BSM-152

Roll No. 2 0 2 2 0 4 1 1 4 4

B. Tech.

Year: First Semester: II

Minor Test - I

Ordinary and Partial Differential Equations

Time: 1 Hrs. **Max Marks: 15**

Note: Attempt ALL questions.

Q1.	Attempt any **Two parts** of the following. **Q 1(a) is compulsory.**	Marks	CO	BL	PO	PI Code
a)	Solve $(D^2 + 5D + 6)y = e^{-2x}\sec^2 x(1 + 2tanx)$.	5	1	3	1,2,8	1.2.1 1.2.2 8.3.1
b)	Solve $(1+x)^2\frac{d^2y}{dx^2} + (1+x)\frac{dy}{dx} + y = 4\cos(\log(1+x))$.	3	1	3	1,2,8	1.2.1 1.2.2 8.3.1
c)	i. Solve $\frac{dx}{dt} = 3x + 8y$ and $\frac{dy}{dt} = -x - 3y$ with $x(0) = 6, y(0) = -2$. ii. Solve $(D^2 + 2D + 2)y = e^{-x}tanx$.	3	1	3	1,2,8	1.2.1 1.2.2 8.3.1
Q2.	Attempt any **Two parts** of the following. **Q 2(a) is compulsory**					
a)	Solve in series the differential equation $xy'' + 2y' + xy = 0$.	4	1	3	1,2,8	1.2.1 1.2.2 8.3.1
b)	Find the series solution of Bessel's differential equation of p^{th} order and hence Evaluate the value of $J_{\frac{1}{2}}$ and $J_{\frac{3}{2}}$.	3	3	3	1,2,8	1.2.1 1.2.2 8.3.1
c)	i. Show that $nP_n = xP_n' - P_{n-1}'$. ii. Show that $\int_{-1}^{1}(x^2-1)P_{n+1}P_n'\,dx = \frac{2n(n+1)}{(2n+1)(2n+3)}$.	3	2	3	1,2,8	1.2.1 1.2.2 8.3.1

BEC-151

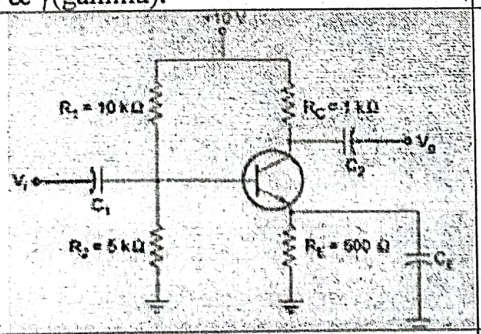
Roll No. 2021041143

B. Tech.
EVEN SEMESTER (SEM-II)
TEST-1 EXAMINATION 2022 - 2023

FUNDAMENTAL OF ELECTRONICS ENGINEERING

Time: 1 Hrs. Max. Marks: 10

Note: Attempt all questions.

Q. No.	Questions	Marks	CO	BL	PI
1.	Attempt any **two** parts of the following. Q1(a) is compulsory.	05			
1(a)	Write short notes on intrinsic and extrinsic semiconductor. Find, (i) the conductivity and (ii)resistance of a bar of pure silicon of length 2cm and cross section area $2mm^2$ at 300K. Given (μ_n=0.14m^2/v.s, μ_p=0.04m^2/v.s, n_i=1.5×10^{16}/m^3 and e=1.6×10^{-19}C).	3	CO1	L1	1.3.1
1(b)	Derive the expressions for the following parameters of the full wave rectifier circuits: i. Average d.c. current (I_{DC}) and Average d.c. voltage (V_{DC}). ii. R.M.S. value of current (I_{RMS}). iii. D.C. Power output (P_{DC}). iv. Ripple factor and ripple efficiency.	2	CO2	L3	1.3.1
1(c)	What is the function of a clamper circuit? Draw the circuit diagram of a diode clipper that limits the positive peak of the of the input voltage. Explain how the circuit works.	2	CO1	L1, L2	1.3.1
2.	Attempt any **two** parts of the following. Q2(a) is compulsory.	05			
2(a)	Define the current amplification factor in CC, CE, and CB mode of configuration. Derive the relation between α(alpha), β(beta) & γ(gamma).	3	CO1	L1, L2	1.3.1
2(b)	For the given circuit β=100 for silicon transistor. Calculate V_B, I_B, R_B, I_C and V_{CE}. 	2	CO1	L2	1.3.1
2(c)	Compare the fixed bias and voltage divider biasing of a transistor. Draw the hybrid equivalent circuit for Common Emitter Configuration.	2	CO2	L3	1.3.1

CO= Course Outcomes (as per the syllabus made for BEC-151 according to NEP)
BL= Bloom Taxonomy (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 –Evaluating, 6 – Creating).PI- Program Indicator (Reference to Examination Reform AICTE (Page 15) – Program Outcome-1.3 Demonstrate competence in engineering fundamentals, Program Indicator- 1.3.1 Apply fundamental engineering concepts to solve engineering problems)

BEC-152

Roll No. | | | | | | | | | | | |

B. Tech.
Year: I, Semester: II
Test-I (Examination): 2022-2023
FUNDAMENTALS OF COMMUNICATION SYSTEMS

Time: 1 Hr. Max Marks: 10

Note: Attempt ALL questions. ALL questions carry equal marks.

Q1.		Attempt any Two parts of the following. Q. 1 (a) is compulsory	Marks	CO	BL	PO	PI Code
	a)	Explain Amplitude Modulation with mathematical expressions & suitable diagram. A modulating signal m(t) = 10cos ($2\pi \times 10^3$ t) is amplitude modulated with a carrier signal c (t) = 50 cos ($2\pi \times 10^5$ t). Find the modulation index, the carrier power, and the power required for transmitting AM wave.	3	CO1	1,2	1,3	1.3.1
	b)	Discuss SSB-SC-AM & derive the expression for bandwidth and power for the wave. Also mention some its advantages, disadvantage, and its applications.	2	CO1	1,3	1,2	1.3.1
	c)	Define modulation and its need. Classify modulation & differentiate between analog and digital modulation.	2	CO1	1,4	1	1.3.1
Q2.		Attempt any Two parts of the following. Q. 1 (a) is compulsory					
	a)	Derive the expression for Modulation index ii) maximum frequency deviation for Phase modulated (PM) signal with suitable diagram. Consider an FM signal $s(t)=10\cos(2\pi\times10^6t+8\sin(4\pi\times10^3t))$ Determine i) Modulation index ii) maximum frequency deviation iii) bandwidth	3	CO2	1,5	1,3	1.3.1
	b)	Discuss Narrowband & wideband frequency modulation. List the different generation method for WB frequency modulation.	2	CO3	1,2	2	1.3.1
	c)	Explain with proper block diagram and expressions how Phase modulated wave can be generated using a frequency modulator. Also draw a block diagram for the generation of Frequency modulated wave using a phase modulator.	2	CO3	1,4	2	1.3.1

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes
PO – Program Outcomes
PI Code – Performance Indicator Code

BCS - 154

Roll No. 2 0 2 2 0 4 1 1 4 4

B. Tech. (ECE)
Year : 1st Semester : II
Test-I (Examination): 2022-2023
BASICS OF PROGRAMMING SKILLS

Time: 1 Hr. **Max Marks: 10**

Note: Attempt ALL questions.

Q1		Attempt any Two parts of the following. Q.1 (a) is compulsory. (Unit-I)	Marks	CO	BL	PO	PI Code
	a)	Explain Flowchart and Algorithm. Draw a flowchart and write an algorithm to check whether given number is prime or not.	3	3	1,2,3	1,2	1.4.1
	b)	What is Operating System. Explain the functions of an OS.	2	2	1	1	1.4.1
	c)	Explain the Internal Execution of C program. Describe the function of a linker and loader.	2	2	1,2	1	1.4.1
Q2		**Attempt any Two parts of the following. Q. 2(a) is compulsory. (Unit-II)**					
	a)	Write a C program to find the sum of the series $1+2x+3x^2+4x^3+$.....upto n terms.	3	3	1,2,3	1,2	1.4.1
	b)	List the differences between while loop and do-while loop. Write a C program to find the factorial of a number using do-while loop.	2	2	1,2	1	1.4.1
	c)	List all conditional control statements used in C. Explain any two with syntax and example.	2	2	2	1,2	1.4.1

BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 – Evaluating, 6 - Creating)
CO – Course Outcomes
PO – Program Outcomes
PI Code – Performance Indicator Code

Subject Code	BHM-104

Roll No.										

B.Tech. (1st Year)
Year: 2022-23, Semester: Even
Test-1 (Minor Examination)
Human Values & Professional Ethics

Time: 1 Hr

Max. Marks:20

Note: Attempt all questions. All questions carry equal marks.

Q1.	Attempt any two parts of the following. Q1(a) is compulsory	Marks	CO	BL	PO
a)	What is the need for value education? Why there is a need of value education?	6	1	2	4
b)	Self-exploration is a process of dialogue between 'what you are' and 'what you want to be'. Explain and illustrate.	4	4	1	4
c)	What is the meaning of prosperity? How can you say that you are prosperous?	4	2	3	4

Q2.	Attempt any two parts of the following. Q2(a) is compulsory				
a)	Right understanding in the individuals is the basis for harmony in the family, which is the building block for harmony in society. Give your comments.	6	2	4	4
b)	Define existence. Show that existence is in a form of co-existence.	4	1	5	4
c)	What do you understand by 'Vasudeva Kutumbkam'? How it is an important aspect in maintaining harmony at a higher level?	4	5	5	4

Subject Code	BHM-155

Roll No.										

B.Tech. (II[nd] Semester), ECE
Year: 2022-23, Semester: Even
Test-1 (Minor Examination)
Subject Name: Engineering Economics

Time: 1 Hr **Max. Marks:20**

Note: Attempt all questions. All questions carry equal marks.

Q1. Attempt any two parts of the following. Q1(a) is compulsory.

a) Define Microeconomics and discuss its meaning, nature, and scope. (6)

b) Discuss the application of Managerial Economics in the engineering field, providing examples. (4)

c) How can engineering managers utilize economic principles to improve decision making and optimize resources? (4)

Q2. Attempt any two parts of the following. Q2(a) is compulsory.

a). Explain the determinants of demand and how they influence the demand for a product or service. (6)

b). What is price elasticity of demand? Discuss its meaning, formula, and significance in managerial decision making. (4)

c). Define the law of supply and discuss its importance in Managerial Economics. (4)