

S2 QUESTION BANK Electronics & CommunicationEngineering (2022-26 Batch) Ac. Yr. 2022-23

DEPARTMENT OF ELECTRONICS & COMMUNICATION NGINEERING

VIDYA ACADEMY OF SCIENCE AND TECHNOLOGY TECHNICAL CAMPUS, KILIMANOOR

VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS

	Module 1				
Sl. No	Questions	Marks	KU/KTU		
1	A particle moves along a circular helix in 3-space so that its position vector at any time 't' is $r(t) = (4\cos\pi t)\vec{i} + (4\sin\pi t)\vec{j} + t\vec{k}$. Find the displacement of the particle during the interval $1 \le t \le 5$.	7	KTU Feb-2017		
2	If $f(x, y, z) = x^2i - 3j + yz^2k$ find div F	2	KTU Apr-2018		
3	Find the work done by the force field $F = xy i + yz j + zx k$ on a particle that moves along the curve C: $x = t$, $y = t^2$, $z = t^3$, $0 \le t \le 1$	3	KTU Apr-2018 & Dec-2017		
4	Find the divergence and curl of the vector field $f(x, y, z) = yz\vec{i} + xy^2\vec{j} + yz^2\vec{k}$	2	KTU Dec- 2017		
5	Evaluate $\int_{c} (3x^2 + y^2) dx + 2xydy$ along the circular arc C given by $x = cost$, $y = sint$ for $0 \le t \le \frac{\pi}{2}$	3	KTU Dec- 2017		
6	Show that the integral $\int \frac{(3,3)}{(1,1)} (e^x \log y - \frac{e^y}{x}) dx + (\frac{e^x}{y} - e^y \log x) dy$ Where x and y are positive, is independent of path and find its value.	5	KTU Dec- 20117		
7	If $\vec{r} = x\vec{\iota} + y\vec{J} + z\vec{k}$ and $r = \vec{r} $, then show that $\nabla f(r) = \int_{r}^{r} \frac{(r)^{r}}{r}\vec{r}$.	5	KTU Dec-2017		
8	Prove that the force field $F = e^{y}i + x e^{y}j$ is conservative in the entire xy- plane	7	KTU Model question		
9	Find the work done by the Force field $F(x, y, z) = xy\vec{i} + yz\vec{j} + xz\vec{k}$ along C where C is the curve $r(t) = t\vec{i} + t^2\vec{j} + t^3\vec{k}$	7	KTU Model Question		
10	Show that $f(x, y) = (cosy + ycosx)\vec{i} + (sinx - xsiny)\vec{j}$ is a conservative vector field. Hence find the scalar potential for it.	5	KTU Dec- 2017		
11	Find the directional derivative of $f(x, y) = x^2 = 3xy + y^2$ at the point P(2,1)in the direction of $\vec{a} = \frac{1}{3}\vec{i} + \frac{2}{3}\vec{j}$	3	KTU- June 2022		
12	Evaluate $\int 3xy dy$ over the line segment C joining (0,0) and (1,2)	3	KTU- June 2022		

13	a)Find the parametric equation of the tangent to the curve $\vec{r}(t) = 2\cos\pi t\vec{i} + 2\sin\pi t\vec{j} + 6t\vec{k}$ at $t = \frac{1}{3}$ b) Show that the vector field $\vec{f}(x, y) = 2xy^3\vec{i} + 3y^2x^2\vec{j}$	7	KTU-June 2022
	is conservative and find ϕ such that $f = \nabla \phi$. (-2,0) Hence evaluate $\int 2xy^3 dx + 3y^2x^2 dy$ (2,-2)	7	
14	a. Find the position and velocity vectors of the particle, given $\vec{a}(t) = (t+1)^{-2}\vec{j} + e^{-2t}\vec{k}, \vec{v}(0) = 3\vec{\iota} - \vec{j}, \vec{r}(0) = \vec{k}$	7	KTU-June 2022
	b. If $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$, and let $\vec{F}(r) = f(r)\vec{r}$, then prove that $div\vec{F} = 3f(r) + \vec{r}f'(\vec{r})$	7	
	Module 2		
1	Using Greens theorem, find the work done by the force field $\vec{f}(x, y) = (e^x - y^3)\vec{i} + (\cos y + x^3)\vec{j}$ on a particle that travels once around the unitcircle $x^2 + y^2 = 1$ in the counter clockwise direction	5	KTU Apr- 2018
2	If σ is any closed surface enclosing a volume V and $F = x\vec{i} + 2y\vec{j} + 3z\vec{k}$, using divergence theorem show that $\iint_{\sigma} F. nds = 6 V$.	3	KTU Apr- 2018
3	Evaluate $\int_{c} (x^2 - 3y)dx + 3xdy$, where C is the circle $x^2 + y^2 = 4$	3	KTU Dec- 2017
4	Using line integral evaluate the area enclosed by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$	2	KTU Dec- 2017
5	Using Greens theorem evaluate $\int_C (xy + y^2)dx + x^2dy$, where C is the boundary of the common to the curve $y = x^2$ and $= x$.	5	KTU Apr- 2018

6	Using stokes theorem evaluate $\int_{c} f dr$ where $F = xz i + 4x^2y^2j + xy k$, C is the rectangle $0 \le x \le 1, 0 \le y \le 3$ in the plane $z = y$.	5	KTU DEC- 2017
7	Determine whether the vector fields are free of sources and sinks, If it is not locate them. (i) $(y + z)i - xz^3j + x^2siny k$ (ii) $xy i - 2xyj + y^2 k$	5	KTU Dec- 2017
8	Evaluate the surface integral $\iint_{\sigma} xzds$, where σ is the part of the plane $x + y + z = 1$ that lies in the first octant.	5	KTU Dec- 2017
9	Using divergence theorem evaluate $\iint_{S} F. nds$ where $F = (x^2 + y)i + z^2j + (e^y - z)k$ and S is the surface of the rectangular solid bounded by the co-ordinate planes $x = 3$, $y = 1$, $z = 3$	5	KTU Apr- 2018
10	Use stokes theorem to evaluate the integral $\int F dr$ where $F = (x^2 - y^2)i^2 + 2xyj^2$ and C is the rectangle in the <i>xy</i> -plane bounded by the lines $x = 0$, $y = 0$, $x = a$ and $y = b$.	5	KTU Apr- 2018
11	Find the circulation of $F = (x - z)i + (y - x)j + (z - xy)k$ using Stokes theorem around the triangle with the vertices A(1,0,0),B(0,1,0) and C(0,0,1).	7	KTU MODEL QUESTIO N
12	Use divergence theorem to find the out ward flux of the vector field $F = 2xi$ + $3yj + z^{3}k$ across the unit cube bounded by $x = 0$, $y = 0$, $z = 0$, $x = 1$, $y = 1$, $z = 1$	7	KTU MODE L question
13	Determine the sources and sinks of the vector field $\vec{f}(x, y) = x^2\vec{\iota} + y^2\vec{j} + z^2\vec{k}$	3	KTU- June 2022
14	Use divergence theorem to evaluate $\iint \vec{f} \cdot \vec{n} dS$ where	3	KTU- June 2022
	$y = 2xi + 4yj - 3zk \text{ and } S \text{ is the surface of the sphere}$ $x^2 + y^2 + z^2 = 1$		

15	a) Use Green's theorem to find the work done by the force field	7	KTU-
	$\vec{f}(x,y) = xy\vec{i} + (\frac{x^2}{2} + xy)\vec{j}$ on a particle that starts at (4,0)		June 2022
	transverse the upper semicircle $x^2 + y^2 = 16$ and returns to the		
	starting point along X axis.		
	b) Find the mass of the lamina that is the portion of the cone		
	$z = \sqrt{x^2 + y^2}$ that lies between the planes $z = 1$ and $z = 3$,	7	
	if the density is $\phi(x, y, z) = x^2 z$.		
16	a) Let σ be the portion of the surface $z = 1 - x^2 - y^2$	7	
	that lies above the XY plane and σ is oriented upwards.	7	KTU- June 2022
	Find the flex of the vector field $\vec{F}(x, y, z) = x\vec{i} + y\vec{j} + z\vec{k}$ across σ .		
	b) Use Stoke's theorem to evaluate $\oint ec{F}.dec{r}$ over the circle		
	$C: x^2 + y^2 = 1$ where $\vec{F}(x, y, z) = z^2 \vec{\iota} + 3x\vec{j} - y^3\vec{k}$ and		
	C is the circle in XY plane with counter clockwise orientation looking		
	down the positive Z axis		
	Module 3		
1	Consider the initial value problem $y'' - x^3y' + 6x = sinx$, y(0) = 3, y'(0) = -1.Can this problem have unique solution in an interval containing zero? Explain	3	KTU JULY- 2018
2	Find any three independent solutions of the differential equation $y'' - y' = 0$	3	KTU JULY- 2018
3	<u>Discuss the existence and uniqueness of solution of initial value problem</u> $\frac{dy}{dx} = \frac{y}{\sqrt{x}}, y(1) = 3$	3	KTU JULY- 2018
4	Prove that $y_1(x) = e^x$ and $y_2(x) = e^{4x}$ form a fundamental system (basis) for the differential equation $y'' - 5y' + 4y = 0$.Can $5e^x - 2e^{4x}$ be a solution(do not use verification code) of the differential equation ?Explain.	5	KTU JULY- 2018
5	Discuss the existence and uniqueness of solution of the initial value problem $dy = x^2 + y^2$, $y(0) = 1$ in the rectangle $ x \le 1$, $ y - 1 \le 1$.	6	KTU JULY- 2018

6	If $y_1(x) = x$ is a solution of $x^2y'' + 2xy' - 2y = 0$, fInd the general solution.	5	KTU JULY-2018
7	Examine whether e^{2x} , e^{3x} are linearly independent solutions of the		
	differential equation $\frac{d^2y}{dt} = 5 \frac{dy}{dt} + 6y = 0$ in $-\infty < x < \infty$. What is its general	3	KTU
	$dx^2 dx$ solution?		MAY-
			2017
8	Find the particular integral of $(D^2 + 4D + 10)y = e^x \sin 3x$	3	КТО
			MAY- 2017
9	Solve $(D^3 + 8)y = \sin x \cos x + e^{-2x}$	6	KTU
			MAY- 2017
10	Solve $y''+y=sec$ rby the method of variation of parameters	7	KTU
10	Solve y y see noy the method of variation of parameters	,	MODEL
			QUESTIO
			N
11	Solve $y'' + 4y' + 4y = x^2 + e^{-x} \cos x$	7	KTU
			MODEL
			QUESTIO
			N
12	Solve the initial value problem $y''+5y'+6y=0$, $y(0) = 1$	3	KTU-
	y'(0)=2		June2022
13	Solve v''-v'=0	3	KTU-
			June2022
1.4		7	
14	a) Using the method of undetermined coefficients solve,	/	KIU- June 2022
	$y''-4y=xe^{x}$		June2022
	b) Using the Method of Variation of parameters solve, 2x	7	
	$y''-4y+5y=\frac{a}{sinx}$		
15	a)Solve the initial value problem, by method of undetermined	7	KTU-
	coefficients $y'' + 4y = 8x^2$, $y(0) = -3$, $y'(0) = 0$		June2022
	b) Solve the initial value problem $x^2y'' + 3xy' + y = 0$,	7	
	y(1) = -3, y(1) = 1	,	
	Module 4	1	I
1	Find the inverse Laplace transform of $\frac{1}{(s^2+1)(s^2+25)}$, using convolution	7	KTU-
	theorem.		Dec 2019
2	Find the Laplace transform of	7	KTU-
-	i)	,	Dec
	ii) $\cos(\omega t + \theta)$		2018

	Solve the initial value problem $y'' - y' - 6y = 0$, $y(0) = 6$, $y'(0) = 13$	7	KTU-
3	using Laplace transforms.		March
			2017
4		8	KTU-
4	Solve, by using Laplace Transform: $y^{+}+y=3\cos 2t$; (0)=0,		Apr 2018
_	<i>y</i> (0)=0.	0	2010
5	Find the Invense I onlose Transforms of	8	KIU- April2018
	Find the inverse Laplace Transform of: (i) $\frac{5-4}{4}$ (ii)		April2018
	$\binom{l}{s^{2}-4}$ $\binom{l}{s^{2}-2s-3}$		
6		8	KTU-
	Find the Laplace Transform of :		April
	(i) $sin3tcos2t$ (ii) $e^{-2t}cos^2t$		2018
7		7	KTU-
	Find the inverse Laplace transform of		July2017
	(<i>s</i> +√2)(<i>s</i> -√3)		170011
8	Solve the initial value problem, using Laplace transforms. $y'' + y' + 9y = 0$,	8	KTU-
	y(0) = 0.16, y'(0) = 0		July 2017
9	Find the Lanlace transform of	8	ZUI /
2	Find the Laplace transform of (i) sinhtcost (ii) $(t - 1)^3$	0	XIO-July 2017
10	(i) similed (ii) (t i) Find the Lenlage transform of	8	Z017
10	Find the Laplace transform of $\frac{1}{2}$	0	X_{10} - May
11	1) $\cos t \sin t \sin \theta$ (1) $\sin \theta$ (2) $\cos \theta \sin \theta$ (2) $\cos \theta \sin \theta$ (3)	7	2017 Model
11.	Find the inverse laplace transform of $F(s) = \frac{1}{s^{2}-4}$	1	Question
	5 1		KTU
12	Find the Laplace Transform of $(sint + cost)^2$	3	KTU-June
12		5	2022
13	Eind the inverse Lenlage Transform of e^{-3s}	3	KTU-June
10	Find the inverse Laplace Transform of $\frac{c}{(s+2)^2}$	J	2022
14	a) Using Laplace Transform solve $y''+5y'+6y=e^{-t}$, $y(0)=0$	7	
	v'(0)=1		KTU-
	b) Using convolution theorem find the Inverse Laplace		June2022
	Transform of s^2	7	
	$(s^2+a^2)(s^2+a^2)$		
15	a) Find the inverse Laplace Transform of s^{+8}	7	
	(s ² +4s+5)		KTU-
			June2022
	b) Using Laplace Transform solve		
	$y''+16y=4\delta(t-3\pi), y(0)=2, y'(0)=0$	7	
	Module 5	-	
1	$\pi_{-\pi}$	7	KTU-
	Using Fourier cosine integral, show that $\int_{0}^{1+\omega^2} d\omega = \frac{1}{2} e^x$, if $x > 0$		Dec 2019
2		Q	ZUI8 KTU
<i>∠</i>	Find the Fourier size transform of $f(x)$, $sinx, 0 < x < \pi$	0	Dec
	Find the Fourier sine transform of $f(x) = \{ 0 \ x > \pi \}$		2018
3	$\sum_{k=1}^{n} \frac{1}{k} \left(\sum_{k=1}^{n} \frac{1}{k} \right) \left(\sum_{k=1}^{n} \frac{1}{k}$	7	KTU-Dec
5	Find the Fourier transform of $f(x) = \begin{cases} 0 & x > 0 \\ 0 & x > 0 \end{cases}$,	2018
	0, 220	L	

4	0 if x < 0	7	KTU-
	Use Fourier integral to show that $\int_{0}^{\infty} \frac{\cos x \omega + \omega \sin x \omega}{2} d\omega = \begin{cases} \pi i f x = 0 \end{cases}$		May
	$\frac{1+\omega^2}{\pi e^{-x}} if x > 0$		2017
5	Represent $f(x) = \{x^2, 0 < x < 1 \text{ as a Fourier cosine integral}\}$	8	KTU-May
	$\begin{array}{c} as a round rou$		2017
6		7	KTU Mari
0	Find the Fourier transform of $f(x) = \{0, otherwise\}$	/	KIU-May 2017
7	$0, 0 \in W $	7	
/	Express $I(x) = 1, 0 < x < n$	/	Inly
	0, x > n, $\infty 1 - \cos \pi \omega$		2017
	a Fourier sine integral and evaluate $\int_0^{\omega} -\frac{\sin \omega}{\omega} \sin \omega d\omega$		
8		8	KTU-
	Find the Fourier Sine Transform of $(x)=e^{- x }$. Hence evaluate		April 2018
	$\int_0^{\infty} \frac{d\omega d\omega d\omega}{1+w^2} d\omega .$		2018
9		7	KTU-April
	Find the Fourier Cosine Transform of $f(x) = \sin x$; $0 < x < \pi$.	(3)	2018,
			KTU-June
			2022
10		8	KTU-
	Using Fourier integral representation show that $\int_{0}^{\infty} \frac{\sin \omega - \omega \cos \omega}{2} =$		July
	$\frac{\pi x}{\omega^2}, \text{if } 0 < x < 1$		2017
	$\int \frac{1}{\pi} dt = 1$		
	$1 \frac{1}{4}, ij \ x = 1$		
	0, if x > 1		
11	Does the Fourier sine transform $f(x) = x^{-1} sinx$ for $o < x < \infty$ exist?	4	Ktu model
	Justify your answer.		question
13	Find the Fourier sine transform of e^{-x} (x \Box 0)	3	KTU-
			June
1.4	$\sum_{i=1}^{n} \sum_{j=1}^{n} \frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \sum_{j=1}^{n} \frac{1}{2} \sum_{i=1}^{n} $	7	2022 KTU
14	a) Find the Fourier transformation of $I(x) = \int_{0}^{1}$	/	KIU- Jupe
	[{] 0, otherwise		2022
	b) Find the Fourier cosine Integral of		2022
	$cos x if 0 < x < \frac{\pi}{2}$	7	
	$f(x) = \begin{cases} 0 & 0 \\ 0 &$		
1.7	0, otherwise		
15	a) Find the Fourier cosine transformation of $\frac{2}{3}$	7	KTU-
	$f(x) = \{x^2, if 0 < x < 1\}$		2022
	0, x > 1		2022
	b) Find the Fourier transform of $f(x) = a - x $, if $ x < a$		
	() $()$ $()$ $()$ $()$ $()$ $()$ $()$	7	
	0,000000000		l

ENGINEERING PHYSICS

SUB CODE	PHT 100	SUBJECT NAME	ENGINEERING PHYSICS - A (2019 SCHEME)

	ENGINEERING PHYSICS -A		
	MODULE 1	Marks	Year
	HARMONIC OSCILLATIONS & WAVES		
1	List any six points to compare electrical oscillator with a mechanical	3	Dec '19
	oscillator.		KTU
2	Distinguish between transverse and longitudinal waves. Give one example	3	Dec '19
	for each.		KTU
3	What is amplitude resonance? Give two examples.	3	Dec '20
			KTU
4	What is the relation between path difference and phase difference in wave	3	Dec '20
	motion?		KTU
5a)	Set up the differential equation for a forced harmonic oscillator and solve	10	Dec '19
	it.		KTU
b)	A transverse wave on a stretched string is described by	4	Dec '19
	$y(x,t)=2\sin(20t+0.021x+\pi/6)$ where x and y are in cm and t is in		KTU/
	second.Obtain (1) Amplitude (2) Initial phase (3) speed (4)		June
	frequency		2022
6a)	Derive an expression for the fundamental frequency of a transverse wave	10	Dec '19
	in a stretched string. Also state laws transverse vibration.		KTU
b)	A sitar wire is under tension of 40 N and length of the bridge is 80cm. A	4	Dec '19
	10m sample of that wire has mass 1.2g. Find the speed and fundamental		KTU
	frequencyof transverse wave on the wire.		
7a)	Frame the differential equation of a damped harmonic oscillator and	10	Dec '20
	deduce its solution. Compare the time-displacement curve in three cases.		KTU/Jan 2021/ June 2022
b)	The frequency of a tuning fork is 200Hz. If its quality factor is 8×10^4 ,	4	Dec '20
	find the time after which its energy becomes 1/10th of its initial value.		KTU
8 a)	Derive the differential equation for transverse wave in a stretched string	10	Dec '20
	and hence obtain the expression for fundamental frequency.		KTU/June 2022
b)	Calculate the fundamental frequency of a string of 1 m long & mass 2g	4	Dec '20
	when stretched by a weight of 4 kg.		KTU

9 a)	Write down the differential equation of a forced harmonic oscillator and	10	Jan '21
	obtain its solution. Derive the expressions for amplitude and phase		KTU
	difference		
b)	A transverse wave on a stretched string is described $byy(x,t)=5$	4	Jan '21
	sin(25t+0.016x+n/2) where x and y are in cm and t is in second. Obtain (1)		KTU
	Speed (2) Amplitude (3)Frequency and (4) Initial phase of the wave		
10	A piece of wire 60 cm long and mass 1.2 g. is stretched by a load of 3 kg.	4	Jan '21
	Find the frequency of the second harmonic.		KTU
	MODULE 3		
1	When a medium of $\mu \neq 1$ is introduced in the Newton's ring set up, what	3	Dec '19 KTU
	happens to the diameter of interference pattern? Explain it with the help of		IXI U
	relevant equation.		
2	Give 3 differences between interference and diffraction	3	Dec '21
			KIU
3	Newton's rings are circular but air wedge fringes are straight. Why?	3	Dec 20
	Cive 2 differences between Energy land Energy before classes of diffusction	2	
4	Give 5 differences between Freshel and Fraunnoler classes of diffraction	3	KTU
5(a)	With necessary diagram, write the formation of interference pattern in an	10	Dec 21
J(a)	air wedge and derive an expression for the diameter of a thin wire	10	KTU
	an wedge and derive an expression for the drameter of a time whe.		
(b)	A monochromatic light of wavelength 5893 Å is incident normally on a	4	Dec 21
	soapfilm of $\mu = 1.42$. What is the least thickness of the film that will		KTU
	appear dark by reflection?		
6	A grating has 6000 lines/cm. Find angular separation between two	4	Dec 21
	wavelengths 577nm and 579 nm in the second order		KTU/ June 22
7(a)	Derive Cosine law and obtain the conditions of brightness and derkness for	10	Dec 20
/(a)	a thin film in reflected system	10	KTU
	a unin mini in teneticu System.	Λ	Dec 10
(D)	In Newton's ring arrangement using a light of wavelength 540nm, the	4	KTU
	radiusof the n and $(n+20)^{}$ dark rings are found to be 0.162cm and		
	0.308cm respectively. Calculate the radius of curvature of the lens.		

8 (a)	How many lines per meter are there in a plane diffraction grating which	4	Dec 20
	gives an angle of diffraction 30° in the second order for light of		KTU
	wavelength 520nm incident normally on it?		
(b)	Starting from the expression of radius of nth dark ring in Newton's	10	Jan '21
	ringspattern, describe an experiment to determine the refractive		KTU/ June 2022
	index of a transparent liquid.		2022
9	Derive grating equation for a plane transmission grating. Explain	10	Dec 20/Jan
	resolvingpower and dispersive power of grating with expressions.		21 / June 22 KTU
	MODULE 4		
1	State Heisenberg's Uncertainty principle and write the three uncertainty	3	Dec '19
	relations		KIU
2	What is meant by quantum mechanical tunneling? Name two electronic	3	Dec '19
	devices based on this phenomenon.		KTU
3 (a)	Derive an expression for energy Eigen values and normalized wave	10	Dec '19
	function for a particle in a box of width L.		KTU
(b)	Calculate the separation between the two lowest energy levels of an	4	Dec '19
	electronin a one-dimensional box of width 4Å in joules.		KTU
	Given me = 9.1 x 10-31 kg; h=6.625 x 10-34 Js		
4 (a)	Write a note on quantum confinement and based on this explain Nano	10	Dec '20
	sheets, Nano wire and quantum dots.		KTU
(b)	Mention any four applications of nanotechnology	4	Dec '19
5	Starting from the wave equation derive Schrodinger's time dependent	10	Dec 20/Jan
	equation and hence deduce Schrodinger's time independent equation		21 / June
			22 KTU
6(a)	Explain the optical, electrical and mechanical properties of nanomaterials.	10	Dec 20/ June 22
	Give two medical applications of nanotechnology.		
(b)	Explain surface to volume ratio of nanomaterials	4	Dec 20

MODULE 4				
1	Distinguish between magnetic induction and magnetizing field.	3	Dec '19	
			KTU	
2	Distinguish between magnetic induction and magnetizing field.	3	Dec '19	
			KTU	
3	Define magnetic flux density and magnetic field intensity. Give the relation	3	Dec '20	
	between them.		KTU	
4	Compare displacement current and conduction current	3	Dec '20	
			KTU	
5a)	State Gauss' law in magnetism, Ampere's circuital law, faraday's laws of	10	Dec '19	
	electromagnetic induction and Lenz's law. Give their equations		KTU	
b)	A magnetizing field of 1800 A/m produces a magnetic flux of 3 x 10 -5 Wb in on iron her of group approximation 0.2 cm^2 . Calculate the normal bility	4	Dec '19	
	an non bar of cross – sectional area 0.2 cm . Calculate the permeability.		KTU	
6a)	Starting from Maxwell's equations derive the expression for the velocity of	10	Dec '19	
	electromagnetic waves in vacuum.		KTU/	
			June 22	
b)	State and explain Poynting's theorem.	4	Dec '19	
			KTU/ June 22	
7 a)	Distinguish between paramagnetic and ferromagnetic substances with two	10	Dec '20	
	examples for each		KTU	
b)	Calculate the magnetic susceptibility of a paramagnetic substance at 600 K, if	4	Dec '20	
	its susceptibility at 200 K is 3.756 x 10-4		KTU	
8 a)	Starting from Maxwell's equations show that velocity of electromagnetic	10	Dec '20	
	waves in free space is $1/(\mu 0 \epsilon 0) 1/2$.		KTU	
b)	State Gauss' divergence theorem and Stokes' theorem.	4	Dec '20	
			KTU	
9a)	Compare the properties of paramagnetic, diamagnetic and ferromagnetic	10	Jan '21	
	materials.		KIU	
			1	

b)	Find the relative permeability of a ferromagnetic material if a field strength of 200	4	Jan '21
	A/m produces a magnetization of 3100 A/m.		KTU
10 a)	Starting from Maxwell's equations show that electromagnetic waves are existing in	10	Jan '21
	free space and find an expression for velocity.		KTU/J
b)	Calculate the value of Poynting's vector at the surface of the sun if the power radiated	4	Jan '21
	by sun is 3.8×10^{26} Watts and its radius is 7×10^8 m.		KTU
	MODULE 5		
1	Show that superconductors are perfect diamantes	3	Dec '19
			KTU
2	Distinguish between step index and graded index fibers	3	Dec '19
4	Distinguish between step index and graded index ribers.	5	
			KIU
3	Give a qualitative account of BCS theory.	3	Dec '20
			KTU/
4	Explain the working of a Photo diode	3	Dec '20
			KTU
5a)	Explain the characteristics of Type I and Type II superconductors with appropriate	10	Dec '19
,	diagrams and examples		KTU
b)	Discuss BCS theory of superconductivity. Give any four applications of	4	Dec '19/
	superconductivity.		June 22
6a)	Explain construction and working of a solar cell and draw its I-V characteristics.	7	Dec '19
	Mention any two applications of solar cells.		KTU
b)	The numerical aperture of an optic fiber is 0.295 and refractive index of core is	7	Dec '19
	1.54. Calculate refractive index of cladding and acceptance angle.		KTU/
			June 22

7 a)	Explain Meissner effect and show that superconductors are perfect diamantes.	10	Dec 20/
	Distinguish between Type I and Type II superconductors with appropriate graphs.		June22
b)	Explain high temperature superconductors with two examples.	4	Dec '20
			VTU
			KIU
8 a)	Define numerical aperture and acceptance angle of an optical fiber and derive the	10	Dec '20
,			
	expression for numerical aperture of a step index fiber with a neat diagram.		KTU/June
			22

BASICS OF ELECTRONICS ENGINEERING (EST 130 PART-2)

BASICS OF ELECTRONICS ENGINEERING (EST 130 PART-2)					
QUESTION BANK					
Qn. No	MODULE – 4	Marks	Year		
1	Draw the symbol of the resistor and explain any three specifications.	4 5	KTU JUN 2022 KTU DEC 2020		
2	For an NPN Transistor, $\alpha = 0.98$, IB =100 μ A, Find IE and IC.	4	KTU JUN 2022		
3	a) Explain with necessary diagrams, the principle of operation of NPN transistorb) Describe the colour coding of a resistor with example.	5	KTU JUN 2022		
		4	KTU DEC 2020		
4	a) Draw the circuit diagram of a common emitter amplifier.b) Explain the input and output characteristics of common emitter configuration with next diagrams.	3 7	KTU JUN 2022		
5	Find the capacitance values for the following codes (i) 2n2 (ii) 104K.	4	KTU DEC 2021		
6	What do you mean by majority and minority carriers in a semiconductor	4	KTU DEC 2021		
7	 a) Explain the formation of potential barrier in a P-N junction diode. b) Draw and explain the VI characteristics of a PN junction diode under forward and reverse bias 	5 4 5 5 6 5	KTU DEC 2021 KTU DEC 2019 MODEL KTU DEC 2021 KTU JUL 2021 MODEL		
8	a) Explain the working of an NPN transistor mentioning all current.b) The dc current gain of a transistor in common emitter configuration is 100. Find its dc current gain in common base configuration.	6 5 4	KTU DEC 2021 MODEL KTU DEC 2021		
9	In a 4 band resistor the last colour in the colour band is gold. If the upper range of resistance is 3.465Ω find its colour code.	4	KTU JUL 2021		
10	Differentiate between Avalanche breakdown and Zener breakdown?	4	KTU JUL 2021		
11	What are the different types of inductors? Give two typical applications of inductor	5	KTU JUL 2021		
12	Derive the relation between common base current gain and common emitter current gain,	4	KTU JUL 2021		
13	Sketch the output characteristic of a transistor and explain different regions of operation.	6	KTU JUL 2021		

14	Distinguish between active and passive electronic components	4	KTU DEC 2020
	with examples for each		
15	Explain Avalanche breakdown?	4	KTU DEC 2020 MODEL
16	What do you understand by depletion region?	5	KTU DEC 2020
17	Explain the VI characteristics of a diode with relevant sketches.	6	KTU DEC 2020
18	What are the different types of capacitors? Give any two applications of capacitors.	4	KTU DEC 2019
19	Describe the forward characteristics of a diode?	4	KTU DEC 2019
20	Explain the working of an NPN transistor. Describe with suitable sketches the input-output characteristics of an NPN transistor.	10	KTU DEC 2019
21	What do you understand by Avalanche breakdown? Draw and explain the reverse V-I characteristics of a diode.	6	KTU DEC 2019
22	What are passive components? Mention at least three components with symbol.	4	KTU DEC 2019
23	Give the specifications of a resistor. The color bands marked on a resistor are Blue, Grey, Yellow and Gold. What are the minimum and maximum resistance values expected from that resistance?	4	KTU MODEL
24	Explain the Different types of Variable resistors? Mention their applications.	5	KTU DEC 2018
25	Write down the color code for a given resistor of 47-Kilo-ohms with a tolerance of 10%.	4	KTU DEC 2018
26	Write the significance of specifying tolerance value of a component. A ceramic capacitor has got the following code marked on its surface. Identify the capacitance value. (i) 103J (ii) 2n2	5	KTU DEC 2017
27	Compare the three transistor configurations.	4	KTU DEC 2022
28	What is an inductor? How does an inductor work?	5	KTU DEC 2022

Qn.	MODULE – 5	Mark	Year
No		S	
1	Explain the action of shunt capacitor filter.	4	KTU JUN 2022
2	Explain the working principle of Zener voltage regulator.	4	KTU JUN 2022
		_	KTU JUL 2021
		6	KTU DEC 2019
	Describe the second of a DC second provide second	5	KTU DEC 2018
3	Describe the components of a DC power supply using a neat	10	KIUJUN 2022 KTUDEC 2021
	block diagram.	5	KTU DEC 2021
Δ	Explain the working of RC coupled amplifier with circuit diagram	10	KTU IUN 2022
	and relevant waveforms. Also explain the frequency response of	10	KTU JUL 2021
	RC coupled amplifier.	6	MODEL
5	Draw and explain the block diagram of a public address system.	4	KTU DEC 2021
			KTU JUL 2021
			KTU DEC 2019
6	Narrate the working of a capacitor filter.	4	KTU DEC 2021
		6	KTU DEC 2019
7	Explain the working of a full wave bridge rectifier.	5	KTU DEC 2021
			KTU JUL 2021
		4	KTU DEC 2019
		7	KTU DEC 2018
8	a) Sketch the frequency response of a transistor amplifier and	/	KTU DEC 2021
	b) What is the role of emitter resistor in on DC coupled emplifier?	2	
	b) what is the role of emitter resistor in an KC coupled amplifier?	3	
9	Give reasons for decrease in transistor amplifier gain at low	4	KTU JUL 2021
10	irequencies and high irequencies		MODEL
10	Write a note on potential divider biasing	4	KTU DEC 2020
11	Describe gain and bandwidth of an RC coupled amplifier	4	KTU DEC 2020
12	Explain the working of a full wave bridge rectifier with capacitor	7	KTU DEC 2020
	filter.		
13	With a neat sketch explain the block diagram of an	3	KTU DEC 2020
	instrumentation system	6	MODEL
14	Define line regulation and load regulation	4	KTU DEC 2020
15	Draw the circuit diagram of a CE amplifier and discuss the role of	6	KTU DEC 2020
15	each component used in it.	0	RTO DEC 2020
16	What is the need of biasing? Draw the potential divider biasing circuit?	4	KTU DEC 2019
17	Discuss the role of coupling and hymosy conscitors in a single	Λ	MODEL
1/	stage RC coupled amplifier	4	MODEL
18	Why does voltage gain of an RC coupled amplifier decrease at low and high frequencies?	4	KTU DEC 2022

Qn.	MODULE – 6	Marks	Year
1	Differentiate between amplitude modulation (AM) and frequency modulation (FM)	4 3	KTU JUN 2022 KTU DEC 2020
		5	KTU DEC 2019 MODEL
2	a) Explain the concept of cells in cellular communication.	3 4	KTU JUN 2022 KTU DEC 2019
	b) Draw the block diagram of GSM and explain the principle of	5	MODEL
	operation.	7	KTU JUN 2022
		7	KTU DEC 2019
		5	MODEL
3	a) Describe the principle and working of an antenna	6	KTU JUN 2022
	a) Describe the principle and working of an antenna.	3	KTU DEC 2020
		3	KTU DEC 2019
		4	MODEL
	b) What is frequency reuse? Explain with a diagram.	4	KTU JUN 2022
4	Write the frequency range and typical applications of VHF and UHF frequency bands	4	KTU JUN 2022
5	a) State the merits and demerits of Amplitude Modulation.	4	KTU JUN 2022
	b) Sketch the block diagram of a superheterodyne receiver and	5	KTU DEC 2010
	explain its working.	5	MODEL
6	Explain the relevance of Intermediate Frequency in a superheterodyne receiver	4	KTU JUL 2021
7	Draw the frequency spectrum of an amplitude modulated (AM) wave. Given that modulating signal is of frequency fm and amplitude Vm and carrier is of frequency fc and amplitude Vc. Take modulation index as m. What is the bandwidth requirement of this AM wave?	5	KTU JUL 2021
8	With a neat sketch explain AM super heterodyne receiver	5	KTU JUL 2021
9	Explain the concept of cells and frequency reuse in cellular communication	5	KTU JUL 2021 KTU DEC 2020
10	Write the expression for an AM wave and comment on the bandwidth requirement and modulation index.	5	KTU DEC 2020
11	What are the merits of AM compared to FM. The carrier amplitude of	5	KTUDEC 2019
	a given AM wave is 5V and the message signal amplitude is 3V. Find the modulationindex.	5	
12	Draw and explain functional block diagram of cellular communication system.	10	KTUDEC 2018
13	Write the principle of frequency modulation and list the advantages of FM over AM.	5	KTUDEC 2017



BASICS OF ELECTRICAL ENGINEERING (EST130 PART-1)











	MODULE 2		
	Questions	Marks	KTU, Year
1	A coil of 180 turns is linked with a flux of 0.03 Wb when carrying a current of 10A. Calculate the inductance of the coil. If the current is uniformly reversed in 0.04 sec, calculate the emf induced in the coil.	4	KTU DEC 2021
2	An alternating current is represented by i(t)=14.14 sin (377t). Find (i)rms value (ii) frequency (iii)time period and (iv)instantaneous value of the current at t=3ms.	4	KTU- DEC 2021
3	An iron ring has a cross section area of 3 cm2 and a mean diameter of 25 cm. An cut across the section of the ring. The ring is wound with a coil of 200 turns through which a current of 3A is passed. If the total magnetic mWb, find the relative permeability of iron, assuming no magnetic leakage	10	KTU- DEC 2021
4	The instantaneous value of an alternating voltage is given by y v=110 sin 314t Find a) the angular velocity, frequency, and time period of b) Differentiate between statically and dynamically induced emfs.	10	KTU- DEC 2021
6	Define the terms i) mmf ii) magnetic field strength iii) magnetic flux and iv) magnetic flux density	4	KTU- DEC 2019
7	State and explain i) Faraday's laws and ii) Lenz's law.	4	KTU- DEC 2019
8	An alternating current varying sinusoidally with a frequency of 50Hz has an rms value of 20A. i) Write down the equation for the instantaneous current ii) Find the instantaneous value of current at 0.0025s. iii) Find the instantaneous value of current 0.125s after passing through a positive maximum value iv) At what time, measured from a positive maximum value, will the instantaneous current be 14.14 A?	10	KTU- DEC 2019
9	Determine the average and rms values of the triangular voltage wave having maximum value Em volt	10	KTU- DEC 2019
10	Compare Electric and Magnetic Circuit	4	KTU- DEC

			2018
11	Calculate the flux produced in the air gap in the magnetic circuit shown in figure which is excited by the MMF of two windings. The mean length of the flux path is 40 cm. The permeability of iron is 2000. The uniform cross sectional area is 10 cm ² $ \int_{I_1}^{I_1} \int_{I_2}^{I_2} $	10	KTU- DEC 2018
12	Draw the circuit of a series parallel magnetic circuit. Show its electrical equivalent	4	KTU DEC 2016
13	A ring shaped electromagnet has an air gap of 6mm and cross sectional area of 12 cm ² . The mean length of the core (excluding air gap) is 60cm. Calculate the mmf required to produce a flux density of 0.4 Wb/m ² in the gap. Take the relative permeability of the material as 400	10	KTU- DEC 2018
14	A steel ring of 25 cm diameter and of circular section 3 cm in diameter has an air gap of 1.5mm length. It is uniformly wound with 1000 turns of wire carrying a current of 2A. Calculate i) Magneto motive force ii) magnetic flux density in air gap iii) magnetic flux iv) relative permeability of steel ring. Assume that iron path takes about 40% of the total mmf.	10	KTU- MA Y 2019
15	Determine the RMS, Average and Form Factor of the waveform shown below (A) 5A 5A 0 T 2T 3T time(sec)	10	KTU- DEC 2018

16	A conductor of length 0.5m kept at right angles to a uniform magnetic	4	KTU IULY
	field of flux density 2Wb/m2 moves with a velocity of 75 m/s at an		2021
	angle of 600 to the field. Calculate the emf induced in the conductor.		2021
17	a) A coil of 50 Ω resistance is placed in a magnetic field of 1mWb. The coil has 50	6	KTU
	turns and a galvanometer of 400 Ω resistance is connected in series with it. Find		DEC 2020
	the average induced emf and the resulting current if the coil is moved in 0.1 second		2020
	from the given field to another field of 0.2mWb.		
	b) Define rms value and average value of a time varying waveform.		
		4	
18	a). The instantaneous value of an alternating voltage is given by	6	KTU
	v=110 sin 314t.		DEC
	Find the angular velocity, frequency, and time period of the voltage.		2021
	b). Differentiate between statically and dynamically induced emfs.	4	
19	An alternating current is given by 14.14Sin377t. Find the (a) rms value of current	6	KTU
	(b) Average value of current (c) frequency (d) form factor (e) peak factor (f)		FEB
	instantaneous value of current when t=3ms.		2022
20	Explain the terms statically induced emf and dynamically induced emf.	4	KTU
			FEB
			2022
21	Two identical coils 1 and 2 are wound on the same magnetic core. Current in coil 1,	7	KTU
	which is changing at the rate of 600 A/s, induces emf of 12 V in coil 2. Calculate		FEB 2022
	the mutual inductance between the coils. If the self-inductance of each coil is		2022
	50mH,		
	calculate the coefficient of coupling between coils.		
22	Define a) MMF b) Field Strength c) Flux Density	3	KTU
			FEB
		1	2022
23	A con or 200 turns carries a current of 4A. The magnetic flux linkage with the coll is	4	KTU FED
	0.02Wb. Calculate the self-induced emf in the coil.		ге р 2022
1			2022

	MODULE 3		
	Questions	Marks	KTU, Year
1	Derive an expression for the energy stored in an inductor.	4	KTU- DEC 2021
2	Derive the expression for the current in an ac series RLC <i>circuit</i>	10	KTU- DEC

			2021
			2021
3	A resistance of 10Ω , an inductance of 0.3 H, and a capacitance of 100μ F are connected in series across 230V, 50 Hz single phase power supply. Calculate the impedance, current through te circuit (iii) voltage across R,L &C and(d) power factor of the circuit	10	KTU- DEC 2021
4	A balanced delta connected 3 phase load is fed from a 3 phase, 400 V 50 Hz supply. The line current is 20A and the total power absorbed by the load is 10kW. Calculate (i) the impedance in each branch (ii) the power factor and (iii) the total power consumed if the same impedances are star connected in the network (10)	10	KTU- DEC 2021
5	Explain the advantage of three phase system of power supply compared to single phase system of power supply	4	KTU MAY 2019
6	When an alternating voltage of (80+j60) V is applied to a circuit, the resulting current flow is (-4+j10)A. Find the impedance, power consumed and the phase angle of the circuit.	4	KTU- DEC 2019
7	Two impedances Z1 and Z2 when connected separately across a 220V, 50 Hz supply, consume 300W and 150W at a power factor of 0.4 lagging and 0.7 leading respectively. When the two impedances are connected in series across the same supply, find total power consumed and overall power factor.	10	KTU- DEC 2019
8	A balanced three phase load has per phase impedance of $(30+j50) \Omega$. If the load is connected across 400V, 3 phase supply, find (i) phase current (ii) line current and (iii) power supplied to load when it is connected in (a) star (b) delta	10	KTU- DEC 2019
9	 In a single phase ac circuit consisting of an impedance of 10Ω, the RMS value of applied voltage is 230V. i. Write down the expression for instantaneous voltage ii. If the current lags the applied voltage by 30° write down the expression for instantaneous current Calculate the power consumed in the circuit 	4	KTU MAY 2019
10	A balanced three phase load consists of three coils each having resistance of 4Ω and inductance 0.02H. It is connected to a 415V, 50Hz, 3-phase ac supply. Determine the phase voltage, phase current, power factor and active power when the loads are connected in (i) star (ii) delta	10	KTU MAY 2019
11	A coil of resistance 10 Ω and inductance 0.1 H is connected in series with a 150 μ F capacitor across 200V, 50 Hz supply. Calculate (i) Inductive reactance, Capacitance reactance, impedance, current and	10	KTU- DEC 2017

	power factor. (ii) The voltage across the coil and capacitor respectively.		
12	 i) An alternating voltage of (80 + j60) V is applied to a circuit and the current flowing is (-4 + j10) A. Find (i) the impedance of the circuit, (b) the power consumed and (c) the phase angle. ii) Each phase of a delta connected load has a resistance of 25Ωand an inductanceof0.15 H. The load is connected across a 400 V, 50 Hz, three phase supply. Determine the line current, power factor and power consumed. 	10	KTU- DEC 2017
13	Two impedences, $10 _{-30}$ and $20 _{60}$ are connected in parallel. Evaluate the equivalent impedance. What is the nature (capacitive or inductive) of the equivalent impedence? If a current of $10 _{45}$ is passing through the parallel combination, calculate the voltage across the combination and express it in rectangular form. Evaluate the currents in each of the impedences. Draw the phasor diagram showing this voltage and all three currents i) Define peak factor and form factor. Consider v(t) = $500\cos(100t)$, a sinusoidal voltage. Evaluate the rms value and peak factor of the voltage form.	10	KTU- DEC 2016
14	An alternating voltage is defined as v=100 sin α 0< α < π v=0V π < α <2 π What is the RMS value of this voltage	4	KTU- DEC 2017
15	A balanced 3 phase load consists of 3 coils each of resistance 6 Ω and inductive reactance of 8 Ω . Determine the line current and power absorbed when the coils are (i) star connected (ii) delta connected across 400V, 3 phase supply.	10	KTU JULY 2021
16	Derive the relation between line and phase currents in a 3 phase delta connected system	4	KTU DEC 2020
17	 Three inductive coils, each with a resistance of 22 Ω and an inductance of 0.05 H are connected in first in star and then in delta, to a 3 phase 415 V, 50 Hz supply. Calculate for both star and delta connections, (i) phase current and line current and (ii) total power absorbed. 	10	KTU DEC 2020
18	A capacitor having a capacitance of 20μ F is connected in series with a non – inductive resistance of 200Ω across 220V, 50 Hz supply. Calculate the following 1) Impedance 2) Current 3) Power Factor 4) Power drawn from supply.	10	KTU FEB 2022

19	Show that the power consumed by three identical single-phase loads connected in delta is equal to three times the power consumed when the phase loads are connected in star.	10	KTU FEB 2022
20	A delta-connected load of 12Ω resistance and $16-\Omega$ reactance are connected across a 100V, 50 Hz supply. Find line current, phase current and power factor.	4	KTU FEB 2022

2022 Batch S2 (2022 - 2023)

HUN 102 PROFESSIONAL COMMUNICATION





1

HUN 102 PROFESS ONAL COMMUNICATION

Modu e 1			
Sl No	Quest on s	Marks	KTU,Year
1	 Find the misspelt words from each set of words given here. a) Defendant, defendant, difendent, defandent b) Assumption, assumption, accumption c) Appreciation, appreciation, appreciation, appreciation d) Superintendent, superantendant, superintendent, superintendent 	4	July 2021 (FN)
2	Write the definition of the compound words of the following.a)Swimming pool b) Paddle boat c) Neck tie d) Black bird e) Foot print f)Sunset	3	July 2021 (FN)
3	In each of the following sentences there are two blank spaces. Findout which pair of words from the options can be filled up inthe blanks in the sentence in the same sequence to make the sentence meaningfully complete. (i) A committee has been to the transformation of thecity into an International Finance Center. a) Constituted, convert b)appointed, oversee c) Convergent , evaluate d)inaugurated, determent (ii) Keeping in mind the to develop the sector the Govt has solicited foreign investment. a) Importance, never b) proposal, forcibly c) objective, wanted d) need, actively (iii) In his speech he vowed to	5	July 2021 (FN)

	c) Plenty, still	d) Frequency, yet		
	(v) They have been on incentives to	these practices are		
	implemented at grass root level.			
	a) Relying, ensure	b) Improving, secure		
	c) advocating, confirm	d) debating, necessitate		
4	Complete the sentence as directed.		3	July
	 a) He said, "I shall go as soon as it is pos Indirectspeech) 	sible." (Change into		2021 (FN)
	b) He proposed that they should wait for the Directspeech)	ne award. (Change into		
	c) The guard refused him admittance.			
	(Rewrite thesentence using			
5	Admittance)	de given	2	Juno
5	1) a) acomodate b) accommadate c) acommo	date d) accommodate	3	2022
	2) a) deductible b) deductable c) deductuble	d) deductabe		2022
	3) a) license b) licence c) licens d) lisence			
6	Write the definition for the following compo	und words.	1	June 2022
	a) Wild life b) Son-in- law			
7	Write the correct sequence words and fill in t	he blanks.(First,	6	June
	Next, Then, Finally, First, After that)			2022
	a, I heard a loud boom, I tried to use my TV, but it was de	ad. I wondered what		
	was happening, I realized I had f	orgotten to pay my		
	electricity bill.			
	b. Let me tell you about how terrible last nigh	t was, I lost		
	my wallet. I was so upset I almost cried	, I spilled a drink		
	on my favourite shirt. The night got even wo	rse.		
8	Find the error in the sentences given below.		1	June
	He drank once again (a)/ as he was (b)/ feelin	g thirsty (c)/ No error(d)		2022
9	Write down two numerical adjectives and use	e it in a sentence	2	June
				2022



10	Rewrite as directed.	2	June
	a) She said: "They had left the place when I arrived"		2022
	(Change into indirect speech.)		
	b) A sound outside woke us all up (Change the voice)		
	Module 2	I	
S No	Quest ons	Marks	KTU Year
1	Help your friend by suggesting and explain SQ3R methods andPQRST method to improve his reading skills?	6	July 2021 (FN)
2	What is reading and what are the four kinds of readingstyles. When these styles are used?	6	June 2022
	Module 3	I	
S No	Quest ons	Marks	KTU Year
1	You are asked to make a presentation on a tough subject to 10thstandard school students. Share your strategies to make your presentation interesting and effective?	4	July 2021 (FN)
2a	Point out the differences between debate and groupdiscussion?	2	July 2021 (FN)
2b	How body language could help you in a group discussion. Writedown6 points.	3	July 2021 (FN)
3a	Differentiate Group Discussion (GD) and debate	3	June 2022
3b	Explain the etiquettes one must follow in GD?	4	June 2022
4	You need to make a Project presentation as a part of your internal evaluation.	4	June 2022
	What preparation do you need to make for presenting visuals effectively?		
	Module 4		
S No	EQuestion WPS Office	Marks	KTU Year

	S		
1a	How we can develop effective listening skills?	3	July 2021 (FN)
1b	How active listening plays an important role in communication?	3	July 2021 (FN)
2	What are the advantages and disadvantages of telephonicor videointerviews?	5	July 2021 (FN)
3	Differentiate between active and passive listening.	3	June 2022
4	List the barriers in listening	3	June 2022

Module 5			
Sl No	Quest on s	Marks	KTU,Year
1	Write a letter to the HR manager of a leading company, requestingpermission to do two-weeks internshipat his company as a part of your academic curriculum.	6	July 2021 (FN)
2a	What is technical communication?	1	July 2021 (FN)
2b	What are the different types of reports?	2	July 2021 (FN)
3	What is a report? Explain its structure and types.	6	June 2022
4	You are required to apply for a job and submit your details to afirm. In what	6	June 2022
	context you decide to submit a CV or Biodata or Resume. Writeyour answer		
	explaining the structure of each and focusing on the differences between them.		



ourse Code: EST 102 Course

Name: Programming in C

	Module I				
Sl. No	Qu esti ons	Marks	Years		
1.	Differentiate between system software and applicationsoftware	3	July 2021 (AN&FN)		
2.	Write an algorithm to find the largest of three numbers	3	July 2021(AN)		
3.	Differentiate between compiler and interpreter	3	July 2021(FN)		
4.	Write an algorithm to find the sum of digits of a number.	7/8	July 2021(FN) June2022		
5.	Explain bubble sort with an example. Draw a flowchart and write pseudo code to perform bubble sort on an array of numbers.	14	July 2021(FN)		
6.	Exp	ļ	July 2021(FN)		
7.	Dra		July 2021(FN)		
8.	Wit a computer		July 2021(FN)		

9.	List five important registers in CPU. Also state the purpose of each	6	July
			2021(FN)
	register.		June
10.		8	July
			2021(FN)
11.	What are the functions of ALU and CU?	3	June 2022
12.	Draw a flowchart to find the sum of first N numbers.	3	June 2022
13	Explain linear search with an example. Draw a flowchart andwrite	14	June
	pseudo code to perform linear search on an array of		2022
	numbers		
	Module II		
1.	What is the importance of precedence and associativity?	3	July
	Write the table for operator precedence		2021(FN)
2		3	Inty
2.	Discuss the differences between break and continuestatements in C.	5	July
			2021(FN)
3.	Write a C program to find the sum of first and last digit of a	7	July
	number		2021(FN)
		7	
4.	Write a C program to check if a number is present in a given	/	July
	insert the number in the list at the end		2021(FN)
			June
			2022
5.	What is type casting? Name the inbuilt typecasting	7	July
	functions available in C language. What is the differencebetween		2021(FN)
	type casting and type conversion?		

6.	Explain different data types supported by the C language with their memory requirements.	7	July 2021(FN) June 2022
7.	What is the difference between assignment and equalityoperators?	3	July 2021(AN)
8.		3	July 2021(AN)
9.		7	July 2021(AN)
10.		7	July 2021(AN)
11.	Write C program to convert the given decimal number intobinary number	7	July 2021(AN)

12.	What do you mean by Formatted Input? Explain in detail the	7	July 2021(AN)
	prototype of 'scanf()' function in C including its argument list and		
	return type		
13.	Differentiate between while and do-while loops using an example.	3	June 2022
14.	Why is the use of goto statements discouraged in C programs?	3	June 2022
15	Explain formatted and Unformatted I/O functions of C language with syntax and example	7	June 2022
16	Write a C program to read a character from the user and check whether it is a vowel or consonant	7	June 2022
	Module III		
1.	Explain any 3 string handling functions using examples	3	July
			2021(FN)
2.	Write a C program to find the occurrence of each element inan	3	July
	allay.		2021(FN)
3.	Write a C program to reverse a string without using stringhandling	7	July
	functions		2021(FN) June 2022
4.	Write a C program to perform linear search on an array ofnumbers.	7	July 2021 (FN & AN)
5.	Write a C program to print the number of vowels and consonants in a	7	July
	string.		2021(FN)
6.	Write a C program to find the transpose of a matrix.	7	July 2021(AN) June 2022

7.	Write a C program to find length of a string without usingstring	3	July 2021(AN)
	handling functions.		
8		3	July 2021(AN)
9.	Explain any 4 string handling functions in C programming.	7	July 2021(AN) June 2022
10	Write a C program to find second largest element in an array	7	July 2021(AN)
11		7	July 2021(AN)
12	Write a C program to compare any two strings using string handling functions	3	June 2022
13	Write a C program to find the largest element in an array	3	June 2022
14	Write a C program to sort an array of numbers using bubblesort	7	June 2022
	Module IV	1	
1.	Define formal parameters and actual parameters. Illustrate with an	3	July
	example.		2021(FN)

2.	With examples show how: (i) an array is passed as an argument of	3	July
	a function. (ii) individual elements of an arrayare passed as		2021(FN)
	arguments of a function.		
3.	What are different storage classes in C? Give examples foreach	7	July 2021 (FN & AN) June 2022
4.	Write a C program to find sum and average of an array of integers using user defined functions	7	July 2021(FN)
5.	Write a C program to : (i) Create a structure containing the fields: Name, Price, Quantity, Total Amount. (ii) Use separatefunctions to read and print the data	7	July 2021(FN) June 2022
6.	What is the purpose of function declaration and function definition and function call? With examples illustrate theirsyntax	7	July 2021(FN)
7.	Differentiate between structure and union using an example	3	July 2021(AN)

8.	3	July 2021(AN)
9.	7	July 2021(AN)

10.	What is recursion? Write a C program to display Fibonacciseries using recursive function	7	July 2021(AN) June 2022				
11.	Write a C program to sort N numbers using functions	7	July 2021(AN)				
12.	Name the different types of parameter passing. Illustrate each of them with an example	3	June 2022				
13.	What are the advantages of modular programming?	3	June 2022				
14.	What are the main differences between structures and unions? Which is preferred in what situation? Give examples.	7	June 2022				
	Module V						
1.	Explain the different modes of operations performed on afile in C language.	7	July 2021(FN)				
2.	Explain how pointers can be passed to functions in C	7	July 2021(FN) June 2022				
3.	Write any three/five file handling functions in C.	3/7	July 2021 (FN & AN) June 2022				
4.	Differentiate between address operator(&) and indirection(*) operator	3	July 2021(FN)				
5.	Explain any 5 file handling functions in C?	7	July 2021(FN)				
6.	Write a program in C to copy the contents of one file intoanother.	7	July 2021(FN)				
7.	Differentiate between char name[] and char *name in C	3	July 2021(AN)				

8.	Explain the use of fseek0 function	3	July 2021(AN)
9.	Write a C program to reverse a string using pointers	7	July 2021(AN)
10.	Differentiate between array of pointers and pointer to anarray	7	July 2021(AN)
11.	Write a C program to count number of lines in a text file	7	July 2021(AN)
12.	Distinguish between text mode and binary mode operation of a file	3	June 2022
13.	What do you mean by a pointer variable? How is it initialized?	3	June 2022
14.	Write a C program to replace vowels in a text file with character ' x '	7	June 2022
15	Write a C program to print the elements of an array inreverse order using pointers	7	June 2022