BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSc **SEMESTER : V**
BRANCH: QEDS **SESSION : MO/2025**

SUBJECT: ED311 PUBLIC ECONOMICS

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	What is a market failure? Explain how externalities can cause market failure? How can the government solve the problem?	[5]	1	2,3
Q.1(b)	What role does the Finance Commission of India play in the Indian economy?	[5]	5	2
Q.2(a)	Suppose a neighbourhood comprises of three(3) groups-A, B and C. A has 20 households, B has 10 households and C has 25 households. All households in a group have identical demand for streetlights. The demand for a single household belonging to group A is given by Q=20-5P. The demand for a single household belonging to group B is given by Q=10-2P. The demand for a single household belonging to group C is given by Q=18-4P. What is the total demand function for streetlights in this neighbourhood. Q is quantity and P is price.	[6]	2	3,4
Q.2(b)	In continuation of question 2(a), the cost of providing streetlights is determined by the cost function: C(Q)=6Q. Find out the socially optimal allocation of streetlights. Explain why this allocation is efficient.	[4]	2	3,4
Q.3(a)	The preferences of individuals *A,B,C,D* and *E* over policy alternatives *a,b,c* and *d* are given by the following preference ordering : $$A: a \succ b \succ c \succ d$$ $$B: a \succ d \succ c \succ b$$ $$C: b \succ c \succ a \succ d$$ $$D: c \succ b \succ a \succ d$$ $$E: d \succ c \succ b \succ a$$ Is there a Condorcet winner for these preferences? Explain your answer.	[5]	3	4
Q.3(b)	According to the Median Voter Theorem, what level of public good will be provided if majority voting is used? Is this allocation of public good socially efficient? Explain your answer.	[5]	3	3
Q.4(a)	Suppose there are two steel plants, A and B in Ranchi. Both plants produce smog as a by-product. Both plants can reduce smog but at a cost, given by the following cost functions: For steel plant A: $c_A(x_A) = 5x_A^2$ For steel plant B: $c_B(x_B) = 14x_B + 10$ The benefit from smog abatement is given by $100(x_A + x_B)$. What is the socially optimal level of abatement for each steel plant?	[4]	4	4
Q.4(b)	In continuation of question 4(b), the government stipulates that each firm should reduce smog by 8 units. Calculate the dead weight loss if the government enforces this quantity restriction. How do the choice of A and B change if the government imposes a tax of 100 on every unit of smog emitted?	[6]	4	4
Q.5(a)	The market demand curve of a commodity is given by Q_D=400-10P_D. The market supply is given by Q_S=100+5P_S. What is the market equilibrium price and quantity. Now if the government imposes a tax of 10 on every unit of commodity sold. What will be the post tax price that the consumers pay. What will be the new quantity sold?	[5]	5	4
Q.5(b)	Calculate the burden of tax incidence on the consumers and the producers? Explain your answer. How much is the deadweight loss?	[5]	5	4

:::::25/11/2025:::::E