6,7	 ADC specifications. types, working of Flash ADC. Working of Successive approximation and dual slope ADCs. Memory devices- Introduction, classification based on different criteria, read and write 		1. Construct/Simulate and verify the working of Flash ADC.
Boolean expressions using PLA. Total in hours 48	16 Total i	4	1,2,3, 4,7	 operations. 1. Introduction to PLDs- PAL, PLA, CPLD, FPGA, ASIC. IC Design Verification – Types & Stages. 2. PAL- Architecture, Implementation of a Booleanexpressions using PAL. 3. PLA-Architecture, Implementation of a Boolean expressions using PLA. 	Refer Table 1	1.Construct/Simulate and verify the working of PAL,PLA

Note: 1) In Practice sessions Video demonstration should be followed by MCQs/Quiz/Subjective questions and the evaluation has to be documented.

2) In Practice sessions, all circuits should be simulated using suitable software before its construction and verification.

TABLE 1: Suggested activities for tutorials

The list is shared as an example and not inclusive of all possible activities of the course. The list of activities for one week can be shared among teams in a batch of students.

Week No.	Suggested activities for tutorials
01	1. Prepare a report on typical design flow for VLSI IC Circuits.
	2. Give a Report on comparison of different types of HDLs.
	3. Give a Report on comparison of different types of modeling in Verilog.
02	1. Prepare a report on declaration and initialization of variables of different data types inVerilog.
	2. Prepare a report on hierarchy of operators.
03	1. Prepare a report on basic components of a module? Which components are mandatory?
	2. Prepare a report on Hierarchical names for variables.
	3. Prepare a report on Verilog code for 4:1 mux and 1:4 demux using gate level modeling.
04	 Prepare a report on Verilog code for Half adder using data flow modeling. Write and explain the Verilog code for 2:1 must using data flow modeling.
	2. Write and explain the verifog code for 2.1 mux using data now modering.
05	1. Write and explain the Verilog code for full adder using data flow modeling.
	2 Write and explain the Verilog code for 8:1 mux using data flow modeling.
06	1. Give a presentation / report on the differences between tasks and functions
	2. Give a presentation / report on use of system tasks with examples.
	3. Give a presentation / report on use of gate delays to model timing for a simple logic equation.
07	1. Compare if-else and case statements with the help of examples.
	2. Compare all loops with the help of examples.
	3. Write and explain the verilog code for full subtractor and 1:8 demux using
	behavioralmodeling.

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08	1.Explain the Verilog Test bench with an example to verify the HDL designs.
	2.Write and explain the verilog code for 1:2 demux using behavioral modeling.
09	1. Prepare a report on differences between Combinational and Sequential circuits with examples.
	2. Give a report on application of flip flop as bounce elimination switch.
	3. Give a report on working of flip flop as a one bit memory element.
10	1. Prepare a report on flip flop ICs and their features.
	2. Give a report on eliminating race -around condition in JK flip flop.
	3. Compare the advantages and disadvantages of all flip flops.
11	1. Prepare a report on shift register ICs and their features.
	2. Give a report on applications of shift registers in real life.
	3. Prepare a report on the working of IC 7495 as shift register.
12	1. Prepare a report on differences between asynchronous and synchronous counters.
	2. Give a report on how counters can be used in a simple car parking system.
	3. Give a report on implementation of footfall counter for various purposes
13	1. Prepare a report & explain the specifications of DAC and ADC ICs.
	2. Give a Report on any application of DAC in real life.
	3. Give a presentation/ report on any application of ADC in real life.
14	1. Prepare a report & explain the types of RAM and ROM.
11	2. Give a presentation / report on usage of RAM and ROM in different digital devices.
15	1. Study the latest technological changes in this course and present the impact of these changes on industry.
	2. Prepare a report on CPLD, FPGA and ASIC and its applications.

16 1. Give a Report on importance or scope of Design Verification in Integrated circuit designs.

2. Prepare a report on PAL and PLA and its applications.

LINKS.

1.<u>https://verilogguide.readthedocs.io/en/latest/verilog/testbench.html</u>

2.<u>https://youtu.be/XES0QUi8ttY</u>(week 11, exp 2)

3.<u>https://www.youtube.com/watch?v=krmXg-WTbIU</u> (week 12, exp 1)

4. http://www.asicguru.com/verilog/tutorial/system-tasks-and-functions/68/.

5.<u>https://youtu.be/vHlg_QLGIQ</u> (week 7,exp 3)

6.<u>https://youtu.be/AtX5x53FcLI</u> (week 9,exp 3)

7.<u>https://youtu.be/Bx_4rsUAGoM</u>

8.<u>https://www.irisys.net/people-counting</u>.

4. CIE and SEE Assessment Methodologies

Sl.	Assessment	Test Week	Duration	Max	Conversion
Ν			In minutes	marks	
0					
1.	CIE-1 Written Test	6	80	30	Average of three
2.	CIE-2 Written Test	10	80	30	tests
3	CIE-3 Written Test	15	80	30	30
4.	CIE-4 Skill Test-Practice	8	180	100	Average of two
5	CIE-5 Skill Test-Practice	13	180	100	skilltests
					20
6	CIE-6 Portfolio continuous	1-16		10	10
	evaluation of Activity				
	throughRubrics				
		60			
	Semester End Examinatio	180	100	40	
	100				

5.Format for CIE (1,2,3) Written Test

Cours	rse Logic Design using Verilog		Test	I/II/III	Sem	III
Name						
Cours	e Code	5432	Duration	80 Min	Marks	30
Note:	Answer a	ny one full question from each se	ction. Each fi	all question ca	arries 10 marks	
Secti		Assessment Questions		Cognitive	Course	Marks
on				Levels	Outcome	
Ι	1					
	2					
II	3					
	4					
III	5					
	6					

Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional questions in each section carry the same weightage of marks, Cognitive level and course outcomes.

SL. No.	COs	Particulars/Dimension	Marks
1	1	List the types of Verilog modelling and the use of each model for specific application.	20
2	3	Write two Verilog programs on combinational circuits for agiven application-40 MarksSimulation- 20 MarksDownload to FPGA kit- 10 Marks	70
3	1,3	PortFolio evaluation of Practice sessions through rubrics	10
		Total Marks	100

5. (a) Format for CIE-4 Skill Test -Practice.

5. (b) Format for CIE-5 Skill Test - Practice.

SL. No.	COs	Particulars/Dimension		
		Write a Sequential circuit for a given application -20		
1	2	MarksConduction using DTK -20	50	
		Marks		
		Output -10 Marks		
		Write a Verilog program on Sequential circuits for a given application - 10		
2	3	Marks	20	
		Simulation -5 Marks		
		Output - 5 Marks		
		Identify various types of A to D, D to A converters/ memory for a given		
3	4	application & select the appropriate converters/ memory types needed to obtain the required output.	20	
4	224	Portfolio evolution of Prostice sessions through rubries	10	
4	2,3,4	Fortiono evaluation of Fractice sessions through rubrics.	10	
		Total Marks	100	

Sl. No.	Dimension	Beginner	Intermediate	Good	Advanced	Expert	Students Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Marks=						
				(8+6-	+2+2)/4=4.5		

6. Rubrics for Assessment of Activity (Qualitative Assessment)

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

7. Reference:

Sl. No.	Description
1	Fundamentals of Digital Logic with Verilog Design by Stephen Brown and Zvonko Vranesic
2	Verilog HDL by Samir Palnikar
3	Introduction to Verilog-Peter M Nyasulu
4	Verilog Tutorial-Deepak Kumar Tala

8. SEE Scheme of Evaluation

SL. No.	COs	Particulars/Dimension	Marks
1	1	List the types of Verilog modelling and the use of each model for specific application	10
2	3	Write a Sequential circuit for a given application -10 MarksConduction using DTK -10 Marks	30
		Output -10 Marks	
3	2	Write a Verilog program for a given application - 10 MarksSimulation - 10 Marks	30
		Download to FPGA kit 10 Marks	
4	4	Identify various types of A to D, D to A converters and memory and for a given application & select the appropriate converters and/or memory types needed to obtain the given output.	10
5	1,2, 3,4	Viva-Voce	20
		Total Marks	100

9. Equipment/software list with Specification for a batch of 20 students

SI	Darticulars	Specification	Quantity
SI. No		Specification	Quantity
110.	Commenter and	Intel Core :5 11th con/9CD	20
1	Computers	Intel Core 15 11th gen/8GB	20
		RAM/1 TB HDD/256GB SSD/	
		Graphics 2 GB	
2	Xilinx software		
3	Digital trainer kits		20
4	Verilog kits		20
5	Dual trace oscilloscope	20-30MHz	10
6	Digital multimeters		05
7	Patch cards	different length	250
8	Digital IC Tester		02
9	ICs		10 each
	7400,7402,7404,7408,7432,7486,7442		
	,		
	7445,7446,7474,7476,7427,7489,7490,		
	7494,7495,74141,74148,74153,74157,		
	74155.74193.74194.DAC0808.ADC-		
	0800,741		

Government of Karnataka

Department of Collegiate and Technical Education JSS Polytechnic for the Differently Abled, Mysuru (AUTONOMOUS)

Programme	Electronics and Communication	Semester	III
Course Code	5433	Type of Course	Programme Core
Course Name	Communication Systems	Contact Hours	8 hours/week 128 hours/semester
Teaching Scheme	L:T:P :: 3:1:4	Credits	6
CIE Marks	60	SEE Marks	40

1. Rationale

The communication system describes the information exchange between any two points. The process of transmission and reception of information is called communication. Without communication the world ceases to exist. Information or Data can be transmitted and received across any part of the world by adapting suitable techniques, process and medium, hence making the world reachable and smaller through Technology.

2. Cour.	2. Course outcomes for successful completion of the course, the students will be able to .					
CO-01	Identify all the components of a communication system, list their role and characteristics					
	in the system.					
CO-02	Propagate a signal through a transmission medium to obtain a desired output for					
	givenconditions in the communication system.					
CO-03	Construct an analog communication system for a given application and demonstrate its					
	working either in a Real or Simulated environment.					
CO-04	Construct an digital communication system for a given application and demonstrate its					
	working either in a Real or Simulated environment.					

2	Course Outcomes On successful	lcompletion	of the course	the students will be able to
Ζ.	course ouccomes : On successio	II completion	of the course,	, the students will be able to

	COs	Programme Outcomes(POs)							Programme Specific Outcomes (PSOs)		
Course		1	2	3	4	5	6	7	1	2	3
	CO1	3	-	2	2	-	1	1	-	3	2
Communication	CO2	3	-	-	2	2	1	1	1	3	-
Systems	CO3	3	3	2	2	2	-	1	1	3	2
Systems	CO4	3	2	2	2	-	1	1	1	3	2
Average		3	2	3	2	2	1	1	1	3	2
Level 3- Hig	Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0-Not Mapped										

MAPPING OF CO WITH PO and PSO

3.	Course Content	
3.	course content	

Week CO		PO	Lecture (Knowledge Criteria)	Tutorial (Activity Criteria)	Practice (Performance Criteria)
	co	10	3 hours/week	1 hour/week	4 hours/week (2 hours/batch twice in a week)
1	1	1,4,5	 Network theorems 1. Superposition theorem- statement and explanation with an example. 2. Maximum Power Transfer theorem-statement and explanation with an example. 3. Thevenin's theorem and Norton's theorem-statements and explanation with an example each. 	Refer Table 1	 Construct and verify maximum power transfer theorem. Construct and verify Thevenin's theorem.
2	1,3	1,2,4 ,6	 Resonance 1. Series resonance - circuit diagram, phasor diagram, resonance plot and characteristics. 2. Condition for series resonance, expression for frequency of resonance. Parallel resonance- circuit diagram, phasor diagram. 3. Parallel resonance-resonance plot and characteristics, Condition for resonance, expression for frequency of 	Refer Table 1	 Construct a series/parallel resonant circuit and plot its frequency response. Construct a series/parallel resonant circuit and find its bandwidth and Q factor.
3	1,3	1,2,4 ,6	 Filters Classification of filters, cut-off frequency, pass band and stop band. Ideal characteristics curve of passive LPF, HPF, BPF and BRF. Circuit diagram & formula for cut- off frequency of T and П configurations of LPF and HPF.	Refer Table 1	 Construct and testthe passive low- pass T-type filter circuit for a given cut-off frequency. Construct and test the passive high pass Π -type filter circuit for a given cut-off frequency.
4	1,3	1,2,4 ,6	Attenuators1. Classification and applications of attenuators. Definition of Bel, Decibeland Neper.2. Symmetrical T type attenuator- Circuit diagram, expression for	Refer Table 1	1. Construct and testT type attenuator circuit for the given attenuation & Ro.

			attenuation. 3.Symmetrical Π type attenuator- Circuit diagram, expression for attenuation		2.Construct and test∏ type attenuator circuit for the given attenuation & Ro.
5	1,2, 3	2,3,4	 Transmission Media Need, different types of transmission media(guided, unguided), Transmission lines- Electrical model, Primary constants - R, L, G and C , Secondary constants - Characteristic Impedance and Propagation Constant. Optical fiber -principle of operation, Numerical aperture, Angle of acceptance, Classification, fiber losses. Basic components of Fiber optic system, splices, connecters , couplers and switches. 	Refer Table 1	 Demonstrate PC toPC communication using Fiber Optic Digital Link. Demonstrate installation , testing, repair and power budgeting of fiber optic cable (using simulator/video)
6	1,2, 3	1,4,5 ,6	Antennas 1. Concept of electric and magnetic fields in a dipole, antenna terminology- polarization, radiation pattern, antenna gain, directive gain, directivity, power gain, antenna resistance. 2. Antenna efficiency, beam width, bandwidth, isotropic radiators. Effects of ground on antennas, effect of antenna height, Antenna types, examples and applications. Working of Dish Antenna, Feed mechanisms-Cassegrain and Horn feed.	Refer Table 1	 Video demonstration and documentation on the working of the dipole antenna and observe its radiation pattern. Video demonstration and documentation of antenna types with examples and applications.
7	2,3	1,4,5 ,6	 Wave Propagation 1. Wave Propagation: Fundamentals of Electromagnetic Waves, electromagnetic spectrum. 2. Modes of wave propagation- groundwave propagation and sky wave propagation and space wave propagation, comparison. 	Refer Table 1	 Video Video demonstration and documentation on the fundamentals ofelectromagnetic waves and electromagnetic spectrum. Video demonstration and documentation on the need for modulation and

					demodulation techniques.
8	1, 3		Analog modulation 1.Block diagram of communication system, Need for modulation and types of analog modulation techniques		1.Video demonstration and documentation on the need for modulation and demodulation techniques.
9	1,3	1,2,3 ,4,6	 AM Transmitter and Receiver - block diagram & waveforms. Expressions for modulating signal, Carrier signal, modulated signal, modulation index and power. Frequency Transmitter and Receiver- block diagram, waveform, Expressions for frequency deviation, modulation index. 	Refer Table 1	 Construct and verify amplitude modulation and demodulation usingkit. Construct and verify frequency modulation and demodulation usingkit.
10	1,4	1,3,4 ,5,6, 7	 Digital communication Block diagram of digital communication system. Definition of information capacity, entropy, bit-rate, baud rate and bandwidth of digital data. 2. Sampling- Sampling theorem for low pass and band pass signals, Nyquist criterion and aliasing effect. 3. Explain Analog pulse modulationtechniques-PAM, PPM, PWM using waveforms. 	Refer Table 1	 Verify sampling theorem for low passsignals using kit. Conduct an experiment to studythe effect of aliasingusing kit.
11	1,4	1,2,3 ,4,6	 Digital Coding 1. Quantization -process, classification. Quantization noise and companding process. 2. PCM and DPCM system. 3. Delta modulation and adaptive delta modulation system. 	Refer Table 1	 Perform an experiment to studyPulse Code Modulation and Demodulation usingkit. Generation of Delta modulated signal using kit.

12	1,4	1,2,3	Delta modulation and adaptive delta modulation system.	Refer Table 1	3. Generation ofDelta modulatedsignal4. using kit.
13	1,3	1,2,4 ,6	 Baseband transmission - significance of inter symbol interference (ISI) and eyepattern. Digital modulation techniques-types. Generation and detection of Binary ASK and Binary FSK. 	Refer Table 1	1. Perform an experiment to generate and detect BASK signal using kit.
14	1,3		3. Generation and detection of Binary PSK and QPSK.	Refer Table 1	2. Perform an experiment to generate and detect BPSK signal using kit.
15	1,3	1,2,6 ,7	 Multiplexing 1. FDM & TDM- concept applications 2. PAM/TDM system -Block diagram, transmission bandwidth, synchronization, crosstalk and guardtime. 3. Digital multiplexers-Principle, classification and performance factors. 	Refer Table 1	 Demonstrate TDMusing Fiber Communication System. Video demonstration and documentation of FDM and TDM.
16	3	1,2,4 ,6	 Error detection & correction Errors-types, redundancy, error control schemes. Error control codes- types, Paritycheck bit coding, error detection methods-LRC. VRC, CRC, Checksum with examples. 	Refer Table 1	 Video demonstration and documentation of error detection and correction. Video demonstration and documentation on LRC, VRC, CRC.
Total ir	ı hour	s	48	16	64

Note: 1. In Practice sessions Video demonstration should be followed by MCQs/Quiz/Subjective questions and the evaluation has to be documented.

2. In Practice sessions, all discrete circuits should be simulated using suitable software before its construction and verification.

TABLE 1: Suggested activities for tutorials

The list is shared as an example and not inclusive of all possible activities of the course. The list of activities for one week can be shared among teams in a batch of students.

Week No.	Suggested activities for tutorials
01	 Write a report on implementation fields of all the theorems. Solve problems on all theorems.
02	 Give a presentation / report of series and parallel resonance. Solve problems on series and parallel resonance.
03	 Write a report on the needs of LPF, HPF, BPF, BRF and their comparison. Give a presentation/ report on of BPF & BRF. Solve problems on Filters.
04	 Give a presentation/ report on the relationship between Bel, Decibel and Neper. Give presentation/ report on the importance of attenuators in communication circuits.
05	 Prepare a report on properties of light and its significance in optical communication. Give presentation/ report on telephone exchange, collect and prepare a handwritten brief report on optical fibers for the communication purpose with specifications.
06	1.Present a report on the FIBERNET broadband and compare it with traditional broadband.
07	 Give a presentation/ report on miniature antennas. Give presentation/ report on how a mobile phone antenna performance can be improved.
08	 Give a presentation/ report on uses of each range of frequency in the Electromagnetic spectrum. Give a presentation/ report on different types of wave propagation.
09	1. Explain different waveforms in Analog modulation.
10	1Prepare a report on the merits, demerits and applications of AM and FM.2. Collect the specifications of FM receivers and explain it.

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11	1. Give a presentation/ report on comparison of analog and digital communication
11	2. Give a presentation/ report on types of sampling.
12	1. Give a presentation/ report on advantages, disadvantages and applications of PCM and DPCM.
	2. Give a presentation/ report on advantages, disadvantages and applications of delta
	modulation and adaptive delta modulation.
13	1. Prepare a report on the type of digital modulation technique used for voice
15	signaltransmission in telephone systems.
	2. Give a presentation/ report on generation and detection of DPSK.
	3. Give a presentation/ report on comparison of digital modulation techniques.
14	1. Give a presentation/ report on comparison of digital modulation techniques.
15	1. Give a presentation on applications of TDM and FDM.
15	2. Prepare a report on the type of multiplexing used in mobile
	communication with specifications of multiplexer.
	1 Study the latest technological changes in this course and present the impact of these
16	changes on industry
	changeson industry.
	2. Give a presentation/ report on the merits, demerits and applications of all error detection methods.

Links.

1. https://www.gopracticals.com/electrical/basic-electrical/verify-thevenin-theorem/

2.<u>https://youtu.be/Ok7DJGuOulQ</u>

3.<u>https://youtu.be/B_u3sGbpM8M</u>

4.<u>https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:3d5cab35-a6d0-49e4-</u>b4b3- 06c745d34d98

5.<u>https://www.wikihow.com/Design-a-Simple-Antenna</u>

6.<u>https://youtu.be/r4NikIMA4dQ</u>

7.<u>https://youtu.be/8P6DBAxbQxY</u>

8.<u>https://youtu.be/00ZbuhPruJw</u>

4. CIE and SEE Assessment Methodologies

Sl. No	Assessment	Test Week	Duration In minutes	Max marks	Conversion	
1.	CIE-1 Written Test	6	80	30	Average of	
2.	CIE-2 Written Test	10	80	30	threetests	
3	CIE-3 Written Test	15	80	30	30	
4.	CIE-4 Skill Test-Practice	8	180	100	Average of two	
5	CIE-5 Skill Test-Practice	13	180	100	skill tests 20	
6	CIE-6 Portfolio continuous evaluation of Activity throughRubrics	1-16		10	10	
Total CIE Marks					60	
Seme	Semester End Examination (Practice)			100	40	
	Total Marks 100					

5.Format for CIE (1, 2, 3) Written Test

Course Name		Communication Systems	Test	I/II/III	Sem	III
Course Co	de	5433	Duration	80 Min	Marks	30
Note: Ans	wer a	any one full question from each section. E	Each full que	estion carries	10 marks.	
				Cognitive	Course	
Section	Ass	sessment Questions		Levels	Outcome	Marks
	1					
Ι	2					
	3					
II	4					
	5					
III	6					
Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional						
questions i	n ead	ch section carry the same weightage of ma	arks, Cognit	ive level and	course outcon	mes.

5. (a).Format for CIE-4 Skill Test -Practice

SL. No.	COs	Particulars/Dimension	Marks
1	1	Conduct an experiment on Network Theorems/ Resonance/ Filters/ Attenuators	
		Writing schematic diagram-20 MarksConduction-30MarksResult- 10 Marks	60
2	2	Conduct an experiment on Transmission media/Antennas	30
3	1,2	Portfolio evaluation of Practice sessions through Rubrics	10
		Total Marks	100

5(b).Format for CIE-5 Skill Test-Practice

SL. No.	COs	Particulars/Dimension	Marks
1	2	Explain propagation of signals through transmission media to obtain desired output.	20
2	3	Demonstrate an analog/digital modulation / demodulation techniqueWrite schematic diagram (2 Circuits)-30 MarksConduction using kit-20 MarksResult-20 Marks	70
3	3,4	Portfolio evaluation of Practice sessions through Rubrics	10
Total	Marks		100

6. Rubrics for Assessment of Activity (Qualitative Assessment)

Sl.	Dimension	Beginner	Intermediat	Good	Advanced	Expert	Students
No.			e				Score
		2	4	6	8	10	~
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
4		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	2
	Average Mar	ks = (8+6+2+2)	/4=4.5				5

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

7.Reference:

Sl. No.	Description	
1	Electronic communications	- George Kennady
2	Advanced Electronics Communication System.	- Wayne Tomosi
3	Understanding communication systems	- Texas Instruments
4	Fiber Optic Communication Systems,	- Dr.R.K.Singh, Wiley India
5	Principles of Electronic Communication Systems	- Louis E. Frenzel, Tata McGraw Hill
6	Digital and analog communication systems	- K.Sham Shanmugam, Wiley India

8. SEE Scheme of Evaluation

SL. No.	COs	Particulars/Dimension	Marks
1	1	Conduct an experiment on Network Theorems/ Resonance/ Filters/ Attenuators Writing schematic diagram -15 Marks Conduction - 15 Marks Result 10 Marks	40
2	2	Identify the type of Transmission media/Antenna used in a given application	10
3	3	Demonstrate an analog/digital modulation / demodulationtechniqueWrite schematic diagram -10 MarksConduction using kit- 10 MarksResult- 10 Marks	30
4	1,2,3	Viva-voce	20
	•	Total Marks	100

9.Equipment/software list with Specification for a batch of 20 students

Sl. No.	Particulars	Specification	Quantity
1	Computers	Intel Core i5 11th gen/8GB RAM/1 TBHDD/256GB SSD/ Graphics 2 GB	20
2	MATLAB/PSPICE/Electronic Workbench SoftwareSimulator		
3	Amplitude modulation and demodulation trainer kits		05
4	Frequency modulation and demodulation trainer kits		05
5	Generation and detection BASK,BFSK,BPSK trainerkits		05 each
6	Regulated Power supply	(1A/2A, 0-30V)	10
7	Dual trace oscilloscope	up to 20 to 30MHz	10
8	Digital multimeters		10
9	Function/Signal generators		10

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10	Step down transformer, Capacitors, Resistors,		Consumable
	Inductors, BJT, Opamp IC-741, Regulator IC-7812,		sas required
	Diode		
11	Single strand wire/Patch cards (different lengths)		150
12	Probes		10
13	Analog trainer kit		5
14	DC Voltage supply	(+/-5v, +/-12V, +/-15V)	10
15	Kit to demonstrate Sampling theorem and aliasing effect		05
16	Kit to demonstrate PCM		05
17	Delta Modulation and Detection trainer kit		05
18	Adaptive Delta Modulation and Detection trainer kit		05
19	Optical fiber communications trainer kit to cover allthe experiments.		05
20	Computers	Pentium and higher,8GBRAM,512 HDD	20
21	Tool kit		02 set

Government of Karnataka

Department of Collegiate and Technical Education JSS MAHAVIDYAPEETHA JSS POLYTECHNIC FOR THE DIFFERENTLY ABLED (AUTONOMOUS)

Programme	Electronics and Communication	Semester	III
Course Code	5434	Type of Course	Programme Core
Course Name	Electronic Measurements and Testing Techniques	Contact Hours	8 hours/week 128 hours/semester
Teaching Scheme	L:T:P :: 3:1:4	Credits	6
CIE Marks	60	SEE Marks	40

1 Rationale

The instruments used to measure any Electrical/Electronic quantity are known as measuring instruments. The standards of measurements are very useful for calibration of measuring instruments. They help in minimizing the errors in the measuring systems. Testing Techniques are means of enhancing troubleshooting and the ability to learn skills. It keeps electronic equipment in working condition and ensures safety. The damage of the equipment can be significantly reduced.

2.Course Outcomes : At the end of the Course, the student will be able to:

CO-01	List the types of measurement and common errors that occur while using electronic
	measuring systems and demonstrate use of statistical analysis to validate specific output
	from measuring
	and testing equipment.
CO-02	Explain the standards used for calibration and demonstrate calibration of a measuring
	and/ortesting equipment to ensure it provides reliable output.
CO-03	Select an appropriate sensor or transducer for a given application and demonstrate
	its use tomeasure and record the readings for a given project.
CO-04	Test a given lab equipment, identify the reasons for error, troubleshoot or calibrate
	to ensure the equipment provides the correct reading
CO-04	its use tomeasure and record the readings for a given project. Test a given lab equipment, identify the reasons for error, troubleshoot or calibrate to ensure the equipment provides the correct reading

Course	COs	POs					PSOs				
course	005	1	2	3	4	5	6	7	1	2	3
Electronic	CO1	3	-	-	3	2	1	3	1	-	-
Measurements	CO2	3	-	-	3	2	1	3	1	-	-
and Testing	CO3	3	-	3	3	2	1	3	3	-	-
Techniques	CO4	3	-	3	3	2	1	3	3	-	-
AVI	3	-	3	3	2	1	3	2	-	-	
Level 3- Highly Mapped, Level 2-Moderately Mapped, Level 1-Low Mapped, Level 0-Not Mapped											

CO-PO/PSO Mapping Matrix:

3. Course Content

Week	со	РО	Lecture (Knowledge Criteria)	Tutorial (Activity Criteria)	Practice(Performance Criteria)
			3 hours/week	1 hour/week	4 hours/ (2 hours/batch twice in a week)
1.	1	1,4 ,6	1. Necessity of measurements- direct and indirect methods, Static characteristics of an instrument.	Refer Table 1	1. Find the static characteristics of analog voltmeter/ multimeter.
2	1, 2, 4	1,4 ,5, 7	 1Statisticalanalysis- arithmetic mean, deviation, average deviation, standard deviation, probability of errors and limiting errors. 2.Problems on Statistical analysis. 3. Calibration, Error check, understand specification sheet of digital multimeter. 	Refer Table 1 Refer Table 1	 Identify the errors and do the calibration for setting up an analog multimeter before performing measurement. Troubleshoot and service the Digital trainer kits.
3.	1, 2, 4	1,4 ,5	 Standards-primary, secondary, working and IEEE standards. Wheatstone bridge- Explanation and applications. 	Refer Table 1	1. Build a Wheatstone bridge to find unknown resistance.
4.	1, 2, 4	1,4 ,5	 Bridges- Comparison of AC and DCbridges. Applications of AC and DC bridges. 	Refer Table 1	Construct a circuit to measure AC voltage by voltage divider method.
5	2, 3	1,2 ,3, 4,6	 Electrical Transducers- necessity, selection, classification- active and passive, analog and digital, primary and secondary. Strain gauge-principle, gauge factor, features of bonded, unbonded, foil type strain gauges. Load Cell, capacitive transducer-principle & features. 	Refer Table 1	 Video demonstration and documentation on multi-function meter used for measuring any electrical parameter. Calibrate a load cell to measure the weight of any object. Use suitable components and/or programming to accomplish the task.
6	2, 3	3,4 ,5, 7	 Hall effect transducers, LVDT, thermistor. Thermocouple, piezoelectric transducers, position sensors. Proximity sensors, digital opticalencoders & PIR sensors. 	Refer Table 1	 Build a temperature sensor circuit using a thermistor. Build a simple application using position/proximity sensor.

Week			Lecture (Knowledge Criteria)	Tutorial(Activity Criteria)	Practice(Performance Criteria)
	CO	РО	3 hours/week	1 hour/week	4 hours/ (2 hours/batchtwice in a week)
7	1, 2	1,4 ,7	 PMMC meters- principle, DC ammeters and multi range ammeters. DC voltmeters using PMMC, multi range voltmeters, loading effect and voltmeter sensitivity. 	Refer Table 1	1. Construct a circuit to verify KVL and measure voltages using analog voltmeter.
8	1, 2	1,4 ,7	Electrodynamometer - principle, ammeter, voltmeter.	Refer Table 1	Construct a circuit to verify KCL and measure currents using analog ammeter.
9	1, 2	1,4 ,5, 7	 Electronic voltmeter- Chopper amplifier type voltmeter. AC voltmeter- full-wave rectifier, Peakresponding and true RMS voltmeters. Ohmmeters- series and shunt type, concept of calibration of meters. 	Refer Table 1	 Study of Regulated DCpower supply and measurement of standard voltages at various stages of RPS. Identify and rectify the various faults in the Regulated DC power supply.
10	1, 4	1,2 ,4, 5	 Digital instruments – Introduction, Ramp type DVM. Automatization in digital meters- automatic polarity indication, automaticdecimal point positioning, automatic ranging and zeroing. 	Refer Table 1	1. Video demonstration and documentation on testing life cycle of electrical loads using Electronic Counter.
11	1, 4	1,2 ,4, 5	Electronic counters-block diagram	Refer Table 1	 2. Troubleshoot and perform minor repair practices on Decade Boxes (Rotary switches, connectors, components 3. connectivity etc).
12	1, 2, 4	1,4 ,5, 6	 Digital frequency meter, Time interval measurement. Digital LCR meter, digital multimeter. 	Refer Table 1	1. Calibrate LCR meter and perform measurement of Resistance, capacitance, and inductance and verify with actual value.

Weels			Lecture (Knowledge Criteria)	Tutorial(Activity	Practice(Performance
vv eek	CO	PO		Criteria)	Criteria)
13	1, 2, 4	1,4 ,5, 6	1. Cathode Ray Oscilloscope-block diagram, working of CRT.	Refer Table 1	1. Study the front panel controls of CRO and do its calibration
					2. Demonstrate the use of CRO to measure phase difference between two waveforms and obtain the lissajous patterns.
14	1, 2, 4	1,4 ,5, 6	2. Dual trace CRO, CRO probes, applications of CRO.	Refer Table 1	1. Demonstrate the use ofCRO to measure phase difference between two waveforms and obtain the lissajous patterns.
15	1, 2, 4	1,4 ,7	1. Function generator- block diagram and applications.	Refer Table 1	1. Demonstrate the analysis of different waveforms (amplitude, phase, frequency) from a function generator usingCRO.
16	1, 2, 4	1,4 ,5, 7	 Precautions to be taken to achievepersonnel safety during servicing. Testing Techniques, electronic repairtools. Explain Basic steps of electronic equipment service and maintenance. a) Study of basic procedure of service and maintenance b) Circuit tracing techniques 	Refer Table 1	1. Do it yourself (DIY) anantistatic wrist strap useful to handle electronic component.
Total inhours			48	16	64

Note: 1) In Practice sessions Video demonstration should be followed by MCQs/Quiz/Subjective questions and the evaluation has to be documented.

2) In Practice sessions, all discrete circuits should be simulated using suitable software before its construction and verification.

JSS Polytechnic for the Differently Abled, Mysuru

TABLE 1: Suggested activities or similar activity for tutorialsThe list is shared as an example and not inclusive of all possible activities of thecourse. The list of activities for one week can be shared among teams in a batch ofstudents.

Week No.	Suggested activities for tutorials
01	1. write a procedure on ways of reducing systematic and random errors.
	2. List the basic tools (electronic repair tools) required for servicing electronic equipment and their purpose.
02	1. Present the specification sheets of voltmeter/ammeter/ohmmeter.
	2. Demonstrate the procedure to calibrate DC power supply.
03	1. Identify the faults in Digital ICs and Troubleshoot using digital IC tester/ Logic Probe
	2. Prepare a report on IEEE standards.
04	1. Give a presentation on applications of strain gauge and explain any one.
	2. Prepare a report on advantages and disadvantages of capacitive transducers.
05	1. Write a report on various kinds of transducers used in Biomedical Instrumentation.
	2. Write the application of any sensor.
06	1. Write statement on KVL and KCL and use of voltmeter and ammeter in taking readings.
	2. Solve problems on extending range in ammeter and voltmeter.

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Week No.	Suggested activities for tutorials
07	1. comparison of commercially available electronic voltmeters.
	2. Prepare a report on calibration of meters.
08	1. Discuss pros and cons of Digital instruments.
	2. Prepare a report on comparison of analog and digital instruments.
09	1. Give a presentation on performance testing on digital multimeters.
	2. Collect and present service manuals of measuring instruments.
	3. Present the applications of IEEE 488 GPIB instruments.
10	1. Write a applications of CRO.
	2. Collect the specifications of DSO.
11	Collect and present the specifications of signal generator.
12	1. Prepare a report on the grounding of any lab equipment (ex. oscilloscope). Also present the consequences if not done so.
	2. Do minor repair practices on Decade Boxes (Rotary switches, connectors, componentsconnectivity etc.,)
13	1. Study the latest technological changes in this course and present the impact of these changes on industry.
	2. Discuss about Trouble shooting chart.
14	3. Prepare a report on the grounding of any lab equipment (ex. oscilloscope). Also present the consequences if not done so.
15	1.Write the Technical specification of CRO.
16	1.Collect service manuals of measuring instruments.

LINKS

- 1. https://www.webassign.net/labsgraceperiod/ncsuplseem2/lab_1/manual.html
- 2. https://youtu.be/i4sI dBWH50
- 3. https://blog.matric.com/pcb-testing-methods
- 4. <u>https://www.youtube.com/watch?v=AUTcWsR6pwU</u>
- 5. <u>https://www.youtube.com/watch?v=x4B6 1C4gEQ</u>
- 6. <u>https://www.youtube.com/watch?v=-0Pre73mp7A</u>
- 7. <u>https://www.youtube.com/watch?v=lgvCMd5nMw4</u>
- 8. <u>https://www.youtube.com/watch?v=Evw5AqUYJcg</u>

https://www.youtube.com/watch?v=yasajLJUYvg

T. CHE and SHE Assessment Methodologies								
SI.	Assessment	Test	Duration	Max	Conversion			
No	Assessment	Week	In minutes	marks	Conversion			
1.	CIE-1 Written Test	6	80	30	Average of			
2.	CIE-2 Written Test	10	80	30	three tests			
3	CIE-3 Written Test	15	80	30	30			
4.	CIE-4 Skill Test-Practice	8	180	100	Average of two			
5	CIE-5 Skill Test-Practice	13	180	100	skill tests 20			
6	CIE-6 Portfolio continuous evaluation of Activity throughRubrics	1-16		10	10			
	60							
Seme	ster End Examination (Practice)		180	100	40			
	100							

4. CIE and SEE Assessment Methodologies

5.Format for CIE (1, 2, 3) Written Test

Course Name		e Electronics Measurement and Test		I/II/III	Sem	III		
		TestingTechniques						
Course Co	de	5434	Duratio	80 Min	Marks	30		
			n					
Note: Ans	wer	any one full question from each section.	Each full o	question carri	ies 10 marks	S.		
Section	Δοσ	A second out Outstiens			Course	Morka		
Section	Ass	sessment Questions	Levels	Outcome	warks			
т	1							
1	2							
п	3							
11	4							
TIT	5							
111	6							
Note for th	Note for the Course coordinator: Each question may have one, two or three subdivisions. Optional							

Questions in each section carry the same weightage of marks, Cognitive level and course outcomes.

5.(a) Format for CIE-4 Skill Test - Practice

SL. No.	COs	Particulars/Dimension	Marks
1	1	Conduct an experiment on characteristics/ Calibration/	
		BridgeWriting circuit -20 Marks	50
		Conduction -20 Marks	
		Result -10 Marks	
2	3	Conduct an experiment on Sensor/Transducer	40
3	1,3	Portfolio evaluation of Practice sessions through Rubrics	10
		Total Marks	100

SL. No.	COs	Particulars/Dimension	Marks
1	2	Conduct experiment on CRO/ Measurement of L C R	40
2	4	Conduct an experiment on Troubleshooting RPS/ Repair of Decade Boxes	50
3	2,4	Portfolio evaluation of Practice sessions through Rubrics	10
		Total Marks	100

5. b) Format for CIE-5 Skill Test - Practice

6 Rubrics for Assessment of Activity (Qualitative Assessment)

S1.	Dime	Beginner	Intermediat	Good	Advanced	Expert	Students
No.	nsion		e				Score
		2	4	6	8	10	
1		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	8
2		Descriptor	Descriptor	Descriptor	Descriptor	Descriptor	6
3		Descriptor	Descriptor	tor Descriptor Descriptor Descriptor		2	
4		Descriptor	Descriptor	Descriptor Descriptor Descriptor		2	
	Average Marks=						5
	(8+6+2+2)/4=4.5						

Note: Dimension and Descriptor shall be defined by the respective course coordinator as per the activities

7 Reference:

Sl. No.	Description
1	Electronic Measurements and Instrumentation -2nd Revised Edition, R. K. Rajput, ISBN: 81-
	219-2917-2 234.
2	Electronic Measurements and Instrumentation-3rd Edition, Sanjay Talbar &
	AkhileshUpadhayaya, ISBN :81-874-3335-3
3	Electronic Instrumentation -3rdEdition, Kalsi H. S., ISBN: 00-707-0206-3
4	Modern Electronic Instrumentation and Measurement Techniques-2nd Edition, Albert
	Helfrick & William Cooper, ISBN:81-203-0752-6

8 SEE Scheme of Evaluation

SL. No.	COs	Particulars/Dimension	Marks
1	1,2	Identify errors, calibrate and perform measurement using analog	
		multimeter/Wheatstone bridge/LCR meter/CRO	30
2	3	Identify the Sensor/Transducer used in different applications.	10
3	4	Conduct an experiment on Troubleshooting and repair of DTK/ RPS/	40
		Decade	
		Boxes	
4	1,2,3,4	Viva-Voce	20
		Total Marks	100

Sl. No.	Particulars	Specification	Quantity
1	Computers	Intel Core i5 11th gen/8GB RAM/1 TB HDD/256GB SSD/ Graphics 2 GB	20
2	MATLAB/Multisim/PSPICE/Electronic Workbench Simulation Software		
3	Dual trace oscilloscope	20-30MHz	20
4	LCR meter		10
5	Multi function meter		5
6	Resistors, Capacitors, Inductors, Thermistor		Consumable sas required
7	Digital multimeter		10
8	Analog multimeter		10
9	Function generator		5
10	Position, and Proximity sensors		10 each
11	Transducer		5
12	Load cell		5
13	Tool kit		2 sets
14	Soldering set		10 sets

9 Equipment/software list with Specification for a batch of 20 students

ತೃತೀಯ ಸೆಮಿಸ್ಟರ್

ಜಿಎಸ್ಎಸ್ ಮಹಾವಿದ್ಯಾಪೀಠ ಜೆಎಸ್ಎಸ್ ವಿಶೇಷಚೇತನರ ಪಾಲಿಟೆಕ್ನಿಕ್ ಮೈಸೂರು ಕನ್ನಡ ಬಲ್ಲ ಡಿಪ್ಪೋಮಾ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ (ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ, ಸಂಸ್ಕೃತಿ ಮತ್ತು ಪರಂಪರೆ ಕುರಿತು)

Course Code	21KA3T	Semester : III	Course Group - AU / KA
Course Title	ಸಾಹಿತ್ಯ ಸಿಂಚನ – 2	Category : PC	Lecture Course
No. of Credits	2	Type of Course	CIE Marks : 50
Total Contact Hours	02 Hrs Per Week 32 Hrs Per Semester	Teaching Scheme (L:T:P) = 2:0:0	SEE Marks : Nil

ಸಾಹಿತ್ಯ ಸಿಂಚನ – 2 (ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕ) KA - 21KA3T

ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕದ ಪರಿವಿಡಿ	ಬೋಧನಾ ಅವಧಿ 32 ಗಂಟೆಗಳು
1. ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ಪ್ರಭಾವಗಳು ಮತ್ತು ಪ್ರೇರಣೆಗಳು	02 ಗಂಟೆ
 ಹೊಸಗನ್ನಡ ಕಾವ್ಯದ ಪ್ರಕಾರಗಳು - ನವೋದಯ ಸಾಹಿತ್ಯ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೊಡುಗೆಗಳು. ನವ್ಯ ಸಾಹಿತ್ಯ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೊಡುಗೆಗಳು. ಬಂಡಾಯ ಮತ್ತು ಪ್ರಗತಿಪರ ಸಾಹಿತ್ಯ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೊಡುಗೆಗಳು. ದಲಿತ ಸಾಹಿತ್ಯ, ಮಹಿಳಾ ಸಾಹಿತ್ಯ, ವಿಜ್ಞಾನ ಸಾಹಿತ್ಯ ಮತ್ತು ಇತ್ರೀಚಿನ ಪ್ರಚಲಿತ ಕನ್ನಡ ಸಾಹಿತ್ಯದ - ಲಕ್ಷಣಗಳು ಮತ್ತು ಪ್ರೇರಣೆ, ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯದ ಕೂಡುಗೆಗಳು. 	04 ಗಂಟೆ 04 ಗಂಟೆ 04 ಗಂಟೆ 04 ಗಂಟೆ
3. ವೈಚಾರಿಕತೆ ಕುರಿತಾದ ಲೇಖನ - ಜಿ ಎಸ್. ಶಿವರುದ್ರಪ್ಪ, ಕಥೆ - ನೇಮಿಚಂದ್ರ ಪ್ರವಾಸ ಕಥನೆ - ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯರವರ - (ಕುಪ್ಪಳ್ಳಿ ಡೈರಿ ಪುಸ್ತಕದಿಂದ)	04 ಗಂಟೆ
4: ಪರಿಸರ, ವಿಜ್ಕಾನ ಮತ್ತು ತಂತ್ರಜ್ಕಾನ ಕುರಿತಾದ ಲೇಖನಗಳು , ಪ್ರಬಂಧ - ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ ಕರ್ನಾಟಕ ಏಕೀಕರಣ ಚಳುವಳಿ - ಪ್ರೊ. ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ ಕನ್ನಡ ಸಿನಿಮಾರಂಗ ಬೆಳೆದು ಬಂದ ದಾರಿ ಮತ್ತು ನಾಡು - ನುಡಿ ಹಾಗೂ ನಾಡಿನ ಸಂಸ್ಕೃತಿಯ ಮೇಲೆ ಬೀರಿದ ಪ್ರಭಾವಗಳು. ಕನ್ನಡದ ಸಾಮಾಜಿಕ ಉಪಭಾಷೆಗಳು (ಭಾಷಾ ಪ್ರಭೇದಗಳು)	06 ಗಂಟೆ
5. ಕರ್ನಾಟಕ ರಾಜ್ಯ ಕುರಿತಾದ ಸಾಮಾನ್ಯ ಜ್ಯಾನದ ಮಾಹಿತಿಗಳು ಕರ್ನಾಟಕದ ಕೆಲೆ ಮತ್ತು ಸಾಂಸ್ಕೃತಿಕ ವಿಷಯಗಳ ಮಾಹಿತಿ. ಕರ್ನಾಟಕ ರಾಜ್ಯದ ಪ್ರಮುಖ ವ್ಯಕ್ತಿಗಳು ಮತ್ತು ಪ್ರೇಕ್ಷಣೀಯ ಸ್ಥಳಗಳ ಮಾಹಿತಿ. ಕರ್ನಾಟಕ ರಾಜ್ಯದ ಮಠಗಳ ಪರಂಪರೆ ಮತ್ತು ಧಾರ್ಮಿಕ ವಿಷಯಗಳ ಪರಿಚಯ.	04 ಗಂಟೆ
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ	32 ಗಂಟೆಗಳು

''ಸಾಹಿತ್ಯ ಸಿಂಚನ – 2''

ಈ ಕಾರ್ಯಪಠ್ಯಪುಸ್ತಕದ ಬೋಧನೆ ಮತ್ತು ಅಳವಡಿಕೆಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಶಿಕ್ಷಕರು ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳು ಕಡ್ಡಾಯವಾಗಿ ಪಾಲಿಸಬೇಕಾದ ಸೂಚನೆಗಳು :

1. ಈ ಪಠ್ಯಪುಸ್ತಕವು ಪ್ರಧಾನವಾಗಿ ಕಾರ್ಯ ಪುಸ್ತಕವಾಗಿ ರೂಪಿಸಲ್ಪಟ್ಟಿದೆ ಆದುದರಿಂದ ಶಿಕ್ಷಕರು ಕನ್ನಡ ಸಾಹಿತ್ಯ ಮತ್ತು ಪರಂಪರೆ ಹಾಗೂ ಇತಿಹಾಸ ಈ ಮೊದಲಾದ ಎಲ್ಲ ವಿಷಯಗಳ ಬೋಧನೆಯನ್ನು ಚಟುವಟಿಕೆಗಳ ಆಧಾರದ ಮೇಲೆ ಮತ್ತು ಪರಂಪರೆ ಹಾಗೂ ಇತಿಹಾಸ ಈ ಮೊದಲಾದ ಎಲ್ಲ ವಿಷಯಗಳ ಬೋಧನೆಯನ್ನು ಚಟುವಟಿಕೆಗಳ ಆಧಾರದ ಮೇಲೆ ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಸಂಭಾಷಣೆಗೆ ಮತ್ತು ಚರ್ಚೆಗೆ ಒಳಪಡಿಸುವುದರ ಮುಖಾಂತರ ಬೋಧಿಸಬೇಕು.

2. ಪ್ರತಿಯೊಬ್ಬ ವಿದ್ಯಾರ್ಥಿಯು ಪೂರ್ಣ ಪ್ರಮಾಣದ (ಬೈಂಡಿಂಗ್ ಮಾಡಿಸಿದ) ಈ ಕಾರ್ಯಪಸ್ತಕವನ್ನು ಬೋಧನೆಯ ಸಮಯದಲ್ಲಿ ತರಗತಿಯಲ್ಲಿ ಕಡ್ಡಾಯವಾಗಿ ಇಟ್ಟುಕೊಂಡಿರಬೇಕು. ಪ್ರತಿ ಪಾಠದ ನಂತರದ ಚಟುವಟಿಕೆಗಳು ಮತ್ತು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು ತಪ್ಪದೆ ಖಾಲಿ ಬಿಟ್ಟಿರುವ ಹಾಗದಲ್ಲಿ ಬರೆದು ತರಗತಿ ಶಿಕ್ಷಕರಿಂದ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡಿಸಿಕೊಳ್ಳಬೇಕು.

3. ಕಾಲೇಜು ಹಂತದ ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ ಪರೀಕ್ಷಾ ಪ್ರಕ್ರಿಯೆಯನ್ನು ಈ ವಿಷಯದ ಮೌಲ್ಯಮಾಪನಕ್ಕೆ ಅಳವಡಿಸಿಕೊಳ್ಳಲಾಗಿರುತ್ತದೆ. **ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ ಇರುವುದಿಲ್ಲ.**

4. ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ ಪರೀಕ್ಷಾ ಪ್ರಕ್ರಿಯೆಯನ್ನು ಅಳವಡಿಸಿಕೊಂಡಿರುವುದರಿಂದ. ಬೋಧನೆಯನ್ನು ಶಿಕ್ಷಕರು. ಚಟುವಟಿಕೆಗಳ ಆಧಾರದ ಮೇಲೆ ಮತ್ತು ಕಾರ್ಯ ಪುಸ್ತಕದಲ್ಲಿ ನೀಡಿರುವ ಪ್ರತಿ ಪಾಠ ಮತ್ತು ವಿಷಯಗಳ ಬೋಧನೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳ ಕಲಿಕೆಯನ್ನು ಮತ್ತು ಮೌಲ್ಯಮಾಪನವನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಮಾಡಬೇಕು.

5. ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ ಬೋಧನೆಯ ಈ ಕಾರ್ಯ ಪುಸ್ತಕವನ್ನು ಪ್ರಯೋಗಾಲಯದ ಕಾರ್ಯ ಪುಸ್ತಕದಂತೆ (ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ನಂತೆ) ಬಳಸಬೇಕು. ಬೋಧನೆಯ ನಂತರ ಪ್ರತಿಯೊಂದು ಪಾಠದ ಚಟುವಟಿಕೆಗಳು ಮತ್ತು ವಿದ್ಯಾರ್ಥಿ ಬರೆದ ಉತ್ತರಗಳನ್ನು ತರಗತಿಯ ಕನ್ನಡ ಶಿಕ್ಷ್ಮಕರು ಕಡ್ಡಾಯವಾಗಿ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡುವುದರ ಮುಖಾಂತರ ದೃಢೀಕರಿಸಬೇಕು.

6. ಸಮಿಸ್ಟರ್ ಅಂತ್ಯದ ನಂತರ ಈ ಕಾರ್ಯ ಪುಸ್ತಕವನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಅಧ್ಯಯನ ದೃಢೀಕರಣ ಪತ್ರದ ಸಮೇತ ಕಾಲೇಜಿನ ಪ್ರಾಂಶುಪಾಲರು / ವಿಭಾಗಾಧಿಕಾರಿಗಳ ಮೇಲು ಸಹಿಯೊಂದಿಗೆ ಇಲಾಖೆಯ ಪರಿಶೀಲನೆಗೆ ಸಿದ್ದವಾಗಿಸಿ ಇಟ್ಟರಬೇಕು.

7. ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಬಲ್ಲ ಅಂದರೆ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಓದಲು, ಬರೆಯಲು ಮತ್ತು ಮಾತನಾಡಲು ಹಾಗೂ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಒಂದು ವಿಷಯವನ್ನಾಗಿ 10ನೇ ತರಗತಿಯಲ್ಲಿ ಅಧ್ಯಯನ ಮಾಡಿರುವ ಎಲ್ಲ ವಿದ್ಯಾರ್ಥಿಗಳು **"ಸಾಹಿತ್ಯ ಸಿಂಚನ – 2**''. ಈ ಕಾರ್ಯಪುಸ್ತಕವನ್ನು ಅಧ್ಯಯನ ಮಾಡಲು ಅರ್ಹರಾಗಿರುತ್ತಾರೆ.

8. ಈ ಮೇಲೆ ತಿಳಿಸಿದ ಎಲ್ಲಾ ಸೂಚನೆಗಳನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯದ ಅಧ್ಯಯನಕ್ಕೆಂದು ರೂಪಿತವಾಗಿರುವ "ಸಾಹಿತ್ಯ ಸಿಂಚನ – 211. ಈ ಕಾರ್ಯ ಪುಸ್ತಕದ ಬೋಧನೆಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳುವುದು.

9. ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಪರೀಕ್ಷಾ ವಿಧಾನಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಹೆಚ್ಚಿನ ಮಾಹಿತಿಗಾಗಿ ಇಲಾಖೆಯ ಈಗಾಗಲೇ ತನ್ನ ವೆಬ್,ಸೈಟ್ ನಲ್ಲಿ ಪ್ರಕಟಿಸಿರುವ ಅ – 20 ಪಠ್ಯಕ್ರಮದ ಪ್ರತಿಯನ್ನು ಗಮನಿಸುವುದು.

ಕಿರು ಪರೀಕ್ಷೆಗಳನ್ನು ಮತ್ತು CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದಲ್ಲಿ ಕಡ್ಡಾಯವಾಗಿ

ಅಳವಡಿಸಿಕೊಳ್ಳಬೇಕಾದ ಮಾನದಂಡಗಳು ಮತ್ತು ಇಲಾಖೆಯ ಸೂಚನೆಗಳು:

ಭಾಗ – 1: ಗರಿಷ್ಣ 30 ಅಂಕಗಳಿಗೆ 03 ಕಿರುಪರೀಕ್ಷೆಗಳನ್ನು ನಡೆಸಬೇಕು:

3ನೇ ವಾರದ ಅಂತ್ಯದಲ್ಲಿ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಮೊದಲ ಕಿರುಪರೀಕ್ಷೆ

2. 7ನೇ ವಾರದ ಅಂತ್ಯದಲ್ಲಿ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಎರಡನೆ ಕಿರುಪರೀಕ್ಷೆ

15ನೇ ವಾರದ ಅಂತ್ಯದಲ್ಲಿ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಮೂರನೇ ಕಿರುಪರೀಕ್ಷೆ

ಭಾಗ – 2: ಗರಿಷ್ಣ 20 ಅಂಕಗಳಿಗೆ 03 ವಿಭಿನ್ನರೀತಿಯ ಆಂತರಿಕ ಪರೀಕ್ಷೆಗಳನ್ನು ನಡೆಸಬೇಕು:

1. ಭಾಗ 2 ರ ಗರಿಷ್ಠ 20 ಅಂಕಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಸಾಹಿತ್ಯ ಸಿಂಚನ ಭಾಗ–2 / ಬಳಕೆ ಕನ್ನಡ – 2 ಕೈ ಸಂಬಂಧಿಸಿದ ಪ್ರಶ್ನೆಗಳು ಹೆಚ್ಚಾಗಿ ಚಟುವಟಿಕೆಯ ಮಾದರಿಯಲ್ಲಿ ಇರುವದರಿಂದ 5ನೇ, 9ನೇ ಮತ್ತು 11ನೇ ವಾರದ ಮೂರೂ ಪರಿಕ್ಸೆಗಳಿಗೆ ಕಾರ್ಯಪಠ್ಯವನ್ನು ಆಧಾರವಾಗಿ ಪರಿಗಣಿಸುವುದು ಮತ್ತು ಈ ಪುಸ್ತಕವನ್ನು ವಿಭಾಗಾಧಿಕಾರಿಗಳ ಮೇಲುಸಹಿಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದರ ಮುಖಾಂತರ ಪುಸ್ತಕಕ್ಕೆ ಅಂಕಗಳನ್ನು ನೀಡಿ ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ನಂತೆ ವಿಭಾಗದಲ್ಲಿ ಸಂರಕ್ಷಿಸಿಡಬೇಕು.

ಭಾಗ – 3: ಗರಿಷ್ಠ 50 ಅಂಕಗಳಿಗೆ:

 ಭಾಗ-1 ರಿಂದ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಮೂರು ಕಿರುಪರೀಕ್ಷೆಗಳಿಂದ ಸರಾಸರಿ ಅಂಕಗಳ ಪರಿಗಣನೆ
 ಭಾಗ-2 ರಿಂದ ಗರಿಷ್ಠ 20 ಅಂಕಗಳಿಗೆ ಮೂರು ಕಿರುಪರೀಕ್ಷೆಗಳಿಂದ ಸರಾಸರಿ ಅಂಕಗಳ ಪರಿಗಣನೆ
 ಭಾಗ-1 ಮತ್ತು ಭಾಗ-2 ಅನ್ನು ಒಟ್ಟಿಗೆ ಸೇರಿಸುವುದರ ಮುಖಾಂತರ ಗರಿಷ್ಠ 50 ಅಂಕಗಳಿಗೆ ಅಖೆಇ – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನವನ್ನು ಸಮಿಸ್ಟರ್ ಪ್ರಾರಂಭದಿಂದ ಅಂತ್ಯದವರೆಗೆ ನಡೆದ ಎಲ್ಲಾ ಪರೀಕ್ಷೆಗಳನ್ನು ಪರಿಗಣಿಸಿ ಸರಾಸರಿ ಅಂಕಗಳನ್ನು ಪರಿಗಣಿಸಬೇಕು.

ವಿಶೇಷ ಸೂಚನೆಗಳು :

ಎಲ್ಲಾ ಕಿರುಪರೀಕ್ಷೆಗಳನ್ನು ಪ್ರತ್ಯೇಕ ಬ್ಲೂಬುಕ್ ನಲ್ಲಿ ಬರೆಸಬೇಕು.

2. ಪ್ರತಿಯೊಂದು 30 ಅಥವಾ 20 ಅಂಕಗಳ ಕಿರುಪರೀಕ್ಷೆಯಲ್ಲಿ ಸಮನಾಂತರವಾಗಿ (10 + 10 + 10) ಅಥವಾ (08 + 08 + 08) ಮೂರು ಹಂತದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಬೇಕು. 2 ಅಥವಾ 5 ಅಂಕಗಳ ಪ್ರಶ್ನೆಗಳು ಹಾಗೂ ವಿದ್ಯಾರ್ಥಿಗಳ ಸೃಜನಶೀಲತೆ ಮತ್ತು ಕ್ರಿಯಾಶಕ್ತಿಯನ್ನು ಪರೀಕ್ಷಿಸುವಂತಹ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಬೇಕು.

3. ಕಿರು ಪರೀಕ್ಷೆಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಕಾರ್ಯ ಪುಸ್ತಕದ ಪ್ರತಿಯೊಂದು ಅಧ್ಯಾಯದ ಅಂತ್ಯದಲ್ಲಿ ನೀಡಿರುವ ಚಟುವಟಿಕೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಮರು ಬಳಸಿಕೊಳ್ಳಬಹುದು.

4. ಸಾಹಿತ್ಯ ಸಿಂಚನ ಭಾಗ'-2 / ಬಳಕೆ ಕನ್ನಡ ಭಾಗ-2 ಕಾರ್ಯ ಪಠ್ಯಕ್ರಮದಲ್ಲಿನ ಎಲ್ಲಾ ಚಟುವಟಿಕೆಗಳನ್ನು ತರಗತಿ ಶಿಕ್ಷಕರು ಸರಾಸರಿ 20 ಅಂಕಗಳಿಗೆ ಮೌಲ್ಯಮಾಪನ ಮಾಡಿ ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿ (Portfolio Evaluation) 11ನೇ ವಾರಂತ್ಯಕ್ಕೆ CIE Assessment - 6 ಗೆ ಪರಿಗಣಿಸುವುದು.

5. ಈ ಅಧ್ಯಯನ ಪ್ರಮಾಣ ಪತ್ರದೊಂದಿಗೆ ಒಟ್ಟು ಅಂಕಗಳನ್ನು ನಮೂದಿಸುವ ಮುಖಾಂತರ ಕಾರ್ಯಪುಸ್ತಕವನ್ನು ಪ್ರಯೋಗಾಲಯದ ರೆಕಾರ್ಡ್ ಭುಕ್**ನಂತೆ ವಿದ್ಯಾರ್ಥಿಗಳಿಂದ ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದಲ್ಲಿ** ತೆಗೆದುಕೊಂಡು ಇಲಾಖಾ ತಪಾಸಣೆಗೆ ಸಿದ್ಧವಿಟ್ಟರಬೇಕು.

20 ಅಂಕಗಳ ಕಿರುಪರೀಕ್ಷೆಗೆ ವಿವರಣೆ

ಗರಿಷ್ಠ 20 ಅಂಕಗಳ ಪರೀಕ್ಷೆಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಅಂಕಗಳನ್ನು ನೀಡಲು ಸೆಮಿಸ್ಟರ್ ಪ್ರಾರಂಭದಿಂದ ಅಂತ್ಯದವರೆಗೂ ವಿದ್ಯಾರ್ಥಿಗಳು ಬಳಸಿದ ಸಾಹಿತ್ಯ ಸಿಂಚನ ಭಾಗ–2 / ಬಳಕೆ ಕನ್ನಡ ಭಾಗ–2 ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ತರಗತಿಯ ಶಿಕ್ಷಕರು ಪ್ರತಿಯೊಂದು ಪಾಠವನ್ನು ದೃಢೀಕರಿಸುವುದು ಮತ್ತು ವಿಭಾಗಾಧಿಕಾರಿಗಳ ಮೇಲುಸಹಿಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದರ ಮುಖಾಂತರ ಪುಸ್ತಕಕ್ಕೆ ಅಂಕಗಳನ್ನು ನೀಡಿ ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ನಂತೆ ವಿಭಾಗದಲ್ಲಿ ಸಂರಕ್ಷಿಸಿಡಬೇಕು. ಸಾಹಿತ್ಯ ಸಿಂಚನ ಭಾಗ – 2 / ಬಳಕೆ ಕನ್ನಡ ಭಾಗ – 2 ಈ ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕಗಳಲ್ಲಿಯೇ ಬಹುಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳು ಪ್ರತಿ ಪಾಠದ ಅಭ್ಯಾಸ ಚಟುವಟಿಕೆಗಳಲ್ಲಿ ಇರುತ್ತವೆ. ಮತ್ತು ಪ್ರತಿ ಪಾಠದ ಅಭ್ಯಾಸ ಚಟುವಟಕೆಗಳಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಯು ತೆರೆದ ಪುಸ್ತಕ ಮಾದರಿಯಲ್ಲಿ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು ಬರೆಯಲು ಅವಕಾಶವಿರುತ್ತದೆ. ಮುಂದುವರೆದು ವಿದ್ಯಾರ್ಥಿಯ ಭಾಷೆಯ ಬಳಕೆ ಮತ್ತು ಸಂವಹನ ಕೌಶಲ್ಯದ ನಿರೂಪಣೆಗೆ ಪ್ರತಿ ಪಾಠದ ಅಭ್ಯಾಸ ಚಟುವಟಕೆಗಳಲ್ಲಿ ಅವಕಾಶವಿರುವುದರಿಂದ ಈ ಪುಸ್ತಕವನ್ನು ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ಬುಕ್ ನಂತೇ ವಿವಿಧ ರೀತಿಯ 20 ಅಂಕಗಳ ಮೂರು ಪರೀಕೈಗಳಿಗೆ ಈ ಪುಸ್ತಕವನ್ನು ಕೇಂದ್ರವಾಗಿ ಪರಿಗಣಿಸುವುದು.

30 ಅಂಕಗಳ ಕಿರು ಪರೀಕ್ಷೆಯ ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ

ಭಾಗ – 1 : 10 ಅಂಕಗಳಿಗೆ ಒಂದು ಅಥವಾ ಎರಡು ಅಂಕಗಳ ಪ್ರಶ್ನೆಗಳು, ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಕ್ನೆಗಳು ಅಥವಾ ಬಿಟ್ಟಸ್ಥಳ ತುಂಬಿ ಮೊದಲಾದ ಪ್ರಶ್ನೆಗಳು ಭಾಗ ~ 2 : 10 ಅಂಕಗಳಿಗೆ ಎರೆಡು ಅಂಕಗಳ ಐದು ಪ್ರಶ್ನೆಗಳು

ಭಾಗ - 3 : 10 ಅಂಕಗಳಿಗೆ ಐದು ಅಂಕಗಳ ಎರೆಡು ಪ್ರಶ್ನೆಗಳು

ಬಳಕೆ ಕನ್ನಡ – 2 ಪಠ್ಯಕ್ರಮಗಳಿಗೆ

ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಮಾರ್ಗಸೂಚಿಗಳು

<u>ಆಡಿಟ್ ಕೋರ್ಸ್ ಸಿ – 21 ಪ್ರತಿ ಸಮಸ್ಯರ್ ನಲ್ಲಿ ಬೋಧನಾವಧಿ: 32 ಗಂಟೆಗಳು</u>

<u>ಗರಿಷ್ಠಾಂಕ: 50 ತೇರ್ಗಡೆ ಅಂಕ: 20</u>

3ನೇ ಸಮಿಸ್ಟರ್ (1) ಸಾಹಿತ್ಯ ಸಿಂಚನ-2 (ಕನ್ನಡ ಬಲ್ಲ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ)

(2) ಬಳಕೆ ಕನ್ನಡ –2 (ಕನ್ನಡ ಬಾರದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ)

<u>ಕನ್ನಡ ಭಾಷಾ ವಿಷಯಗಳ ಮೌಲ್ಯಾಂಕನ ವಿಧಾನ</u>

ಅಹಇ ಮೌಲ್ಯಾಂಕನ ವಿಧಾನ (ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ ಪರೀಕ್ಷೆಗಳು ಮತ್ತು ನಿಯೋಜಿತ ಚಟುವಟಕೆಗಳು(ಅಸೈನ್ಮೆಂಟ್)

ਚੁੱ. ਲ ੦	ಮೌಲ್ಯಾಂಕನ	ವಿಧಾನ	ವೇಳಾಪಟ್ಟ	ಸಮಯ	ಗರಿಷ್ಠಾಂಕ	ಸರಾಸರಿ ಅಂಕ	ತೇರ್ಗಡೆಗೆ ಅಗತ್ಯವಾದ ಕನಿಷ್ಠ ಅಂಕ
1	CIE- ಮೌಲ್ಕಾಂಕನ– 1	ಲಿಖಿತ ಪರೀಕ್ಸ್–1	3ನೇ ವಾರಾಂತ್ಯ	80 ನಿಮಿಷಗಳು	30		
2	CIE-ಮೌಲ್ಯಾಂಕನ-2	ಲಿಖಿತ ಪರೀಕ್ಷೆ-2	7ನೇ ವಾರಾಂತ್ಯ	80 ನಿಮಿಷಗಳು	30	30	
3	CIE ಮೌಲ್ಯಾಂಕನ-3	ಲಿಖಿತ ಪರೀಕ್ಸೆ-3	15ನೇ ವಾರಾಂತ್ಯ	80 ನಿಮಿಷಗಳು	30		
4	CIE ಮೌಲ್ಯಾಂಕನ-4	ಬಹು ಆಯ್ಕೆ ಪ್ರಶ್ನೆ(ಎಂಸಿಕ್ಕೂ)	5ನೇ ವಾರಾಂ ತ್ಯ	60 ನಿಮಿಷಗಳು	20	_	
5	CIE ಮೌಲ್ಯಾಂಕನ–5	(ತೆರೆದ ಪುಸ್ತಕ)ಒಪನ್ ಬುಕ್ ಪರೀಕ್ಷೆ	9ವೇ ವಾರಾಂಕ್ಯ	60 ನಿಮಿಷಗಳು	20	20	
6	CIE ಮೌಲ್ಯಾಂಕನ-6	ಕಾರ್ಯ ಪಠ್ಯಮಸ್ತಕದ ಸಲ್ಲಿಕೆ	16ನೇ ವಾರಾಂತ್ಯ	-	20	1.1.2	
ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಾಂಕನಗಳ ಒಟ್ಟು ಅಂಕ					50	20	
7	ಸಮಸ್ಯ ್ ಅಂತ್ಯ ದ ಪರೀಕ್ಷೆ	ఇల్ల					
	ಒಟ್ಟು ಅಂಕಗಳು					50	20

ತೃತೀಯ ಸೆಮಿಸ್ಟರ್

ಜೆಎಸ್ಎಸ್ ಮಹಾವಿದ್ಯಾಪೀಠ ಜೆಎಸ್ಎಸ್ ವಿಶೇಷಚೇತನರ ಪಾಲಿಟೆಕ್ನಿಕ್ ಮೈಸೂರು ಕನ್ನಡ ಬಾರದ / ಕನ್ನಡೇತರ ಡಿಪ್ಲೋಮಾ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ

Course Code	21NK3T	Semester : III	Course Group – AU
Course Title	Balake Kannada – 2	Category : Audit	Lecture Course
No. of Credits	2	Type of Course	CIE Marks : 50
Total Contact Hours	02 Hrs Per Week 32 Hrs Per Semester	Teaching Scheme (L:T:P) = 2:0:0	SEE Marks : Nil

ಬಳಕೆ ಕನ್ನಡ – 2 (ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕ) KA – 21NK3T

ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕದ ಪರಿವಿಡಿ				
General Introduction of the Course with Activities	02 Hours			
Lesson – 1 : Personal Pronouns, Possessive Forms, Interrogative words				
Permission, Commands, encouraging and Urging words (Imperative words and	06 Hours			
sentences) Comparitive, Relationship, Identification and Negation Words –				
Lesson – 2 : Different types of Tense (Use and Usage of Tense in Kannada)	06 Hours			
Kannada Helping Verbs in Conversation (Use and Usage of Verbs)				
Lesson – 3: Formation of Past, Future and Present Tense Sentences with Changing Verb Forms	06 Hours			
Lesson – 4: Karnataka State and General Information about the State				
Kannada Language and Literature	06 ಗಂಟೆ			
Do's and Don'ts in Learning a Language.				
Lesson - 5: Karnataka Darshana: Concepts of Kannada, Kannadiga and Karnataka,				
Karnataka art and culture, Important Places of tourism, Famous personalities of	06 ಗಂಟೆ			
Karnataka, Religious culture of Karnataka (Famous Mata's).				
Total Teaching Hours	32 Hours			

ಬಳಕೆ ಕನ್ನಡ – 2 (ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕ) KA – 21NK3T

ಈ ಕಾರ್ಯಪಠ್ಯಪುಸ್ತಕದ ಬೋಧನೆ ಮತ್ತು ಅಳವಡಿಕೆಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಶಿಕ್ಷಕರು ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳು ಕಡ್ಡಾಯವಾಗ್ರಿ ಪಾಲಿಸಬೇಕಾದ ಸೂಚನೆಗಳು :

1. ಈ ಪಠ್ಯಪುಸ್ತಕವು ಪ್ರಧಾನವಾಗಿ ಕಾರ್ಯ ಪುಸ್ತಕವಾಗಿ ರೂಪಿಸಲ್ಪಟ್ಟಿದೆ ಅದುದರಿಂದ ಶಿಕ್ಷಕರು ಕನ್ನಡ ಸಾಹಿತ್ಯ ಮತ್ತು ಪರಂಪರೆ ಹಾಗೂ ಇತಿಹಾಸ ಈ ಮೊದಲಾದ ಎಲ್ಲ ವಿಷಯಗಳ ಬೋಧನೆಯನ್ನು ಚಟುವಟಿಕೆಗಳ ಅಧಾರದ ಮೇಲೆ ಮತ್ತು ಪರಂಪರೆ ಹಾಗೂ ಇತಿಹಾಸ ಈ ಮೊದಲಾದ ಎಲ್ಲ ವಿಷಯಗಳ ಬೋಧನೆಯನ್ನು ಚಟುವಟಿಕೆಗಳ ಅಧಾರದ ಮೇಲೆ ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಸಂಭಾಷಣೆಗೆ ಮತ್ತು ಚರ್ಚೆಗೆ ಒಳಪಡಿಸುವುದರ ಮುಖಾಂತರ ಬೋಧಿಸಬೇಕು.

2. ಪ್ರತಿಯೊಬ್ಬ ವಿದ್ಯಾರ್ಥಿಯು ಪೂರ್ಣ ಪ್ರಮಾಣದ (ಬೈಂಡಿಂಗ್ ಮಾಡಿಸಿದ) ಈ ಕಾರ್ಯಶಸ್ತ್ರಕವನ್ನು ಬೋಧನೆಯ ಸಮಯದಲ್ಲಿ ತರಗತಿಯಲ್ಲಿ ಕಡ್ಡಾಯವಾಗಿ ಇಟ್ಟುಕೊಂಡಿರಬೇಕು. ಪ್ರತಿ ಪಾಠದ ನಂತರದ ಚಟುವಟಕೆಗಳು ಮತ್ತು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು ತಪ್ಪದೆ ಖಾಲಿ ಬಿಟ್ಟಿರುವ ಹಾಗದಲ್ಲಿ ಬರೆದು ತರಗತಿ ಶಿಕ್ಷಕರಿಂದ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡಿಸಿಕೊಳ್ಳಬೇಕು.

3. ಕಾಲೇಜು ಹಂತದ ನಿರಂತರ ಅಂತರಿಕ ಮೌಲ್ಯಮಾಪನ ಪರೀಕ್ಷಾ ಪ್ರಕ್ರಿಯೆಯನ್ನು ಈ ವಿಷಯದ ಮೌಲ್ಯಮಾಪನಕ್ಕೆ ಅಳವಡಿಸಿಕೊಳ್ಳಲಾಗಿರುತ್ತದೆ. ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ ಇರುವುದಿಲ್ಲ.

4. ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ ಪರೀಕ್ಷಾ ಪ್ರಕ್ರಿಯೆಯನ್ನು ಅಳವಡಿಸಿಕೊಂಡಿರುವುದರಿಂದ. ಬೋಧನೆಯನ್ನು ಶಿಕ್ಷಕರು. ಚಟುವಟಿಕೆಗಳ ಆಧಾರದ ಮೇಲೆ ಮತ್ತು ಕಾರ್ಯ ಪುಸ್ತಕದಲ್ಲಿ ನೀಡಿರುವ ಪ್ರತಿ ಪಾಠ ಮತ್ತು ವಿಷಯಗಳ ಬೋಧನೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳ ಕಲಿಕೆಯನ್ನು ಮತ್ತು ಮೌಲ್ಯಮಾಪನವನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಮಾಡಬೇಕು.

5. ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ ಬೋಧನೆಯ ಈ ಕಾರ್ಯ ಪುಸ್ತಕವನ್ನು ಪ್ರಯೋಗಾಲಯದ ಕಾರ್ಯ ಪುಸ್ತಕದಂತೆ (ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ನಂತೆ) ಬಳಸಬೇಕು. ಬೋಧನೆಯ ನಂತರ ಪ್ರತಿಯೊಂದು ಪಾಠದ ಚಟುವಟಿಕೆಗಳು ಮತ್ತು ವಿದ್ಯಾರ್ಥಿ ಬರೆದ ಉತ್ತರಗಳನ್ನು ತರಗತಿಯ . ಕನ್ನಡ ಶಿಕ್ಷಕರು ಕಡ್ಡಾಯವಾಗಿ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡುವುದರ ಮುಖಾಂತರ ದೃಢೀಕರಿಸಬೇಕು.

6. ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ನಂತರ ಈ ಕಾರ್ಯ ಪುಸ್ತಕವನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಅಧ್ಯಯನ ದೃಢೀಕರಣ ಪತ್ರದ ಸಮೇತ ಕಾಲೇಜಿನ ಪ್ರಾಂಶುಪಾಲರು / ವಿಭಾಗಾಧಿಕಾರಿಗಳ ಮೇಲು ಸಹಿಯೊಂದಿಗೆ ಇಲಾಪೆಯ ಪರಿಶೀಲನೆಗೆ ಸಿದ್ದವಾಗಿಸಿ ಇಟ್ಟರಬೇಕು.

7. ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಬಲ್ಲ ಅಂದರೆ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಓದಲು, ಬರೆಯಲು ಮತ್ತು ಮಾತನಾಡಲು ಹಾಗೂ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಒಂದು ವಿಷಯವನ್ನಾಗಿ 10ನೇ ತರಗತಿಯಲ್ಲಿ ಅಧ್ಯಯನ ಮಾಡಿರುವ ಎಲ್ಲ ವಿದ್ಯಾರ್ಥಿಗಳು **ಬಳಕೆ ಕನ್ನಡ – 2''** ಈ ಕಾರ್ಯಪುಸ್ತಕವನ್ನು ಅಧ್ಯಯನ ಮಾಡಲು ಅರ್ಹರಾಗಿರುತ್ತಾರೆ.

8. ಈ ಮೇಲೆ ತಿಳಿಸಿದ ಎಲ್ಲಾ ಸೂಚನೆಗಳನ್ನು ಕಡ್ಡಾಯವಾಗಿ ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯದ ಅಧ್ಯಯನಕ್ಕೆಂದು ರೂಪಿತವಾಗಿರುವ ಬಳಕೆ ಕನ್ನಡ – 2''. ಈ ಕಾರ್ಯ ಪುಸ್ತಕದ ಬೋಧನೆಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳುವುದು.

9, ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಪರೀಕ್ಷಾ ವಿಧಾನಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಹೆಚ್ಚಿನ ಮಾಹಿತಿಗಾಗಿ ಇಲಾಖೆಯ ಈಗಾಗಲೇ ತನ್ನ ವೆಬ್ಸೈಟ್ನಲ್ಲಿ ಪ್ರಕಟಿಸಿರುವ ಅ – 20 ಪಠ್ಯಕ್ರಮದ ಪ್ರತಿಯನ್ನು ಗಮನಿಸುವುದು.

ಬಳಕೆ ಕನ್ನಡ – 2 :

ಕಿರು ಪರೀಕ್ಷೆಗಳನ್ನು ಮತ್ತು CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದಲ್ಲಿ ಕಡ್ಡಾಯವಾಗಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬೇಕಾದ ಮಾನದಂಡಗಳು ಮತ್ತು ಇಲಾಬೆಯ ಸೂಚನೆಗಳು:

ಭಾಗ – 1: ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ 03 ಕಿರುಪರೀಕ್ಸೆಗಳನ್ನು ನಡೆಸಬೇಕು:

3ನೇ ವಾರದ ಅಂತ್ಯದಲ್ಲಿ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಮೊದಲ ಕಿರುಪರೀಕ್ಷೆ

7ನೇ ವಾರದ ಅಂತ್ಯದಲ್ಲಿ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಎರಡನೆ ಕಿರುಪರೀಕ್ಷೆ

15ನೇ ವಾರದ ಅಂತ್ಯದಲ್ಲಿ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಮೂರನೇ ಕಿರುಪರೀಕ್ಷೆ

ಭಾಗ - 2: ಗರಿಷ್ಠ 20 ಅಂಕಗಳಿಗೆ 03 ವಿಭಿನ್ನರೀತಿಯ ಆಂತರಿಕ ಪರೀಕ್ಷೆಗಳನ್ನು ನಡೆಸಬೇಕು:

1. ಭಾಗ 2 ರ ಗರಿಷ್ಠ 20 ಅಂಕಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಬಳಕೆ ಕನ್ನಡ – 2 ಕೈ ಸಂಬಂಧಿಸಿದ ಪ್ರಶ್ನೆಗಳು ಹೆಜ್ಜಾಗಿ ಚಟುವಟಿಕೆಯ ಮಾದರಿಯಲ್ಲಿ ಇರುವದರಿಂದ 5ನೇ, 9ನೇ ಮತ್ತು 11ನೇ ವಾರದ ಮೂರೂ ಪರಿಕ್ಟ್ರೆಗಳಿಗೆ ಕಾರ್ಯಪಠ್ಯವನ್ನು ಆಧಾರವಾಗಿ ಪರಿಗಣಿಸುವುದು ಮತ್ತು ಈ ಪುಸ್ತಕವನ್ನು ವಿಭಾಗಾಧಿಕಾರಿಗಳ ಮೇಲುಸಹಿಯನ್ನು ತಿಗೆದುಕೊಳ್ಳುವುದರ ಮುಖಾಂತರ ಪುಸ್ತಕಕ್ಕೆ ಅಂಕಗಳನ್ನು ನೀಡಿ ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ನಂತೆ ವಿಭಾಗದಲ್ಲಿ ಸಂರಕ್ಷಿಸಿಡಬೇಕು.

ಭಾಗ – 3: ಗರಿಷ್ಠ 50 ಅಂಕಗಳಿಗೆ:

 ಭಾಗ-1 ರಿಂದ ಗರಿಷ್ಠ 30 ಅಂಕಗಳಿಗೆ ಮೂರು ಕಿರುಪರೀಕ್ಷೆಗಳಿಂದ ಸರಾಸರಿ ಅಂಕಗಳ ಪರಿಗಣನೆ
 ಭಾಗ-2 ರಿಂದ ಗರಿಷ್ಠ 20 ಅಂಕಗಳಿಗೆ ಮೂರು ಕಿರುಪರೀಕ್ಷೆಗಳಿಂದ ಸರಾಸರಿ ಅಂಕಗಳ ಪರಿಗಣನೆ
 ಭಾಗ-1 ಮತ್ತು ಭಾಗ-2 ಅನ್ನು ಒಟ್ಟಿಗೆ ಸೇರಿಸುವುದರ ಮುಖಾಂತರ ಗರಿಷ್ಠ 50 ಅಂಕಗಳಿಗೆ CIE – ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನವನ್ನು ಸಮಿಸ್ಟರ್ ಪ್ರಾರಂಭದಿಂದ ಅಂತ್ಯದವರೆಗೆ ನಡೆದ ಎಲ್ಲಾ ಪರೀಕ್ಷೆಗಳನ್ನು ಪರಿಗಣಿಸಿ ಸರಾಸರಿ ಅಂಕಗಳನ್ನು ಪರಿಗಣಿಸಬೇಕು.

ವಿಶೀಷ ಸೂಚನೆಗಳು :

1. ಎಲ್ಲಾ ಕಿರುಪರೀಕ್ಷೆಗಳನ್ನು ಪ್ರತ್ಯೇಕ ಬ್ಲೂಬುಕ್ ನಲ್ಲಿ ಬರೆಸಬೇಕು.

 ಪ್ರತಿಯೊಂದು 30 ಅಥವಾ 20 ಅಂಕಗಳ ಕಿರುಪರೀಕ್ಷೆಯಲ್ಲಿ ಸಮನಾಂತರವಾಗಿ (10 + 10 + 10) ಅಥವಾ (08 + 08 + 08) ಮೂರು ಹಂತದ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಬೇಕು. 2 ಅಥವಾ 5 ಅಂಕಗಳ ಪ್ರಶ್ನೆಗಳು ಹಾಗೂ ವಿದ್ಯಾರ್ಥಿಗಳ ಸೃಜನಶೀಲತೆ ಮತ್ತು ಕ್ರಿಯಾಶಕ್ತಿಯನ್ನು ಪರೀಕ್ಷಿಸುವಂತಹ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಬೇಕು.

3. ಕಿರು ಪರೀಕ್ಷೆಗಳ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಗಳಲ್ಲಿ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲು ಕಾರ್ಯ ಪುಸ್ತಕದ ಪ್ರತಿಯೊಂದು ಅಧ್ಯಾಯದ ಅಂತ್ಯದಲ್ಲಿ ನೀಡಿರುವ ಚಟುವಟಿಕೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಮರು ಬಳಸಿಕೊಳ್ಳಬಹುದು.

4. ಬಳಕೆ ಕನ್ನಡ ಭಾಗ-2 ಕಾರ್ಯ ಪಠ್ಯಕ್ರಮದಲ್ಲಿನ ಎಲ್ಲಾ ಚಟುವಟಿಕೆಗಳನ್ನು ತರಗತಿ ಶಿಕ್ಷಕರು ಸರಾಸರಿ 20 ಅಂಕಗಳಿಗೆ ಮೌಲ್ಯಮಾಪನ ಮಾಡಿ ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿ (Portfolio Evaluation) 11ನೇ ವಾರಂತ್ಯಕ್ಕೆ CIE Assessment - 6 ಗೆ ಪರಿಗಣಿಸುವುದು.

5. ಈ ಅಧ್ಯಯನ ಪ್ರಮಾಣ ಪತ್ರದೊಂದಿಗೆ ಒಟ್ಟು ಅಂಕಗಳನ್ನು ನಮೂದಿಸುವ ಮುಖಾಂತರ ಕಾರ್ಯಪುಸ್ತಕವನ್ನು ಪ್ರಯೋಗಾಲಯದ ರೆಕಾರ್ಡ್ ಬುಕ್ ನಂತೆ ವಿದ್ಯಾರ್ಥಿಗಳಿಂದ ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದಲ್ಲಿ ತೆಗೆದುಕೊಂಡು ಇಲಾಖಾ ತಪಾಸಣೆಗೆ ಸಿದ್ದವಿಟ್ಟರಬೇಕು.

20 ಅಂಕಗಳ ಕಿರುಪರೀಕ್ಸೆಗೆ ವಿವರಣೆ

ಗರಿಷ್ಠ 20 ಅಂಕಗಳ ಪರೀಕ್ಷೆಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಅಂಕಗಳನ್ನು ನೀಡಲು ಸೆಮಿಸ್ಟರ್ ಪ್ರಾರಂಭದಿಂದ ಅಂತ್ಯದವರೆಗೂ ವಿದ್ಯಾರ್ಥಿಗಳು ಬಳಸಿದ ಬಳಕೆ ಕನ್ನಡ ಭಾಗ–2 ಕಾರ್ಯ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ತರಗತಿಯ ಶಿಕ್ಷಕರು ಪ್ರತಿಯೊಂದು ಪಾಠವನ್ನು ದೃಢೀಕರಿಸುವುದು ಮತ್ತು ವಿಭಾಗಾಧಿಕಾರಿಗಳ ಮೇಲುಸಹಿಯನ್ನು ತೆಗೆದುಕೊಳ್ಳುವುದರ ಮುಖಾಂತರ ಪುಸ್ತಕಕ್ಕೆ ಅಂಕಗಳನ್ನು ನೀಡಿ ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ನಂತೆ ವಿಭಾಗದಲ್ಲಿ ಸಂರಕ್ಷಿಸಿಡಬೇಕು. ಬಳಕೆ ಕನ್ನಡ ಭಾಗ – 2 ಈ ಕಾರ್ಯ ಪಠ್ಯಮಸ್ತಕಗಳಲ್ಲಿಯೇ ಬಹುಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳು ಪ್ರತಿ ಪಾಠದ ಅಭ್ಯಾಸ ಚಟುವಟಕೆಗಳಲ್ಲಿ ಇರುತ್ತವೆ. ಮತ್ತು ಪ್ರತಿ ಪಾಠದ ಅಭ್ಯಾಸ ಚಟುವಟಕೆಗಳಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಯು ತೆರೆದ ಪುಸ್ತಕ ಮಾದರಿಯಲ್ಲಿ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು ಬರೆಯಲು ಅವಕಾಶವಿರುತ್ತದೆ. ಮುಂದುವರೆದು ವಿದ್ಯಾರ್ಥಿಯ ಭಾಷೆಯ ಬಳಕೆ ಮತ್ತು ಸಂವಹನ ಕೌಶಲ್ಯದ ನಿರೂಪಣೆಗೆ ಪ್ರತಿ ಪಾಠದ ಅಭ್ಯಾಸ ಚಟುವಟಕೆಗಳಲ್ಲಿ ಅವಕಾಶವಿರುವುದರಿಂದ ಈ ಪುಸ್ತಕವನ್ನು ಲ್ಯಾಬ್ ರೆಕಾರ್ಡ್ ಬುಕ್ ನಂತೇ ವಿವಿಧ ರೀತಿಯ 20 ಅಂಕಗಳ ಮೂರು ಪರೀಕ್ಷೆಗಳಿಗೆ ಈ ಪುಸ್ತಕವನ್ನು ಕೇಂದ್ರ ವಾಗಿ ಪರಿಗಣಿಸುವುದು.

30 ಅಂಕಗಳ ಕಿರು ಪರೀಕ್ಷೆಯ ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ

ಭಾಗ – 1 : 10 ಅಂಕಗಳಿಗೆ ಒಂದು ಅಥವಾ ಎರಡು ಅಂಕಗಳ ಪ್ರಶ್ನೆಗಳು, ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಕ್ನೆಗಳು ಅಥವಾ ಬಿಟ್ಟಸ್ಥಳ ತುಂಬಿ ಮೊದಲಾದ ಪ್ರಶ್ನೆಗಳು ಭಾಗ – 2 : 10 ಅಂಕಗಳಿಗೆ ಎರೆಡು ಅಂಕಗಳ ಐದು ಪ್ರಶ್ನೆಗಳು

ಭಾಗ – 3 : 10 ಅಂಕಗಳಿಗೆ **ಐದು ಅಂಕಗಳ ಎರೆಡು** ಪ್ರಶ್ನೆಗಳು

ಬಳಕೆ ಕನ್ನಡ – 2 ಪಠ್ಯಕ್ರಮಗಳಿಗೆ

ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಮಾರ್ಗಸೂಚಿಗಳು

<u>ಆಡಿಟ್ ಕೋರ್ಸ್ ಸಿ – 21 ಪ್ರತಿ ಸೆಮೆಸ್ಟರ್ ನಲ್ಲಿ ಬೋಧನಾವಧಿ: 32 ಗಂಟೆಗಳು</u>

<u> ಗರಿಷ್ಠಾಂಕ : 50 _____ ತೇರ್ಗಡೆ ಅಂಕ : 20</u>

3ನೇ ಸೆಮಿಸ್ಟರ್ (1) ಸಾಹಿತ್ಯ ಸಿಂಚನ-2 (ಕನ್ನಡ ಬಲ್ಲ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ)

(2) ಬಳಕೆ ಕನ್ನಡ -2 (ಕನ್ನಡ ಬಾರದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ)

<u>ಕನ್ನಡ ಭಾಷಾ ವಿಷಯಗಳ ಮೌಲ್ಯಾಂಕನ ವಿಧಾನ</u>

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ಅಶ್ಲೂ ಮೌಲ್ಯಾಂಕನ ವಿಧಾನ (ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನ ಪರೀಕ್ಷಿಗಳು ಮತ್ತು ನಿಯೋಜಿತ ಚಟುವಟಕೆಗಳು(ಅಸ್ಕೆನ್ಮಾಂಟ್)

ಕ್ರ.ಸಂ	ಮೌಲ್ಯಾಂಕನ	ವಿಧಾನ	ವೇಳಾಪಟ್ಟಿ	ಸಮಯ	ಗರಿಷ್ಠಾಂಕ	ಸರಾಸರಿ ಅಂಕ	ತೇರ್ಗಡೆಗ ಅಗತ್ಯವಾದ ಕನಿಷ್ಠ ಅಂಕ
1	CIE- ಮೌಲ್ಯಾಂಕನ-1	ಲಿಖಿತ ಪರೀಕ್ಸೆ–1	3ನೇ ವಾರಾಂತ್ಯ	80 ನಿಮಿಷಗಳು	30		
2	CIE- ಮೌಲ್ಮಾಂಕನ–2	ಲಿಖಿತ ಪರೀಕ್ಷೆ-2	7ನೇ ವಾರಾಂತ್ಯ	80 ನಿಮಿಷಗಳು	30	30	
3	CIE ಮೌಲ್ಕಾಂಕನ–3	ಲಿಖಿತ ಪರೀಕ್ಷೆ–3	15ನೇ ವಾರಾಂತ್ಯ	80 ನಿಮಿಷಗಳು	30		
4	CIE ಮೌಲ್ಯಾಂಕನ-4	ಬಹು ಆಯ್ಕೆ ಪ್ರಶ್ನೆ(ಎಂಸಿಕ್ಕೂ)) 5ನೇ ವಾರಾಂಕ್ಯ	60 ನಿಮಿಷಗಳು	20	-	
5	CIE ಮೌಲ್ಯಾಂಕನ–5	(ತೆರೆದ ಪುಸ್ತಕ)ಒಪನ್ ಬುಕ್ ಪರೀಕ್ಷೆ	9ನೇ ವಾರಾಂತ್ಯ	60 ನಿಮಿಷಗಳು	20	20	
6	CIE ಮೌಲ್ಯಾಂಕನ–6	ಕಾರ್ಯ ಪಠ್ಯಮಸ್ತಕದ ಸಲ್ಲಿಕೆ	16ನೇ ವಾರಾಂತ್ಯ	-	20		20
	ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಾಂಕನಗಳ ಒಟ್ಟು ಅಂಕ					50	
7	ಸಮಸ್ವರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆ	ಇಲ್ಲ		-300			
	L	ఒట్ను	ಅಂಕಗಳು			50	20