PRN NO | QP. CODE

Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test I Sem – I A.Y. – 2024-25

Class Program	FYBTech (all divisions)	Day & Date	Saturday, 26/10/2024
Course Code	01FYBSL101	Time	10.00 am to 11.00 am
Course Title	Applied Mathematics – I	Max. Marks	20

Q.No		Solve the following.	Marks	CO	BL	PI
1	a	Reduce the following matrix to normal form and find its rank. $\begin{bmatrix} 1 & 1 & 1 & -1 \\ 1 & 2 & 3 & 4 \\ 3 & 4 & 5 & 2 \end{bmatrix}$	05	1,3	L1, L3	1.1.1
	b	Test for consistency and if possible, solve the equations $2x - y + z = 9$, $3x - y + z = 6$, $4x - y + 2z = 7$, $-x + y - z = 4$	05	1,3	L2, L3	1.1.1
		OR				
	b	Investigate for what value of λ and μ the equations $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + \lambda z = \mu$. have i) no solution ii)unique solution				
2	a	Find Eigen values of the matrix A and also find eigen values of (i) A^{-1} (ii) adjoint A where $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & -2 & 6 \\ 0 & 0 & -3 \end{bmatrix}$	05	1,2	L2, L3	2.4.1
		OR				
	a	Find Eigen values and eigen vector for largest eigen value of the matrix $A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$				
	b	Solve the following homogeneous equations $4x + 3y - z = 0$, $3x + 4y + z = 0$, $5x + y - 4z = 0$	05	1,3	L2, L3	1.1.1

PRN NO | | QP. CODE | TA105

Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test II Sem – I A.Y. – 2024-25

Class Program	F.Y.B.Tech.	Day & Date	Saturday, 07/12/2024
Course Code	01FYBSL101	Time	01.00 pm to 02.00 pm
Course Title	Applied Mathematics – I	Max. Marks	20

Q.No		Solve the following.	Marks	CO	BL	PI
1	a	Simplify: $\frac{(\cos3\theta+i\sin3\theta)^5(\cos\theta-i\sin\theta)^3}{(\cos5\theta+i\sin5\theta)^7(\cos2\theta-i\sin2\theta)^5}$	05	2	L1, L2 L4	1.1.1 3.1.1
	b	Find all the values of $(1-i)^{2/3}$	05	2	L1 L2, L4	1.1.1 3.1.1
		OR				
	b	Solve the equation $x^4+x^3+x^2+x+1=0$				
2	a	Arrange in powers of x by using Taylor's series $17+6(x+2)+3(x+2)^3+(x+2)^4-(x+2)^5$	05	2	L1 L2, L3	2.3.1
		OR				
	a	Using Taylor's series expand $\sin\left(\frac{\pi}{6}+x\right)$ upto x^4 and find $\sin(30°, 30')$.				
	b	Using De Moivre's Theorem Prove that $\frac{\sin6\theta}{\sin2\theta} = 16cos^4\theta - 16cos^2\theta + 3$	05	2	L1 L2, L4	1.1.1 3.1.1

PRN NO | QP. CODE | TA103

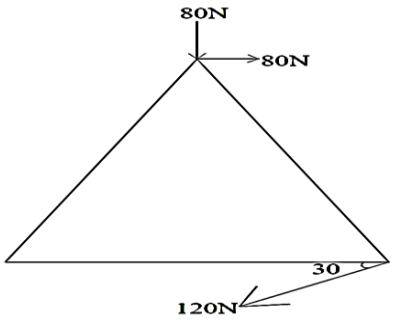
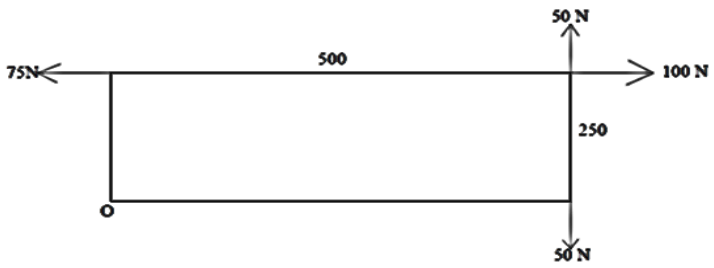
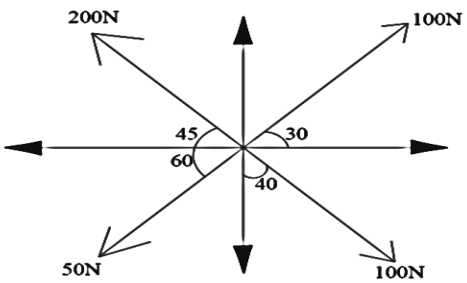
Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test I / II Sem – I A.Y. – 2024-25

Class Program	AI&DS/ CSE/ IT	Day & Date	Friday, 25/10/2024
Course Code	01FYESL107	Time	10am- 11am
Course Title	Applied Mechanics	Max. Marks	20

Q. No		Question	Marks	CO	BL	PI
1	a	State "Lami's Theoram" and Explain with neat sketch.	05	CO2	Remember	1.3.1
	b	State "Law of Parallelogram of Forces" and Draw a neat sketch.	05	CO1	Remember	1.3.1
		OR				
	b	State the Law of transmissibility of forces and draw the neat sketch of it.			Remember	
2	a	Determine the resultant of non-concurrent force system acting on the lamina of equilateral triangular shape as shown in figure 	05	CO1	Understand	2.3.1
		OR				
	a	Determine the resultant of non-concurrent force system as shown in figure 			Understand	
	b	A system of four forces acting on a body as shown in figure. Determine the resultant. 	05	CO1	Understand	2.3.1

PRN NO | QP. CODE

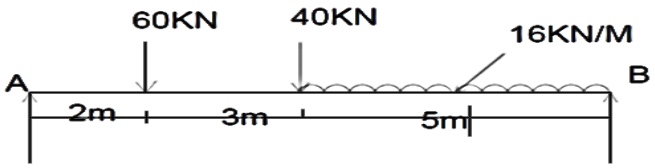
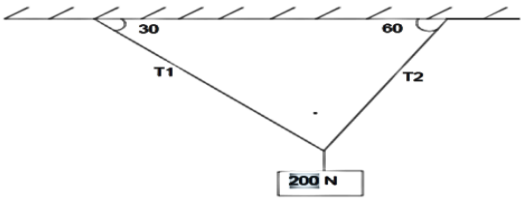
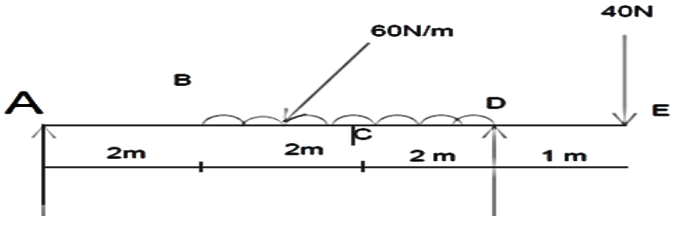
Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test II Sem – I A.Y. – 2024-25

Class Program	FYBTECH	Day & Date	Friday & 06/12/2024
Course Code	01FYESL107	Time	02:00 pm- 03:00 pm
Course Title	Applied Mechanics	Max. Marks	20

Q. No		Attempt the following	Marks	CO	BL	PI
1	a	Define free body diagram with neat sketch. Give two example.	05	CO2	Remember	1.1.a
	b	State & explain the different types of support with neat sketch.	05	CO2	Understand	1.3.1
		OR				
	b	State & explain Parallel axis theorem with neat sketch.		CO3	Understand	1.2.1
2	a	Calculate support reactions of the beam as shown in figure 	05	CO2	Apply	2.1.3
		OR				
	a	A weight of 200N is attached by two strings. Calculate the tension in the strings. 		CO2	Apply	2.1.3
	b	Calculate support reactions of the beam as shown in figure 	05	CO2	Apply	2.1.3

PRN NO | QP. CODE TA102

Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test I Sem – I A.Y. – 2024-25

Class Program	FY CSE	Day & Date	Thursday
Course Code	01FYESL105	Time	2.00pm to 3.00pm
Course Title	Basic Electronics Engineering	Max. Marks	20

Q.No			Marks	CO	BL	PI
1	a	How transistor can be used to form an amplifier? Explain with circuit diagram and waveform.	05	CO1	Understand	
	b	What are different number systems? Define radix of number system. Mention it for each of the number system.	05	CO2	Understand, Apply	
		OR				
	b	In the following binary number $(1001011011010)_2$ Write: i) Decimal weight of LSB ii) Decimal weight of MSB iii) Number of nibbles iv) Number of bytes v) Number of bits				
2	a	Plot & explain the DC load line on output characteristics of CE configuration of transistor. Define Q/Operating point	05	CO1	Understand	
		OR				
	a	Explain the working of bridge rectifier with circuit diagram and waveform.				
	b	Convert following codes- i) $(2AF7)_{16} = (?)_2$ ii) $(764)_{10} = (?)_{16}$	05	CO2	Understand, Apply	

PRN NO | QP. CODE

Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

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Test I / II Sem – I A.Y. – 2024-25

Class Program	FY BTech	Day & Date	06/12/2024
Course Code	01FYESL105	Time	10:00AM To 11:00
Course Title	Basic Electronics Engineering	Max. Marks	20

Q.No			Marks	CO	BL	PI
1	a	Convert the following: i) $(673)_8 = (?)_{10}$ ii) $(9543)_{10} = (?)_{BCD}$	05	2	L3	
	b	Explain Half subtractor with Definition, truth table, K-map, logic equation and logic diagram.	05	4	L2	
		OR				
	b	Explain Half adder with Definition, truth table, K-map, logic equation and logic diagram.				
2	a	State and explain De-Morgan's theorems.	05	3	L2	
		OR				
	a	Explain AND gate, OR gate and NOT with statement, logic diagram, equation and truth table.				
	b	Justify the statement "NAND and NOR gates are known as universal gates". Draw Ex-OR and Ex-Nor gate using NAND gate.	05	3,4	L2	

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Dr. J. J. Magdum Trust's

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Test I / II Sem – I A.Y. – 2024-25

Class Program	F.Y.Civil/Mechanical/ETC	Day & Date	Thursday-24/10/2024
Course Code	01FYESL104	Time	3.30 pm to 4.30 pm
Course Title	Basic Electrical Engineering	Max. Marks	20

Q.No			Marks	CO	BL	PI
1	a	Explain effect of temperature on resistance material.	05	1	L2	K1
	b	Explain and State Kirchhoff's Current Law..	05	1	L2	K1
		OR				
	b	Explain and State Kirchhoff's Voltage Law.				
2	a	Two Batteries A & B are Connected in Parallel across a Load Resistance of 4 Ω.The EMF and internal resistance of battery A and B are 24 V, 4 Ω and 36 V,6 Ω respectively, using mesh analysis Find current in Battery A and current in Battery B.	05	2	L3	K3
		OR				
	a	Two Batteries A & B are Connected in Parallel across a Load Resistance of 6 Ω.The EMF and internal resistance of battery A and B are 32 V, 4 Ω and 36 V,6 Ω respectively, using node analysis Find current in Battery A and current in Battery B.				
	b	Define (i)Magnet, (ii) Magnetic Field, (iii) Magnetic Flux, (iv) Flux density.	05	1	L2	K1

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Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

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Test - II Sem – I A.Y. – 2024-25 Div - D, E & F

Class Program	FYBTech	Day & Date	Friday 06/12/2024
Course Code	FYESL104	Time	11:30 am to 12:30 pm
Course Title	Basic Electrical Engineering	Max. Marks	20

Q. No			Marks	CO	BL	PI
1	a	Comparing between electric circuit and magnetic circuit.	05	1	K1	1.2.1
	b	Explain Magnetic leakage and fringing.	05	1	K1	1.2.1
		OR				
	b	Derive the expression of series magnetic circuit for three different magnetic material.		1	K1	1.2.1
2	a	Derive the expression of RMS value of alternating current of sine wave.	05	3	K4	2.1.1
		OR				
	a	Derive the equation of current and power in pure inductive circuit		3	K4	2.1.1
	b	A R=50 ohm, L=100 mH, C=50 microfarad are connected in series across 230 volts, 50Hz ac supply find i) Impedance ii) Current iii) Power factor .	05	2	K3	2.1.2

PRN NO | | QP. CODE | TA108

Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test I / II Sem – I A.Y. – 2024-25

Class Program	Mech/ Civil/ E&TC Engineering	Day & Date	Friday, 25/10/2024
Course Code	01FYESL106	Time	11.30-12.30
Course Title	Computer Aided Engineering Drawing	Max. Marks	20

Q. No		Question	Marks	CO	BL	PI
1	a	Enlist types of lines and illustrate with neat diagram (Any 5)	05	CO1	Remember	1.3.1
	b	Write a note on page set for AutoCAD 2D drawing.	05	CO2	Remember	5.1.1
		OR				
	b	Write the path for following draw commands 1. Circle 2. Polygon 3. Construction line 4. Hatch 5. Text				
2	a	Draw BIS sign conventions for any 5 materials.	05	CO1	Analyze	1.3.1
		OR				
	a	What are the types of dimensioning system? explain in brief with neat sketch.			Understand	1.3.1
	b	Write the path for following modify commands 1. Trim 2. Mirror 3. Move 4. Offset 5. Array	05	CO2	Remember	5.1.1

PRN NO | | QP. CODE | TA307

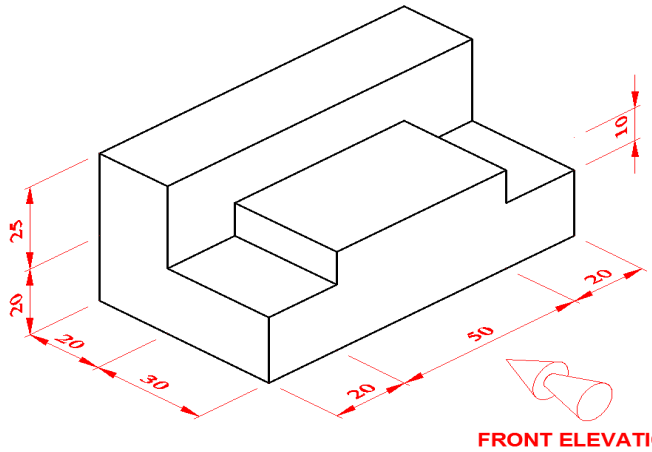
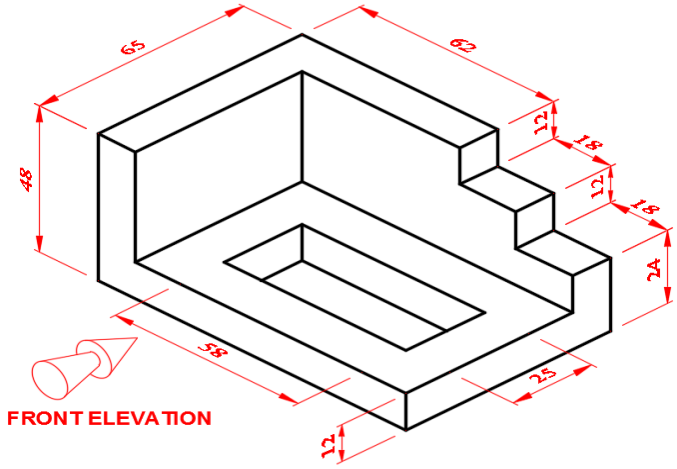
Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test I / II Sem – I A.Y. – 2024-25

Class Program	FYBTECH	Day & Date	Friday, 31/12/2024
Course Code	01FYESL106	Time	1:00- 2:00 pm
Course Title	Computer Aided Engineering Drawing	Max. Marks	20

Q.No		Question	Marks	CO	BL	PI
1	a	Differentiate between first and third angle method	04	CO4	Remember	1.3.1
	b	 Draw orthographic projections by **Third Angle** method	06	CO4	Apply	2.1.3
2	a	 Draw Orthographic Projections By **First angle** method	10	CO4	Apply	2.1.3
		or				
	b	A pentagonal lamina of 40 mm side has a circular hole of 15 mm diameter in its centre. The plane stands on one of its sides on HP with its plane perpendicular to VP and 45° inclined to HP. Draw the projections.	10	CO3	Apply	2.1.3

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Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test II Sem – I A.Y. – 2024-25 Div- C

Class Program	FYBTech	Day & Date	Thursday, 7th Dec
Course Code	01FYBSL103	Time	10.00 to 11.00 am
Course Title	Engineering Chemistry	Max. Marks	20

Q.No			Marks	CO	BL	PI
1	a	Define electrochemical corrosion. Explain oxygen absorption mechanism with example.	05	03	02	2.1.3
	b	What is hot dipping process? Discuss galvanisation with a neat labelled diagram.	05	01	01	1.2.1
		OR				
	b	What is hot dipping process? Discuss tinning with a neat labelled diagram.				
2	a	Write a note on Cathodic protection.	05	02	02	1.2.1
		OR				
	a	Write a note on Electroplating..				
	b	A Bomb calorimeter experiment gave the following data : i) Water equivalent of calorimeter = 550 gm ii) Weight of coal sample = 1.1 gm iii) Weight of water taken = 2460 gm iv) Observed rise in temperature = 2.51OC v) Cooling correction = 0.043 OC vi) Correction due to H2SO4 = 24.2 Cal vii) Correction due to HNO3 = 35.8 Cal viii) Fuse wire correction = 4.0 Cal If the fuel contains 5% hydrogen, calculate the Gross and Net calorific value of the fuel. (Given latent heat of steam = 587 Cal/gm).	05	03	02	2.1.3

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Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test II Sem – I A.Y. – 2024-25 Div- A & B

Class Program	FYBTECH	Day & Date	07 Dec, 2024
Course Code	01FYBSL103	Time	10.00 – 11.00 am
Course Title	Engineering Chemistry	Max. Marks	20

Q. No			Marks	CO	BL	PI
1	a	A Bomb calorimeter experiment gave the following data : i) Water equivalent of calorimeter = 550 gm ii) Weight of coal sample = 1.1 gm iii) Weight of water taken = 2460 gm iv) Observed rise in temperature = 2.51OC v) Cooling correction = 0.043 OC vi) Correction due to H2SO4 = 24.2 Cal vii) Correction due to HNO3 = 35.8 Cal viii) Fuse wire correction = 4.0 Cal If the fuel contains 5% hydrogen, calculate the Gross and Net calorific value of the fuel. (Given latent heat of steam = 587 Cal/gm	05	03	02	2.1.3
	b	Write a brief note on- Alkalinity of water.	05	01	01	1.2.1
		OR				
	b	Write a brief note on- Chloride content of water .				
2	a	Discuss in detail about the scale & sludge formation in boilers.	05	02	02	1.2.1
		OR				
	a	Explain the Ion Exchange process for water softening.				
	b	A sample of water on analysis was found to contain the following impurities Wt. mg/lit Mol. wt. $CaCO_3$ 12.5 100 $Mg(HCO_3)_2$ 20.6 146 $CaCl_2$ 11.1 111 $MgSO_4$ 7.8 120 Calculate temporary, permanent and total hardness of water in ppm.	05	03	02	2.1.3

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Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test I / II Sem – I A.Y. – 2024-25

Class Program	FYBTech	Day & Date	Thursday, 24/10/2024
Course Code	01FYBSL103	Time	10:00- 11.00 am
Course Title	Engineering Chemistry	Max. Marks	20

Q.No			Marks	CO	BL	PI
1	a	Derive the expression for Beer-Lambert's Law.	05	03	02	
	b	Compare Solid fuels with Liquid fuels.	05	01	01	
		OR				
	b	Compare Liquid fuels with Gaseous fuels.				
2	a	Discuss the principal and working of Bomb Calorimeter.	05	02	02	
		OR				
	a	Discuss the principal and working of Boy's Calorimeter.				
	b	With the schematic diagram, explain the principle & working of Single Beam Spectrophotometer. How will you determine the concentration of unknown solution with the help of Single Beam Spectrophotometer?	05	03	02	

PRN NO | | QP. CODE | **TA104**

Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test II Sem–I A.Y. – 2024-25

Class Program	FYBTECH	**Day & Date**	Friday: 07/12/2014
Course Code	01FYESL108	**Time**	3.00 pm to 4.00 Pm
Course Title	Fundamentals of Programming Language	**Max. Marks**	20

Que. No	#	Questions	Marks	CO	BL	PI
1.	a.	Define Arrays in C with declaration & initialization.	05	CO3	L1	1.3.1
	b.	Explain if else-if ladder and Nested if else with example.	05	CO2	L2	1.4.1
		OR				
	b.	Write a C program to display even numbers and odd numbers in between 1-100 using For Loop.	05	CO2	L6	1.4.1
2.	a.	Explain For Loop and While Loop with example.	05	CO2	L2	1.4.1
		OR				
	a.	Explain difference between Arrays and String.	05	CO3	L2	1.4.1
	b.	Write a C program to display week-days using Switch statement.	05	CO2	L6	1.4.1

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Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysingpur

(An Autonomous Institute)

Test I **Sem – I A.Y. – 2024-25**

Class/ Program	Div.D/E/F	Day & Date	Thursdy,24/10/2024
Course Code	01FYBSL102	Time	11:30-12:30 pm
Course Title	Engineering Physics	Max. Marks	20

Q.No			Marks	CO	BL	PI
1	a	Define resolving power of grating and obtain an expression for it.	06	1,2	K^1, K^2	
		OR				
	a	What is grating? Explain theory of plane transmission grating when light falls at 90^0 on the grating.				
	b	A parallel beam of Sodium light is allowed to be incident normally on a plane grating having 4250 lines per cm and a second order spectral line is observed to be deviated through 30^0. Calculate the wavelength of spectral line.	04	3	K^3	
2	a	Define: optic axis, Principal plane. With neat diagram explain the phenomenon of double refraction.	06	1,2	K^1, K^2	
		OR				
	a	Give Huygen's theory of double refraction in uniaxial crystal & distinguish between positive and negative crystals.				
	b	Define any four terms from the following: Diffraction, Polarised light, anisotropic media, principal section, principal plane.	04	1	K^1	

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Test II **Sem – I A.Y. – 2024-25**

Class/ Program	FYBTECH	Day & Date	Saturday, 07/12/2024
Course Code	01FYBSL102	Time	11.30 am- 12.30 pm
Course Title	Engineering Physics	Max. Marks	20

Q.No			Marks	CO	BL	PI
1	a	Explain the following terms(**Any two**): i)Spontaneous Emission ii)Stimulated Emission iii)Population inversion	06	1,2	K^1, K^2	1.2.1
		OR				
	a	What is holography? Explain recording of hologram and reconstruction of hologram.				
	b	What do you mean by pumping& Explain optical pumping technique & electric discharge pumping technique.	05	1,2	K^1, K^2	1.2.1
2	a	What is acoustics of buildings? State the essential features of good acoustics?	06	1,2	K^1, K^2	1.2.1
		OR				
	a	Explain the term reverberation. State and explain factors controlling reverberation time. State and explain sabine's formula.				
	b	An auditorium has a volume of 8000 m^3.It is required to have reverberation time of 2 seconds. What should be the total absorption in it?	03	3	K^3	2.1.3