BEC-101

Roll No. 2 0 2 1 0 3 1 1 1 1

B. Tech.
ODD SEMESTER (SEM-I)
TEST-1 EXAMINATION 2021 - 2022

FUNDAMENTALS OF ELECTRONICS ENGINEERING

Time: 1 Hrs. Max. Marks: 10

Note: Attempt all questions.

1. Attempt any two parts of the following. Q1(a) is compulsory. [5]

(a) Explain the forward and reverse bias characteristics of PN junction diode? Explain the effect of temperature on an intrinsic semiconductor. [3]

(b) Write a short note on any of the one: [2]
i. Diffusion capacitance
ii. Transition capacitance

(c) Calculate the dynamic forward and reverse resistances of a Si PN junction diode when the applied voltage is 0.25V at T =300K given Io=2μA [2]

2. Attempt any two parts of the following. Q2(a) is compulsory. [5]

(a) Derive the relation between current gain α and β. The value of current gain α for a transistor is 0.95, find the value of β and also find the value of α if β changes to 100. [3]

(b) Explain the input and output characteristics of a transistor in common base configuration. [2]

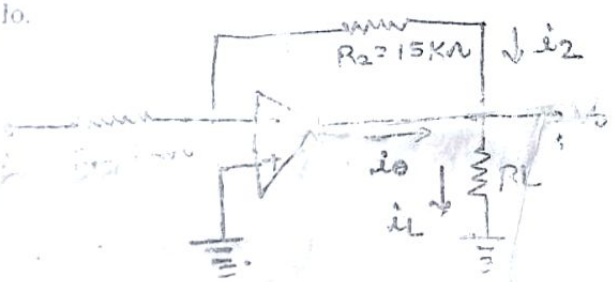
(c) What are the different methods of transistor biasing? Explain the importance of self-bias or voltage divider bias. [2]

Roll No. 2021031111

B. Tech.
ODD SEMESTER (SEM-I)
TEST- 2 EXAMINATION 2021 - 2022
FUNDAMENTALS 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)	Explain the construction & working of enhancement type MOSFET with suitable diagram.	3	CO1	L1, L2	1.3.1
1(b)	Convert (i) $(1101101)_2 = (?)_{10}$ and $(69)_{10} = (?)_2$ (ii) $(1010111011110101)_2 = (?)_{16}$ and $(FA876)_{16} = (?)_2$	2	CO3	L5	1.3.1
1(c)	A JFET has the following parameters: IDSS = 32 mA, VGS (off) = – 8V; VGS = – 4.5 V. Find the value of drain current.	2	CO1	L3	1.3.1
2.	Attempt any two parts of the following. Q2(a) is compulsory.	05			
2(a)	Write a short note on: I. Virtual ground II. Digital voltmeter III. Input impedance & output impedance	3	CO5	L1,L2	1.3.1
2(b)	The input voltage Vi shown in the figure below is -0.02V. If the op amp is ideal. Find the output current Io. 	2	CO4	L3,L5	1.3.1
2(c)	Write the principle and working of CRO with proper block diagram.	2	CO6	L1	1.3.1

CO = Course Outcomes (as per the syllabus made for BEC-101 according to NEP)
BL = Bloom Taxonomy (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 –Evaluating, 6 – Creating)
PI = Program Indicator (Reference: 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)

BCS - 101

Roll No. 2 0 2 1 0 3 1 1 1 1

B. Tech. (Electrical Engineering)
Year : 1st Semester : I
Test-I (Examination): 2021-2022
INTRODUCTION TO COMPUTER PROGRAMMING

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)	Define flowchart and algorithm. Draw a flowchart and write an algorithm to find out the number is prime or not.	3	3	1,2,3	1,2	1.4.1
	b)	What are different types of errors occurred during the execution of C program.	2	2	1,2	1	1.4.1
	c)	Write the difference between compiler and interpreter. Describe the function of a linker and loader.	2	2	1	1	1.4.1
Q2.		**Attempt any Two parts of the following. Q. 2(a) is compulsory. (Unit-II)**					
	a)	List the differences between while loop and do-while loop. write a C program to find factorial of a number using for loop.	3	3	1,2,3	1,2	1.4.1
	b)	What is dangling else problem? Explain how to handle this in C programming.	2	2	1,2	1	1.4.1
	c)	Implement a C program to find the reverse of an integer number and check whether it is palindrome or not.	2	3	3	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

BCS - 01

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

B. Tech. (Electrical Engineering)
Year: I[st] Semester: I[st]
Test-II (Examination): 2021-2022
Introduction to C Programming

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. (Units-III)	Marks	CO	BL	PO	PI Code
	a)	What is array? Explain the declaration and initialization of one dimensional and two dimensional array with an example.	3	CO2	L1	1	1.4.1
	b)	How string is declared and initialized? Write a C program to reverse the string without using built-in function strrev().	2	CO2	L2	1,2	1.4.1
	c)	Explain nested structure and self referential structure with example.	2	CO2	L2	1	1.4.1
Q2.		Attempt any Two parts of the following. Q. 2(a) is compulsory. (Units -IV)					
	a)	Write a C function to find the largest and smallest in a given list of integers of size n using call by reference: void minmax(int list[ ], int n, int *min, int *max);	3	CO3	L3	1,2	1.4.1
	b)	What is static memory allocation and dynamic memory allocation? Write the syntax of malloc(), calloc(), realloc() and free().	2	CO2	L2	1,2	1.4.1
	c)	Explain at least four file handling operations available in C language giving their syntax.	2	CO3	L3	1	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-104/154 Roll No 2 0 2 1 0 3 1 1 1 1

B.Tech

SEM I ODD SEMESTER

TEST-1 (EXAMINATION) 2021-2022

Subject Name: Human Values and Professional Ethics

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

Note- Answer All the Questions

Q.1 Attempt any **Two** parts of the following. Q.1(a) is compulsory.

a) What do you understand by the term Human Values? Why Human Values is important in today's scenario? 6

b) What are Family values? How it differs from societal values. 4

c) What is happiness? How we can remain happy and prosperous. Discuss in brief. 4

Q.2 Attempt any **Two** parts of the following. Q.2(a) is compulsory.

a) What is harmony? How will you increase the harmony in family and society? 6

b) Briefly discuss pollution and how it affects our life. 4

c) What are the steps involved in sustainable development to secure our environment. Discuss. 4

Printed Pages: 1

Subject Code: BHM-104/154 **Roll No** | | | | | | | | | | |

B.Tech

SEM I ODD SEMESTER

TEST-2 (EXAMINATION) 2021-2022

Human Values and Professional Ethics (BHM-104/154)

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

Note- Answer All the Questions

Q.1 Attempt any **two** parts of the following. Q.1 (a) is compulsory.

a) What do you mean by Ethics? Explain its various sources and relation with morality. 6

b) Does ethics differs from law, comment. 4

c) What is the role of ethics in science and technology? 4

Q.2 Attempt any **two** parts of the following. Q.2 (a) is compulsory.

a) What do you mean by Corporate Social Responsibility? Explain by giving an example. 6

b) Elaborate the difference between theistic and atheistic approach in ethics. 4

c) What do you understand by professional ethics or ethics at workplace? 4

BSM-01

Roll No. 2 0 2 1 0 3 1 1 1 1

B. Tech.
Year: I Semester: I
Test-I (Examination): 2021-22
Calculus and Linear Algebra

Time: 1 Hr. Max Marks: 20

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

Que 1.		Attempt any Two parts of the following. Q. 1 (a) is compulsory.	Marks	CO	BL	PO	PI Code
	a)	(i) Show that the functions $u = \frac{x+y}{1-xy}$, $v = \tan^{-1} x + \tan^{-1} y$ are functionally related. Hence find the relation between them. (ii) Find the shortest and longest distance from the point $(1, 2, -1)$ to the sphere $x^2 + y^2 + z^2 = 24$.	6	1	2/3	1	1.1.1
	b)	(i) Show that n^{th} derivative of $\frac{1}{x^2+a^2}$ is $\frac{(-1)^n n!}{a^{n+2}} \sin(n+1)\theta \sin^{n+1}\theta$, where $\theta = \tan^{-1}\frac{a}{x}$. (ii) If $\phi(cx - az, cy - bz) = 0$, then show that $a\frac{\partial z}{\partial x} + b\frac{\partial z}{\partial y} = c$.	4	1	3	1	1.1.1
	c)	Find the Taylor series expansion of $f(x, y) = \cot^{-1} xy$ in powers of $(x + 0.5)$ and $(y - 2)$ up to the second-degree term. Hence compute $f(-0.4,\ 2.2)$ approximately.	4	1	3	1	1.1.1
Que 2.		Attempt any Two parts of the following. Q. 2 (a) is compulsory					
	a)	(i) Verify Cayley-Hamilton theorem for matrix A and hence find matrix $A^8 - 5A^7 + 7A^6 - 3A^5 + 8A^4 - 5A^3 + 8A^2 - 2A + I$ If matrix $A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{bmatrix}$. (ii) Reduce the matrix $\begin{bmatrix} 1 & 0 & -1 & 1 \\ 2 & 1 & 2 & 1 \\ 2 & -1 & 1 & 2 \\ 1 & 2 & 0 & 1 \end{bmatrix}$ to the normal form. Hence find the rank.	6	1	2/3	1	1.1.1
	b)	Solve the system of equations $2x + y + 2z = 10, 2x + 2y + z = 9$ and $x + 2y + 2z = 11$, by finding the inverse using elementary transformations.	4	1	2/3	1	1.1.1
	c)	Find all the eigen values and eigen vectors of following matrix $A = \begin{bmatrix} 3 & -4 & 4 \\ 1 & -2 & 4 \\ 1 & -1 & 3 \end{bmatrix}$	4	1	3	1	1.1.1

BSM-01

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

B. Tech.

Year: I Semester: I

Test-II (Examination): 2021-22

Calculus and Linear Algebra

Time: 1 Hr. Max Marks: 20

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

Que1.		Attempt any Two parts of the following. Q. 1 (a) is compulsory.	Marks	CO	BL	PO	PI Code
	a)	(i) Evaluate following integral by changing the order of integration $\int_0^1 \int_x^{\sqrt{2-x^2}} \frac{x}{\sqrt{x^2+y^2}} dydx$ (ii) Evaluate $\int_0^1 (1-x^3)^5 dx$	6	4	2/3	1	1.1.1
	b)	Evaluate $\int_0^{\log 2} \int_0^x \int_0^{x+y} e^{x+y+z} dxdydz$	4	4	3	1	1.1.1
	c)	Show that $\Gamma m\, \Gamma\left(m+\frac{1}{2}\right) = \frac{\sqrt{\pi}}{2^{2m-1}} \Gamma(2m)$	4	4	3	1	1.1.1
Que 2.		Attempt any Two parts of the following. Q. 2 (a) is compulsory					
	a)	(I) In what direction from the point (1, 1, −2), the directional derivative of $\phi = x^2 - 2y^2 + 4z^2$ is maximum? Also find the maximum value of directional derivative. (II) Show that $div(grad\, r^n) = \nabla^2 r^n = n(n+1)r^{n-2}$	6	3	2/3	1	1.1.1
	b)	Evaluate $\iint_S \vec{F}.\vec{n}\, dS$ if $\vec{F} = 4y\hat{\imath} + 18z\hat{\jmath} - x\hat{k}$ and S is the surface of the plane $3x + 2y + 6z = 6$ contained in the first octant.	4	3	2/3	1	1.1.1
	c)	Show that $r^n\vec{r}$ is solenoidal if $n = -3$ and irrotational for all values of n. Here $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ and $r = \lvert\vec{r}\rvert$.	4	3	3	1	1.1.1