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TOPICS FOR INTERNAL ASSESSMENT ASSIGNMENTS (2021-22)
B.Sc. Final Year (PCM & CBZ)

General Note: *Students are advised to read the separate enclosed instructions regarding submission of Internal Assessment Assignments.*

Notes: *1) Students are advised to read the separate enclosed instructions regarding submission of Internal Assessment Assignments.*
2) Students to submit Internal Assignments of all the Optional Papers (PCM or CBZ) in accordance with the combination opted by the.
3) Out of 25 Internal Assignment marks per Paper (30 Marks for Mathematics Papers) 05 marks will be awarded for regularity (attendance) to Counseling/ Contact Programme classes pertaining to the paper. Therefore, the topics given below are only for 10 marks each paper (Mathematics papers 25 marks).

Topics in Optional Papers
PHYSICS
Paper- III:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	Obtain the expression for Fermi energy and average energy of electrons?	**05** Marks
2.	Mention the different types Bravais lattice crystal system.	**05** Marks

Paper- IV:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	Give Debye's theory of specific heat of solids and discuss high and low temperature limits.	**05** Marks
2.	Describe half adder by using logic gates with necessary truth tables.	**05** Marks

CHEMISTRY
Paper- III:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	How is Uranium extracted from pitch blende?	**05** Marks
2.	What are fuel cells? Explain H_2-O_2 fuel cell.	**05** Marks

Paper- IV:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	Write a note on 'elements of symmetry'.	**05** Marks
2.	. Discuss the isomerism in coordination compounds.	**05** Marks

MATHEMATICS

Paper- III:

Topic Number	*Answer all Topics*	Maximum 25 Marks
1.	prove that every homomorphic image G' of a group G is isomorphic to some quotient group.	**05** Marks
2.	Show that the set of all matrices of the form $\begin{bmatrix} 0 & x \\ 0 & y \end{bmatrix}$ where $x, y \in Q$ is a non commutative ring without unity, the binary operation being addition and multiplication of matrices	**05** Marks
3.	Find the GCD of $f(x) = x^3 - 1$ and $g(x) = x^4 - x^3 + x^2 - 2$ in $R[x]$ and express it in the form GCD$= a(x)f(x) + b(x)g(x)$	**05** Marks
4.	Find the matrix for the following linear transformation $T: R^3 \to R^2$ defined by $T(x, y, z) = (x + y,\ y + z)$ with respect to the bases $B_1 = \{(1,1,0), (1,0,1), (1,1,-1)\}$ & $B_2 = \{(2,-3), (1,4)\}$	05 Marks
5	If $u = tan^{-1}\left(\frac{x^3+y^3}{x-y}\right)$ then show that $xu_x + yu_y = sin\, 2u$	**05** Marks

Paper- IV:

Topic Number	*Answer all Topics*	Maximum 25 Marks
1.	Evaluate $\int_0^1 \int_0^{1-x} \int_0^{1-x-y} xyz\ dz\, dy\, dx$	**05** Marks
2.	If C is the curve leading from $(0,1,2)$ to $(3,-1,1)$ then evaluate $\int_C (4xy - 3x^2z^2)dx + 2x^2 dy - 2x^3 z\, dz$	**05** Marks
3.	Show that $\int_0^{\frac{\pi}{2}} \sqrt{tan\theta}\, d\theta = \frac{\pi}{\sqrt{2}}$	**05** Marks
4.	Solve $x\frac{d^2y}{dx^2} - \frac{dy}{dx} - 4x^3 y = 8x^3 sinx^2$, where $x > 0$, using the transformation $z = x^2$	**05** Marks
5.	Prove that the function $f(x) = 8x + 1$ is R-integrable over the interval $[1,2]$	**05** Marks

Paper- V:

Topic Number	*Answer all Topics*	Maximum 25 Marks
1.	Find $L\left\{\frac{2sin2t\ cos3t}{t}\right\}$	**05** Marks
2.	Solve the integral equation $f(t) = at + \int_0^t f(u).sin(t-u)du$	**05** Marks
3.	Show that $Arg\left(\frac{z-1}{z+1}\right) = \frac{\pi}{3}$ represent a circle. Find its centre and radius.	**05** Marks
4.	Evaluate $\int_c \frac{z^2-4}{z(z^2+9)}dZ$, where C is the circle $\|z\| = 1$	**05** Marks
5.	Evaluate $\int_0^1 \frac{dx}{1+x}$ by applying the Simpson's $\frac{3}{8}$ rule by dividing the interval into 6 equal parts and hence find the value of $log2$	**05** Marks

BOTANY

Paper- III:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	Explain the simple fruits with neat labeled diagram.	**05** Marks
2.	Explain the salient features of family Verbinaceae and Cucurbitaceae.	**05** Marks

Paper- IV:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	What is Plant Breeding? Describe the objectives and principles of plant Breeding.	**05** Marks
2.	Explain Embryo culture with appropriate diagrams and their applications.	**05** Marks

ZOOLOGY

Paper- III:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	Write a note on speciation.	**05** Marks
2.	Explain the life cycle of silkworm *Bombyx mori.*	**05** Marks

Paper- IV:

Topic Number	*Answer all Topics*	Maximum 10 Marks
1.	Write a note on vitamins.	**05** Marks
2.	Explain the composition of blood.	**05** Marks

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