B. L. D. E. ASSOCIATION'S
S. B. ARTS AND K. C. P. SCIENCE COLLEGE-586103
DEPARTMENT OF PHYSICS AND ELECTRONICS
FIRST INTERNAL TEST NOV-DEC 2022

Sem: I   **Sub: Physics (DSC)**   **Code: 21BSC1C1PHY1L**

Date: 01-12-2022   **Time: 4 PM-5 PM**   **max.marks: 20**

PART-I

Answer any FOUR questions   (2x4=8 M)

1) State Newton's law of gravitation with expression.
2) What is orbital velocity? Write an expression of orbital velocity for open orbit?
3) State Parallel axis theorem with its expression.
4) What is surface energy?
5) What is the angle of contact in case of mercury which is in contact with glass surface?
6) Mention the expression for determination of surface tension using Quinke's method?

PART-II

Answer any ONE question   (8+4=12M)

7) a) Obtain the expression for Moment Of Inertia for Rectangular Lamina.   8M
   b) Calculate the period of revolution of Neptune round the sun given that diameter of the orbit is 30 times the diameter of the earth's orbit round the sun, both orbits being assumed to be circular.   4M

OR

8) c) Derive an expression for Stoke's law to determine the viscous force.   8M
   d) Calculate surface tension of water, if it rises to a height of 0.5 x 10-2 m in a capillary tube of radius 3 mm. **Given:** Density of water=1000 kg/m3 and angle of contact=0.   4M

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DEPARTMENT OF PHYSICS AND ELECTRONICS
FIRST INTERNAL TEST NOV-DEC 2022

Sem:I   sub: energy sources(OEC)   code:21BSC101PHY1

Date :29-11-2022   time :4 PM-5PM   max.marks:20

PART-I

Answer any FOUR questions   (2x4=8)

1) What is hydroelectricity?
2) What is biomass?
3) What is renewable energy?
4) Mention 4 types of renewable energy sources.
5) What is geothermal energy?
6) What is the principle of solar cell?

PART-II

Answer any ONE question   (8+4=12)

7. a) what is solar energy? Write the advantages and disadvantages of solar energy.   8M
   b) distinguish between renewable and non-renewable energy sources.   4M

OR

c). Write a note on ocean energy sources   8M
d) Explain about biogas generation.   4M

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DEPARTMENT OF PHYSICS AND ELECTRONICS
SECOND INTERNAL TEST JAN 2023-24

Sem:I   sub: energy sources(OEC)   code:21BSC101PHY1

Date :07-01-2023   time :4 PM-5PM   max.marks:20

PART-I

Answer any FOUR questions   (2x4=8)

1. Define solar energy .
2. Draw a neat labeled diagram of equivalent PV circuit.
3. Mention the geothermal resources.
4. Define wave energy.
5. What is tidal energy?
6. What is green energy?

PART-II

Answer any ONE question   (8+4=12)

7.a) Write in detail about wind energy .   8M

  b) Write note on solar distillation   4M

OR

  c) Explain briefly solar water heater and flat plate collector.   8M

  d) Write the advantages and disadvantages of wind energy.   4M

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DEPARTMENT OF PHYSICS AND ELECTRONICS
SECOND INTERNAL TEST - Jan :- 2023-24

Sem: I **Sub: Physics (DSC)** Code: 21BSC1C1PHY1L

Date: 05-01-2023 Time: 4 PM-5 PM Max.marks: 20

PART-I

Answer any FOUR questions (2x4=8 M)

1) State Gauss divergence theorem and Stokes theorem.

2) Define scalar product. Write properties of scalar product.

3) Find the constant 'a' for which $\vec{A}=(x+3y)\hat{i}+(y-2z)\hat{j}+(x+az)\hat{k}$ is a solenoidal.

4) Mention the types of elastic constants.

5) What is poisson's ratio?

Answer any ONE question (8+4=12M)

7) **a)** Explain the physical interpretation of divergence of vector field and write its physical significance. **8M**

   b) i. Using principle of homogeneity of dimensions, check the correctness of equation, $t=2n\sqrt{l/g}$

   ii. Convert a force of 1 newton to dyne.(i.e. convert force from MKS to CGS system) **4M**

OR

8) **c)** Define Young's modulus. Determine young's modulus by bending of beam supported at its ends & loaded at middle. **8M**

   d) Derive an expression for bending moments. **4M**

Subject: DSC3 Physics (Wave motion& Optics)   Max Marks: 30
Code: 21BSC3C3PHY1L   Time: 10.15am to 11.10am

Date: 21/01/2023

Q.No.-1 ANSWER ANY THREE QUESTIONS.   (2X3=06)
a) Define Wave.
b) What are Beats?
c) What are coherent sources?
d) Mention any two methods of producing interference by division of wavefront.

Q.No-2 ANSWER ANY QUESTIONS   (12 marks)
(a) Explain analytical treatment for beats (with waxing and wanning). (8M)
(b) Derive wave equation in differential form.(4M)
                          OR
(c) Derive an equation for intensity of plane progressive wave.(8M)
(d) Explain Laplace's correction for velocity of sound.(4M)

Q.No.-3 ANSWER ANY QUESTIONS
(a) i) Describe with a neat diagram Fresnel's Biprism. (2M)   **(12marks)**
    ii) Obtain the expression for fringe width with necessary theory with reference to Young's Double slit experiment. (6M)
(b)   State the conditions for sustained & distinct interference pattern.(4M)
                          OR
(c) Describe Fresnel's Biprism experiment with neat diagram to determine the wavelength of a monochromatic source of light.(8M)
(d) A parallel beam of sodium light of wavelength 5890×10^{-10}m is incident on a thin film of $\mu = 1.3$, such that the angle of refraction into the film is 60^0. Find the smallest thickness of the film that makes the film appear bright by reflection.(4M)

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DEPARTMENT OF PHYSICS
FIRST INTERNAL TEST-JAN-2023

Sem: III   Sub: CLIMATE SCIENCE (OEC)   Code: 21BSC303PHY3

Date: 18 – 01 – 2023   Time: 11.10 AM – 12.05 PM   Max. Marks: 30

Q.No.1. ANSWER ANY THREE QUESTIONS   **2x3=6 Marks**

a) What is meteorology?

b) How to measure weather forecasting?

c) What is greenhouse effect?

d) Define atmospheric pressure?

e) What is global warming?

Q.No.2. ANSWER ANY ONE OF THE FOLLOWING QUESTION

a) Define weather and climate? Write any four differences between weather and climate.   **08 Marks**

b) Explain fixed and variable gases in the atmosphere?   **04 Marks**

OR

c) What are sources and sinks of gases? Describe sources and sinks of the gases in the atmosphere.   **08 Marks**

d) Define volume mixing ratio? Explain the volume mixing ratio's of various gases in the atmosphere.   **04 Marks**

Q.No.3. ANSWER ANY ONE OF THE FOLLOWING QUESTION

a) Explain greenhouse effect with i) meaning ii) causes iii) control measures of the greenhouse effect.   **08 Marks**

b) Write the difference between conventional and non-conventional energy sources.   **04 Marks**

OR

c) Describe the structure of the atmosphere.   **08 Marks**

d) Write a note on the variation of temperature in the atmosphere.   **04 Marks**

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Time: 1 Hours,   Course Code: PHYDSCT5.1   Max. Marks: 20

PART-I

Answer any TWO questions (2x2=4)

1) State Direchlet condition.

2) Define mean life or average life (Tav).

3) Define constraints and give example.

PART-II

Answer any ONE question (6x1=6)

4) State and obtain the relation for radioactive decay law.

5) Define and obtain the relation for Half life ($T_{1/2}$).

PART-III

Answer any ONE question (10x1=10)

6) Expansion of periodic function in a series of sine and cosine and determination of it's coefficients.

7) Derive Lagrangian equation from D Alembert's principle.

Date = 18/1/23

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S. B. ARTS & K.C.P. SCIENCE COLLEGE, VIJAYAPUR
B.Sc. V Semester
First Internal Assessment Test – January 2023
Sub: <u>Electronics (Elective-I)</u>

<u>Time; 1 Hour</u>   <u>Max. Marks; 20</u>

PART-I

Answer any TWO questions   **(2x2=4)**

1) Define signal.
2) What is microprocessor and write its applications?(any two)
3) What is clock speed and write two points?

PART-II

Answer any ONE question   **(6x1=6)**
4) Write the comparison between power signal and energy signal.
5) Write about basic block diagram of microprocessor.Explain

PART-III

Answer any ONE question   **(10x1=10)**
6) Prove the following.
   i. The power of the energy signal is zero over infinite time.
   ii. The energy of the power signal is finite over infinite time.
7) Classify the signals. Give the examples for each.

<u>**Time: 1 Hours.**</u>   <u>**Max. Marks: 20**</u>

PART-I

Answer any TWO questions   **(2x2=4)**

1) What is Accuracy?
2) What is Environmental Errors?
3) What is CRO?

PART-II

Answer any ONE question   **(6x1=6)**
4) Write the difference between analog and digital multimeter
5) Explain signal generator with block diagram.

PART-III

Answer any ONE question   **(10x1=10)**
6) Explain working principle of analog multimeter
7) Explain working principle of Electronic Voltmeter with block diagram
8) Explain working principle of Digital storage oscilloscope with block diagram

16|01|23

Time: 1 Hours.   Max. Marks: 20

PART-I

Answer any TWO questions   **(2x2=4)**

1) What is antenna?
2) What is optical fiber?
3) What is acceptance angle?

PART-II

Answer any ONE question   **(6x1=6)**
4) Explain polar diagram of dipole antenna
5) Explain Losses in Optical fiber

PART-III

Answer any ONE question   **(10x1=10)**
6) Briefly explain Horn antenna and micro strip antenna
7) Draw neat block diagram of optical fiber communication system explain each block
8) Derive an expression for Numerical aperture

B.L.D.E. Association's

Date:-18/1/23

S. B. ARTS & K.C.P. SCIENCE COLLEGE, VIJAYAPUR

B.Sc. V Semester
First Internal Assessment Test – January 2023
Sub: Electronics (Elective-I)

Time: 1 Hour   Max. Marks: 20

PART-I

Answer any TWO questions   (2x2=4)

1) Define signal.
2) What is microprocessor and write its applications?(any two)
3) What is clock speed and write two points?

PART-II

Answer any ONE question   (6x1=6)

4) Write the comparison between power signal and energy signal.
5) Write about basic block diagram of microprocessor.Explain

PART-III

Answer any ONE question   (10x1=10)

6) Prove the following.
   i. The power of the energy signal is zero over infinite time.
   ii. The energy of the power signal is finite over infinite time.
7) Classify the signals. Give the examples for each.

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S.B. ARTS AND K.C.P. SCIENCE COLLEGE VIJAYAPUR-586 103
DEPARTMENT OF PHYSICS
SECOND INTERNAL TEST-FEB-2023

Sem: III   Sub: CLIMATE SCIENCE (OEC)   Code: 21BSC303PHY3

Date: 13 - 02 - 2023   Time: 12.00 PM – 1.00 PM   Max. Marks: 30

Q.No.1. ANSWER ANY THREE QUESTIONS   **2x3=6 Marks**

a) Define clouds. Mention the types.

b) What are aerosols? Write the unit for the measurement of clouds and aerosols.

c) Mention the cloud seeding methods.

d) Define "Leader" in case of lightening discharge.

e) What is Sea level rise?

Q.No.2. ANSWER ANY ONE OF THE FOLLOWING QUESTION

a) Explain the formation of clouds and its classification.   **08 Marks**

b) Write a note on aerosols.   **04 Marks**

OR

c) What are Trade winds? Describe the formation of Trade winds which meets the intertropical convergence zone with neat diagram.   **08 Marks**

d) Write a note on Cyclone.   **04 Marks**

Q.No.3. ANSWER ANY ONE OF THE FOLLOWING QUESTION

a) Explain global warming with i) meaning ii) causes iii) control measures of the global warming.   **08 Marks**

b) Write the difference between EL Nino and LA Nino.   **04 Marks**

OR

c) Explain wind measurement using 1) wind vane 2) cup anemometer.   **08 Marks**

d) Write a note on surface observational network.   **04 Marks**

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1.		Answer any TEN questions	10x2=20
	i.	Define periodic function.	
	ii.	Write any two application of Fourier Series.	
	iii.	Prove that $\int_{-\pi}^{+\pi} Cosnx.\,Sinnx\;dx = 0 \;\forall\; m, n$	
	iv.	Define Orthogonality.	
	v.	Define range of α particle.	
	vi.	What is meant by half life $(T_{1/2})$	
	vii.	Define mean life (T_{av})	
	viii.	State the radioactive decay law	
	ix.	Define generalised co-ordinates.	
	x.	State Hamilton's principle.	
	xi.	Define holonomic and non- holonomic constraints.	
	xii.	Write the expression for generalized velocity.	
2.	(a)	Represent the fourier series in complex form	(5 M)
	(b)	Find the fourier series of the function $$f(x)=\begin{cases} -2 & \text{for } -4<x<-2 \\ x & \text{for } -2<x<2 \\ 2 & \text{for } 2<x<4 \end{cases}$$	(10 M)
		OR	
3.	(a)	Expand the non periodic function over an interval	(5 M)
	(b)	1) Prove that $$\int_{-\pi}^{+\pi} Cosnx.\,Cosmx\;dx =\begin{cases} 0 & m\neq n \\ \pi & m=n\geq 1 \\ 2\pi & m=n=0 \end{cases}$$	(10 M)

1.		**Answer any TEN questions**	10x2=20
	i.	What is Compton effect?	
	ii.	What is Heisenberg's Uncertainty Principle?	
	iii.	What are matter waves?	
	iv.	What is a hole in a semiconductor?	
	v.	What is carrier concentration?	
	vi.	Draw the circuit symbol of NPN and PNP transistors.	
	vii.	Explain why Collector region has larger area of cross-section a transistor.	
	viii.	What is hexadecimal number?	
	ix.	Write the truth table of NOR-gate.	
	x.	What are opto-electronic devices?	
	xi.	Mention any two advantages of fiber optical communication.	
	xii.	Calculate the maximum transmission distance for a fiber with following data $\alpha = 0.1 dB/Km$, $P_{in}=0.5$ mW. $P_{out}=50\mu W$	
2.	(a)	Explain Debye's Specific heat of Solids. (5 M)	
	(b)	Explain G.P Thomson Experiment & give value of wavelength from radii of rings. (10 M)	
		OR	
3.	(a)	Explain Energy distribution in black body radiation spectrum. (5 M)	
	(b)	Explain Davisson and Germer experiment. (10 M)	
4.	(a)	Derive an equation for the electrical conductivity of an intrinsic semiconductor. (5 M)	
	(b)	What is Zener Diode? Explain the I-V characteristics of a Zener Diode and its use as Voltage regulator. (10 M)	

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S. B. ARTS &K.C.P. SCIENCE COLLEGE,VIJAYAPUR.
B.Sc.-V Semester
Second Internal Test – Feb- 2023.
Sub: PHYSCS (SEC)

Date: 14|02|23

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

PART-I

Answer any TWO questions   (2x2=4)

1) What is Gross Errors?
2) What is Precision?
3) What is Voltmeter?

PART-II

Answer any ONE question   (6x1=6)
4) Explain Digital Multimeter.
5) Write the applications of CRO.

PART-III

Answer any ONE question   (10x1=10)
6) Explain working principle of Amplifier rectifier with block diagram.
7) Explain working principle of AC Millivoltmeter with block diagram.
8) Explain working principle of Q-Meter with neat diagram and write Applications.

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S. B. ARTS & K.C.P. SCIENCE COLLEGE, VIJAYAPUR.
B.Sc.-V Semester
Second Internal Test – Jan- 2023.   Date: 06|02|23
Sub: **ELECTRONICS-1**
                                        Max. Marks: 80
Time: 3 Hours.

PART-I

(10x2=20)

1)   **Answer any TEN questions**
   a) What is secant law?
   b) What is fading?
   c) What is Skip distance?
   d) What is Frequency modulation?
   e) What is Transmitter?
   f) Define is antenna?
   g) What is Dipole antenna?
   h) What is optical fiber?
   i) What is Numerical aperture?
   j) Draw symbol of LED
   k) Define acceptance angle
   l) Write any two losses in optical fiber

PART-II

Answer any FOUR questions   (4x5=20)
2) Write the difference between AM and FM Modulation
3) Explain AM Transmitter
4) Explain cassegrain feed antenna
5) Explain Helical Antenna
6) Define acceptance angle and derive an expression for acceptance angle of optical fiber
7) Explain construction and working of LED

PART-III

Answer any FOUR questions   (4x10=40)
8) Derive an expression for frequency modulation
9) Draw neat block diagram and explain AM superheterodyne receiver
10) Explain a) Hertzian Dipole b) Theory of dipole antenna
11) Explain semiconductor LASER Diode
12) With neat block diagram explain the optical fiber communication system
13) Define Numerical aperture and obtain expression for numerical aperture

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S. B. ARTS & K.C.P. SCIENCE COLLEGE, VIJAYAPUR
B.Sc. V Semester
Second Internal Assessment Test – February 2023   Date: 08\02\23
Sub: Electronics (Elective-I)
Time: 3 Hour   Course Code: Max. Marks: 80

PART-I
(2x10=20)

I. Answer the following.

1) What is microprocessor?
2) What is assembly language?
3) What is stake?
4) What is I/O mapping?
5) Define opcode operand.
6) What are the basic units of a microprocessor?
7) What is interfacing?
8) Define system?
9) Write the properties of system.
10) Write the expression for power and energy.
11) Define signal?
12) Determine whether the following DT signal is periodic and not if periodic determine fundamental period?

II a. Write an assembly language program for arranging a largest and smallest number in a given array using 8085. **(10m)**
b. Write a program to sort the numbers in ascending order. **(5m)**

or

c. Write an assembly language program for addition and substraction of two 8-bit number **(10m)**
d. Write an ALP to substract two 8 bit numbers.

III a. Explain briefly about the bus structure of 8085. **(10m)**
b. Explain pin diagram of 8085. **(5m)**

or

c. Draw and explain the architecture of 8085 microprocessor. **(10m)**
d. Write the features of microprocessor 8085. **(5m)**

IV a. Prove the following.
1. The power of the energy signal is zero over infinite time.
2. The energy of the power signal is infinite over infinite time. **(10m)**
b. Explain and CT and DT signal. **(5m)**

or

c. Explain linear and non-linear systems. **(10m)**
d. Check whether the following continuous time system is linear or non-linear.
i. $y(t)=tx(t)$. **(5m)**

V a. Draw the block diagram of programmable peripheral interface IC 8255 and explain the f2 of each block **(10m)**
b. Explain basic concept of interfacing. **(5m)**

or

c. Write program about Fibonacci series. **(10m)**
d. Write program about Factorial number. **(5m)**

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S.B. ARTS AND K.C.P. SCIENCE COLLEGE VIJAYAPUR-586 103
DEPARTMENT OF PHYSICS
First Internal Assessment-2022-23

Sem: II   Sub: Electricity and Magnetism (DSC) Code: 21BSC2C2PHY2L

Date: 10 - 07- 2023   Time: 12.00 PM – 1.00 PM   **Max. Marks: 30**

Q.No. 1. ANSWER ANY THREE QUESTIONS   **2x3=6Marks**

　　a. State Coulomb's law and Gauss law.

　　b. Define electric lines of forces & write their properties.

　　c. State Kirchoff's current law.

　　d. Mention the expression of charging of capacitor in RC circuit.

　　e. Define current sensitivity of Ballistic Galvanometer.

Q.No 2 . ANSWER ANY ONE QUESTION.

　　a. Determine the electric field due to uniformly charged solid sphere & also explain variation of E with distance from centre of solid sphere using Gauss law.   **08 Marks**

　　b. Two charges +q & -3q are separated by a distance of 1m. At what points on its axis is the potential zero?   **04Marks**

OR

　　c. Derive an expression for the determination of high resistance by using Leakage method.   **08 Marks**

　　d. Mention any four comparisons between series resonance and parallel resonance.   **04 Marks**

Q.No.3. ANSWER ANY ONE QUESTION.

　　a. Determine the capacitance of parallel plate, spherical & cylindrical capacitors.   **08 Marks**

　　b. Two charges 10mc & -10mc are placed at points A & B separated by a distance of 10cm.find the electric field at a point P on the perpendicular bisector of AB at a distance of 12cm from its middle points.   **04 Marks**

OR

　　c. Explain construction and working of Ballistic Galvanometer.   **08 Marks**

　　d. Write a note on charge sensitivity and voltage sensitivity of Ballistic galvanometer.   **04 Marks**

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DEPARTMENT OF PHYSICS AND ELECTRONICS
FIRST INTERNAL TEST JUL 2022-23

Sem:II   sub: optical instruments(OEC)   code:21BSC202PHY2

Date :12-07-2023   time :10 AM-11AM   max.marks:20

PART-I

Answer any FOUR questions   **(2x4=8)**

1. What is optical path?
2. Define focal points
3. What is dispersion of light?
4. Define reflection of light.
5. Define angular dispersion.
6. What is convex lens?

PART-II

Answer any ONE question   **(8+4=12)**

7. a)Derive an expression for lens makers formula.   8M
   b) Explain Newtons experiment   4M

OR

c) Derive an expression for effective focal length of thin lenses placed in contact.   8M
d)Define refraction of light. And Explain the laws of refraction as per Fermat's principle. 4M

Subject:DSC4 Physics (Thermal Physics and Electronics)   Max Marks: 30
Code: 21BSC4C2PHY4L   Time: 4.15pm to 5.15pm

Date: 11/07/2023

Q.No.-1 ANSWER ANY THREE QUESTIONS.   (2X3=06)

a) What is thermodynamic process?
b) What is thermodynamic system?
c) Define Semiconductor and mention its types.
d) Define Rectifiers and Rectification.

Q.No-2 ANSWER ANY ONE QUESTION   (12 marks)

(a) Explain half wave and full wave rectifiers. (8M)
(b) Write a note on semiconductor diode. (4M)

OR

(c) Explain capacitor filter and inductor filters. (8M)
(d) Write a note on LC filter. (4M)

Q.No-3 ANSWER ANY ONE QUESTION   (12 marks)

(a) Explain two types of full wave rectifier. (8M)
(b) Write a note on P and N type semiconductor. (4M)

OR

(c) Explain LC filter and π section filters. (4M)
(d) Find minimum and maximum value of R_s (8M)
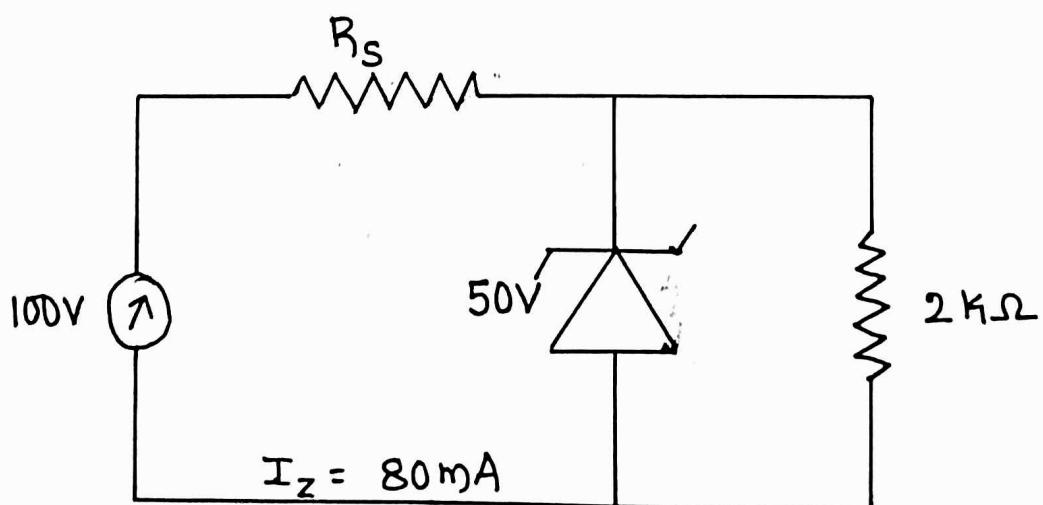
Time: 1 Hours.   **Max. Marks: 20**

PART-I

Answer any TWO questions   **(2x2=4)**

1) Mention different quantum numbers associated with Vector atom model.
2) Mention two spectral features of Vector atom model.
3) Write the difference between rotational spectra and vibrational spectra.

PART-II

Answer any ONE question   **(6x1=6)**
4) State and prove orthogonally property for Legendre polynomial.
5) Explain spatial quantization.

PART-III

Answer any ONE question   **(10x1=10)**
6) Find the solution of Legendre differential equation by using Frobinius method.
7) Discuss pure rotation spectra of diatomic molecule.

Time: 1 Hour   Max. Marks: 20

PART-I

Answer any TWO questions   **(2x2=4)**

1) What is Wiedemann–Franz Law?
2) What is Fermi Energy (E_F)?
3) Define magnetization and magnetic susceptibility.

PART-II

Answer any ONE question   **(6x1=6)**

4) What are the failures of Classical Free Electron Theory (CFET).
5) Distinguish between Diamagnets, Paramagnets and Ferromagnetic materials.

PART-III

Answer any ONE question   **(10x1=10)**

6) Derive an expression for Electrical and Thermal conductivity based on Classical Free Electron Theory.
7) Derive an expression for Susceptibility applying Classical Langvein theory of paramagnetism.

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

PART-I

Answer any TWO questions   **(2x2=4)**

1) What is Current?
2) What is Voltage?
3) Define ohms law?

PART-II

Answer any ONE question   **(6x1=6)**
4) Explain passive circuit elements.
5) Explain single phase supply.

PART-III

Answer any ONE question   **(10x1=10)**
6) Explain Kirchoff's Laws
7) Explain voltage drop across inductor and capacitor.
8) Explain three phase supply and write its applications.

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S. B. ARTS AND K. C. P. SCIENCE COLLEGE VIJAYAPUR
DEPARTMENT OF PHYSICS & ELECTRONICS
B.Sc VI Semester
First Internal Test – July 2023
Subject: Electronics-I

Time: 1 Hour   Max. Marks: 20

Part- I

Answer any TWO questions   (2x2=4)
1. What is Television?
2. What is Aspect ratio?
3. What is Interlaced Scanning

Part- II

Answer any ONE question   (6x1=6)
4. Explain Horizontal and Vertical Scanning
5. Explain flickers.

Part- III

Answer any ONE question   (10x1=10)
6. draw the Block diagram of Monochrome TV receiver and Explain the function of each block
7. Explain interlaced Scanning

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S. B. ARTS AND K. C. P. SCIENCE COLLEGE-586103
DEPARTMENT OF PHYSICS AND ELECTRONICS
FIRST INTERNAL TEST JUL 2022-23
Sem:VI   Sub: ELECTRONICS-II   Code:ELEDSET6.2A
Date :11-07-2023   Time :12:00PM-1:00PM   Marks:20

PART-I

Answer any TWO questions.   (2x2=4)

1. What is Microcontroller?
2. Define Embedded System.
3. Write any 4 application of embedded system.

PART-II

Answer any ONE question.   (6x1=6)

4. Write the Difference Between Microprocessor and Microcontroller.
5. Explain the Classification of Embedded System Based on Performs and Functional Requirements.

PART-III

Answer any ONE question.   (10x1=10)

6. Explain the Pin Diagram of 8051 Microcontroller.
7. What is Embedded System? With neat diagram explain the basic structure of embedded system .

Semester: II	Subject: Physics	Code: 21BSC2C2PHY1L
Date: 22/08/2023	Time: 12.00pm to 1.00pm	Max. Marks: 30

Q. No. I.	Answer any THREE of the following Questions	2×3=6M
a)	What is polarization?	
b)	State Gauss Law in Dielectrics with expression.	
c)	Write the significance of div.B & curl.B in magnetic field.	
d)	Mention the types of magnetic materials.	
e)	Write the expression for the energy stored in a magnetic field.	
Q. No. II	**Answer the following Questions**	
a)	Determine the Capacitance of Parallel Plate Capacitor, Cylindrical Capacitor & Spherical Capacitor with Dielectric.	8M
b)	The Capacitance of Parallel Plate Capacitor is 400picofarad & its plates are separated by 2mm of air. i) What will be the energy when it is charged to 1500 volts? ii) What will be the P.D with same charge if plate separation is doubled? iii) How much energy is needed to double the distance between its plates?	4M
	OR	
c)	Derive an expression for the relation between magnetic intensity and magnetic potential due to dipole.	8M
d)	Write a note on B-H loop.	4M
Q.No. III	**Answer the following Questions**	
a)	State Biot-Savart's Law. Determine the i) Magnetic field due to straight wire carrying current & ii) Magnetic field along the axis of current carrying circular coil.	8M
b)	A rectangular loop ABCD carrying a current of 10A in clockwise direction is placed with its longer side parallel to a long straight conductor 5cm apart & carrying a current of 20A. The sides of the loop are 10cm & 5cm. What is the net force on the loop.	4M
	OR	
c)	Derive an expression for the equation of continuity.	8M
d)	Mention the differential and integral forms of Maxwell's equations.	4M

Semester: II	Subject: optical instruments(OEC)	Code:21BSC2O2PHY2
Date: 24-08-2023	Time: 10am to 11 am	Max. Marks: 30

Q. No. I.	Answer any THREE of the following Questions.	2×3=6
a)	What is compound microscope?	
b)	Write any two applications of electron microscope.	
c)	What is astronomical telescope?	
d)	Define eyepiece.	
e)	What is reflecting telescope?	
Q. No II	Answer the following Questions.	8+4=12
a)	Explain construction and working of photographic camera.	8M
b)	Write a note on human eye.	4M
	OR	
c)	Explain construction and working of simple microscope.	8M
d)	What are binocular microscopes? Mention its uses.	4M
Q. No. III	Answer the following Questions.	8+4=12
a)	Explain construction and working of terrestrial telescope.	8M
b)	Write a note on Ramsden's eyepiece.	4M
	OR	
c)	Explain the construction and working of spectrometer.	8M
d)	Explain brief utilities of eye pieces.	4M

Semester: IV	Subject: Physics	Code: 21BSC4C2PHY4L
Date: 23/08/2023	Time: 4:15 pm to 5:15 pm	Max. Marks: 30

Q. No. 1.	Answer any two of the following Questions.	2×3=6
a)	What is thermal equilibrium?	
b)	What is quasistatic process?	
c)	What is Op-Amp?	
d)	Define feedback.	

Q. No II	Answer the following Questions.	12×1=12
a)	Derive an expression for the work done during an adiabatic process. (8m)	
b)	A quanta of dry air at 27^{0}C is compressed suddenly to ½ of it's volume. Find the change in temperature assuming Y to be 1.4. (4m)	
	OR	
c)	Derive an equation of state for an adiabatic process. (8m)	
d)	What are isovolumic and isobaric process? (4m)	

Q. No. III	Answer the following Questions.	12×1=12
a)	Explain block diagram of Op-Amp. (8m)	
b)	Explain pin diagram of IC-741. (4m)	
	OR	
c)	State and prove De-Morgan's theorems. (8m)	
d)	Convert this binary number $(101011011)_2$ into hexadecimal number $(\quad)_{16}$ (4m)	

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Semester: VI	Subject: Physics Paper I	Code: : PHYDECT6.1
Date: 24/08/2023	Time: 3 PM to 4 PM	Max. Marks: 20

Q. No. I.	Answer any two of the following Questions.	2×2=4
a)	Define scattering of light.	
b)	Define population inversion.	
c)	Reduced mass of CO molecule is 11.38×10^{-27} Kg and intermolecular distance of CO molecule is 0.1131 nm. Calculate the moment of inertia of the molecule?	
Q. No II	Answer any One of the following Questions.	1X6=6
a)	Discuss main component of Laser.	
b)	The line in the pure rotational spectra of HCl molecule is spaced as 20.8×10^{12} m^{-1}. Calculate the Moment of inertia and inter molecular distance when reduced mass of HCl is 1.62×10^{-27} Kg?	
Q. No. III	Answer any One of the following Question.	1×10=10
a)	Discuss construction and working of Ruby Laser.	
b)	Define stimulated absorption, spontaneous emission and stimulated emission and hence derive Einstein's coefficients.	

Semester: VI	Subject: Physics Paper II(ELECTIVE-III)	Code: : PHYDECT6.2A
Date: 26/08/2023	Time: 12 PM to 1 PM	Max. Marks: 20

Q. No. 1.	Answer any two of the following Questions.	2×2=4
a)	What is wave function?	
b)	What are quantum mechanical operators?	
c)	Define Eigen value and Eigen functions.	

Q. No II	Answer any One of the following Questions.	1X6=6
a)	Explain Born's interpretation of wave function	
b)	Explain Normalization of wave function.	

Q. No. III	Answer any One of the following Question.	1×10=10
a)	Derive the expression for Schrodinger's Time Dependent wave equation for 1-D	
b)	Explain Hydrogen Atom in quantum mechanics and mention it's eigen value and eigen function.	

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Semester: VI	Subject: Physics SEC	Code: PHYDECT6.3
Date: 25/08/2023	Time: 12.00 to 1.00PM	Max. Marks: 20

Q. No. 1.	Answer any two of the following Questions.	2×2=4
a)	Define Ohms Law	
b)	Draw the symbols of variable resistor and Switch	
c)	Define Kirchoff's Voltage Law	
Q. No II	Answer any one of the following Questions.	1×6=6
a)	Explain Ladder Diagram	
b)	Write the Difference between AC and DC Generator	
Q. No. III	Answer any One of the following Question.	1×10=10
a)	Explain AC and DC generator	
b)	Explain Single Phase Induction Motor	

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Semester: VI	Subject: Electronics Paper I	Code: ELEDSET6.1
Date: 22/08/2023	Time: 3.00 to 4.00PM	Max. Marks: 20

Q. No. 1.	Answer any two of the following Questions.	2×2=4
a)	Define Sampling Theorem	
b)	What is Pulse width Modulation?	
c)	What is Satellite?	
Q. No II	Answer any one of the following Questions.	1×6=6
a)	Explain Pulse Width Modulation.	
b)	Explain any two Satellite Orbits.	
Q. No. III	Answer any One of the following Question.	1×10=10
a)	Explain with neat diagram delta gun color picture tube	
b)	What is Multiple access? Write about TDMA and FDMA	

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Semester: VI	Subject: Electronics Paper II	Code: ELEDSET6.2A
Date: 23/08/2023	Time: 12.00 to 1.00PM	Max. Marks: 20

Q. No. 1.	Answer any two of the following Questions.	2×2=4
a)	What is Microcontroller?	
b)	Define Addressing Mode.	
c)	What is difference between PIC and 8051 Microcontroller?	
Q. No II	Answer any One of the following Questions.	1×6=6
a)	Write about Harvard CPU Architecture.	
b)	Explain the memory organisation of PIC Microcontroller.	
Q. No. III	Answer any One of the following Question.	1×10=10
a)	Explain Pin Diagram of 8051.	
b)	What is addressing mode? Explain any five addressing modes of 8051 microcontoller.	