

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

Acronyms have their usual meaning.

1. (a) Explain with example the characteristics of good objectives. (15)
(b) Explain different types of budgeting. (20)

2. (a) "There is no perfect project evaluation system but one must consider different major aspects in designing an evaluation system". — Describe those aspects and explain why they need to be considered. (15)
(b) What are the issues a project planner/manager have to consider while determining schedule/timeframe of a project. (8)
(c) Describe the stages of policy making as per Jones. (12)

3. (a) Write down the differences between project and routine work. (5)
(b) What are the basic functions a project manager has to perform for managing projects? (8)
(c) Write down the factors for evaluating project selection models. (5)
(d) "Open tender is the preferred mode for procuring any goods, works and services." — Why? Describe the procedure of open tendering with flow chart according to PPR 2008. (17)

4. (a) Write short notes on (Any four)— (4×5=20)
 - (i) Different types of appraisals,
 - (ii) Types of evaluation,
 - (iii) Content of Terms of Reference (ToR),
 - (iv) Situational analysis,
 - (v) Tools of policy implementation.
(b) Explain with diagram how two persons can reach pareto optimality. (15)

PLAN 401/URP

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

Assume standard values of quantities if not provided.

Acronyms have their usual meaning.

5. (a) Describe how the shadow prices are determined for labour inputs considering the impacts on the economy. (10)

- (b) The average annual income of five income groups have been collected for pre-and post-project scenarios. The income data and the marginal propensity to save of these five income groups are provided in the following table. Find the project's impact on savings of these income groups. (10)

Income Group	Pre-Project Annual Income (Tk.)	Post-Project Annual Income (Tk.)	Marginal Propensity to Save (%)
1	500,000	550,000	5
2	400,000	600,000	10
3	475,000	300,000	8
4	700,000	800,000	15
5	650,000	680,000	20

- (c) Discuss different sources of risk for a project. Which measure of risk in project evaluation is commonly used and why? (10+5=15)

6. (a) Finance company 'A' advertises that it provides loan with an interest of 12% which is to be repaid in not more than 12 years. Another finance company 'B' advertises that it has a much lower interest rate of 8% but the loan should be repaid in 8 years. As a project manager, which finance company would you choose to minimize your annual installments for taking a specific amount of loan? (10)

- (b) A project consists of the following activities with the corresponding time estimates.

Activity	Preceding Activity	t_c (weeks)	t_p (weeks)	t_o (weeks)
A	–	2	5	1
B	A	10	15	7
C	B	9	11	6
D	A	5	6	4
E	D	7	12	5
F	C, E	9	10	6

The project starts with activity A and ends with activity F.

- (i) Draw the network diagram for the project including the EOT and LOT for each event. (10)

- (ii) Determine the critical path of the network diagram and the time required for completing the project. (2)

- (iii) Determine the probability of completing the project within 32 weeks. (13)

PLAN 401/URP

Contd... Q. No. 6(b)

7. (a) Briefly describe three types of time estimates assigned for each activity while developing a project schedule. (6)
- (b) How the Net Present Values (NPV) of a project is calculated? Compare the relative advantages and disadvantages of NPV, IRR and BCR. (4+10=14)
- (c) Two mutually exclusive projects (A and B) have been designed for a community development program. The expected cash flows (at the end of each year) for the two alternative projects are provided in the following table: (15)

	Project A (Tk. in 000's)	Project B (Tk. in 000's)
Initial Investment	90	40
Cash Flows		
Year 1	80	10
Year 2	68	25
Year 3	55	35
Year 4	—	48
Year 5	—	35

Considering a discount rate of 10% and a cost of capital of 9%, make a comparative analysis of the economic benefits of these projects with the help of their NPV and BCR.

8. (a) Financial Cost-Benefit Analysis is not enough for evaluating investment projects, Social Cost-Benefit Analysis (SCBA) is also necessary. — Explain the statement with respect to the factors considered in SCBA. (12)
- (b) Outline the stages of UNIDO method of project appraisal. (5)
- (c) Azure Enterprise is considering to start a new project. To determine associated risks, the company is conducting a break-even analysis based on the previous data of similar projects. Calculate the financial break-even point of the project income using the following data: (18)

Initial Investment : Tk. 15 million
 Variable Cost : Tk. 10 million
 Income : Tk. 18 million
 Fixed Cost : Tk. 1.8 million
 Depreciation : Tk. 2 million
 Tax : 20%
 Project Life : 10 years
 Interest Rate : 10%

Cumulative Probability up to Z for Standard Normal Distribution

Z	Cumulative probability
-3.0	0.001
-2.8	0.003
-2.6	0.005
-2.4	0.008
-2.2	0.014
-2.0	0.023
-1.8	0.036
-1.6	0.055
-1.4	0.081
-1.2	0.115
-1.0	0.159
-0.8	0.212
-0.6	0.274
-0.4	0.345
-0.2	0.421
0.0	0.500
0.2	0.579
0.4	0.655
0.6	0.726
0.8	0.788
1.0	0.841
1.2	0.885
1.4	0.919
1.6	0.945
1.8	0.964
2.0	0.977
2.2	0.986
2.4	0.992
2.6	0.995
2.8	0.997
3.0	0.999

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) What do you understand by the term "Environmental Engineering"? Briefly explain the interactions between human and environment. Explain briefly hydrologic cycle and availability of water. (18)
- (b) What are the major sources of outdoor air pollution? Briefly discuss the effects of air pollution on public health, agriculture and climate. (17)

2. (a) What are the main objectives of water supply? Show the essential elements of a surface water based water supply system in a neat sketch. Describe briefly the factors affecting per capita demand of water. (18)
- (b) The population of a city was 25 million in 1965, 29 million in 1975, 38 million in 1985, 55 million in 1995 and 80 million in 2005. Estimate the probable population of the city in 2015 and 2025 by the least square parabola method. (17)

3. (a) What are intakes? Where are these used? What are the important considerations for designing an intake for surface water based water supply system? (17)
- (b) What are the main technical criteria for selecting pumps? (18)
- Design a suitable set of pumping unit to deliver 200,000 litres water per hour from an underground reservoir (the R.L. of the bottom of this reservoir is 25 m) to an elevated reservoir of maximum water level at R. L. 65 m through 1,200 m long pipe. Combined efficiency of the pump is 65%, friction factor is 0.01 and the diameter of the pipe is 150 mm.

4. (a) What are the main purposes of settling in water treatment process? Briefly explain the principles of settling. What are the different types of settling? (18)
- (b) "In sedimentation tanks, overflow rate is the measure of effective removal of particles" — derive the equation for overflow rate, and then critically examine the above statement with your comments. (17)

CE 471/URP

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) What is Integrated Solid Waste Management (ISWM)? Why is it called 'integrated'? Describe the importance of ISWM and its functional elements. (12)
What are the effects of solid waste mismanagement?
- (b) What is Waste Hierarchy Principles in Solid Waste Management? Does Dhaka city adopt any such principles in waste management? Give example in favour of your answer. Write down briefly the importance of 3-R policy in solid waste management. (15)
- (c) Mrs. Zaman has made measurements of her household solid wastes as shown in Table below. If the container volume is 0.076 m^3 , what is the average density of the solid waste produced in her household? Assume the mass of each empty container is 3.63 kg. (8)

Date	Container No.	Gross mass* (kg)
March 18	1	7.26
	2	7.72
March 25	1	10.89
	2	7.26
	3	8.17
April 8	1	6.35
	2	8.17
	3	8.62

*Container plus solid waste

6. (a) What is a Septic Tank? Draw a sketch of Septic Tank showing its various components. Discuss the various processes that take place in a septic tank. (15)
- (b) Name the possible options for disposal of septic tank effluent. (3)
- (c) Design a septic tank to serve a house-hold of 8 persons, who produce 90 lpcd of wastewater. The tank is to be desludged in every 4 years. (Assume an average temperature of 20°C and assume any reasonable value for missing data if necessary.) (17)
7. (a) State the low-cost sanitation options for on-site disposal of human waste. What is the basic improvement of Pour Flush latrine compared to Simple Pit and VIP latrines? (8)
What are the limitations of Pour flush latrines?

CE 471/URP

Contd... Q. No. 7

- (b) Design a pit latrine for a family of 6 with maximum possible design life. The family will use pre-cast concrete rings of 1.0 m diameter and 0.3 m depth and a concrete slab to cover it. The soil is unconsolidated/loose and the groundwater is 3.7 m below ground surface and the water availability in the area is very limited. What kind of latrine will be suitable in that area? Design your suggested latrine and draw a neat sketch showing all the elements of the designed latrine. (18)
- (c) What is the working principle of composite toilets? Comment on the applicability of compost toilets in Bangladesh. (9)
8. (a) What is SBS system and what are its basic elements? (20)
Describe the parameters that bring significant changes in the design of SBS system.
Why is self-cleansing velocity not required in SBS system?
- (b) As a planner, what parameters you should consider in selecting the different technological options in a Sanitation Development Programme? Discuss briefly. (10)
- (c) Name and show the various components of a ROEC latrine with a neat sketch. (5)
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Sub : **PLAN 451** (Environmental Planning and Management)

Full Marks: 210

Time : 3 Hours

USE SEPARATE SCRIPTS FOR EACH SECTION

The figures in the margin indicate full marks.

SECTION – AThere are **FOUR** questions in this section. Answer any **THREE**.

Acronyms have their standard meaning.

1. (a) Illustrate Delphi method as less formal environmental impact prediction technique. (10)
- (b) Discuss different types of uncertainty in decision making during prediction stage of EIA. (12)
- (c) Discuss the best known type of quantified matrix with its advantages and disadvantages. (13)

2. (a) "The best solid waste management system is known as 3R" — Explain with reference to Material Flow Analysis. (17)
- (b) Differentiate between Monitoring and Auditing in EIA process. (7)
- (c) What do you know about Environmental Monetary Valuation Techniques? Discuss in short. (11)

3. (a) What is environmental baseline condition? Is environmental baseline condition similar to Zero Alternative condition? Explain. (4+4=8)
- (b) Assume some environmental components affected by a construction/development project of a developer company are air quality, water quality, traffic, housing, soil and geology, flora, fauna, population density, employment etc. Some impacts of particular project action can be positive; others can be negative. Show the overall impact of project actions (both in construction and operation phase) on various environmental components with the help of a suitable impact identification method. (5)
- (c) State the differences between Green Category project and Red Category project according to ECR'97. Amber A and B category projects with examples from ECR'97. (6+4=10)
- (d) Define the methodology of Cost-Benefit Analysis (CBA) as an evaluation approach in EIA process. How can the presentations of CBA results be distinguished between tangible and intangible costs and benefits? What are the differences between Planning Balance Sheet (PBS) and CBA as impact evaluation technique? (4×3=12)

PLAN 451/URP

4. (a) What are the standards and quality indices for measuring air and water pollution? (12)
- (b) Describe the principles considered in SEA process. (10)
- (c) Assume that the existing deer: range land ratio results in 40% of annual plant production being consumed (for environmental quality score; see figure 01). Suppose a highway will be constructed along the area and this development project likely to halve the deer population (because of accident, loss of habitat, disturbance in good habit, etc.). Calculate both the post and pre development score through using Environmental Evaluation System (EES) method and give impact decision (positive or negative) regarding highway project on this particular environmental component (existing deer: range land ratio/browsers and grazers). For importance weighting against study parameter, use following point distribution (figure 02) given by expert panel as a framework for the Batlle EES (1973). (13)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

Provide diagrams where necessary.

5. Write short notes on the followings (any five) (7×7=35)
- (i) Aerodynamic Roughness,
 - (ii) Air turbidity,
 - (iii) Dust Dome and Plume,
 - (iv) Rainwater Harvesting and Climate of the city,
 - (v) Urban Watershed,
 - (vi) Urban Heat Island Effect,
 - (vii) Green Roofs
6. (a) Does urbanization have any impact of the climate of the city? (10)
- (b) What are the factors that lead to such condition? (25)
7. (a) What are the types of hazards in a city? (10)
- (b) Describe any one type of hazards. (25)
8. (a) What is the Eco-city concept? (10)
- (b) What are the ways of promoting alternatives to car ownerships? (10)
- (c) Describe the trade-offs of some of these alternatives. (15)
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PLAN 451

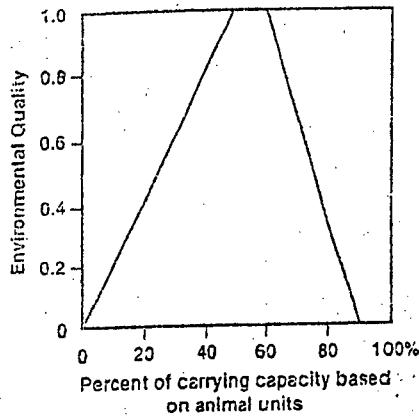


Figure 01: Environmental parameter functions for the EES: deer: rangeland ratios: browsers and grazers.

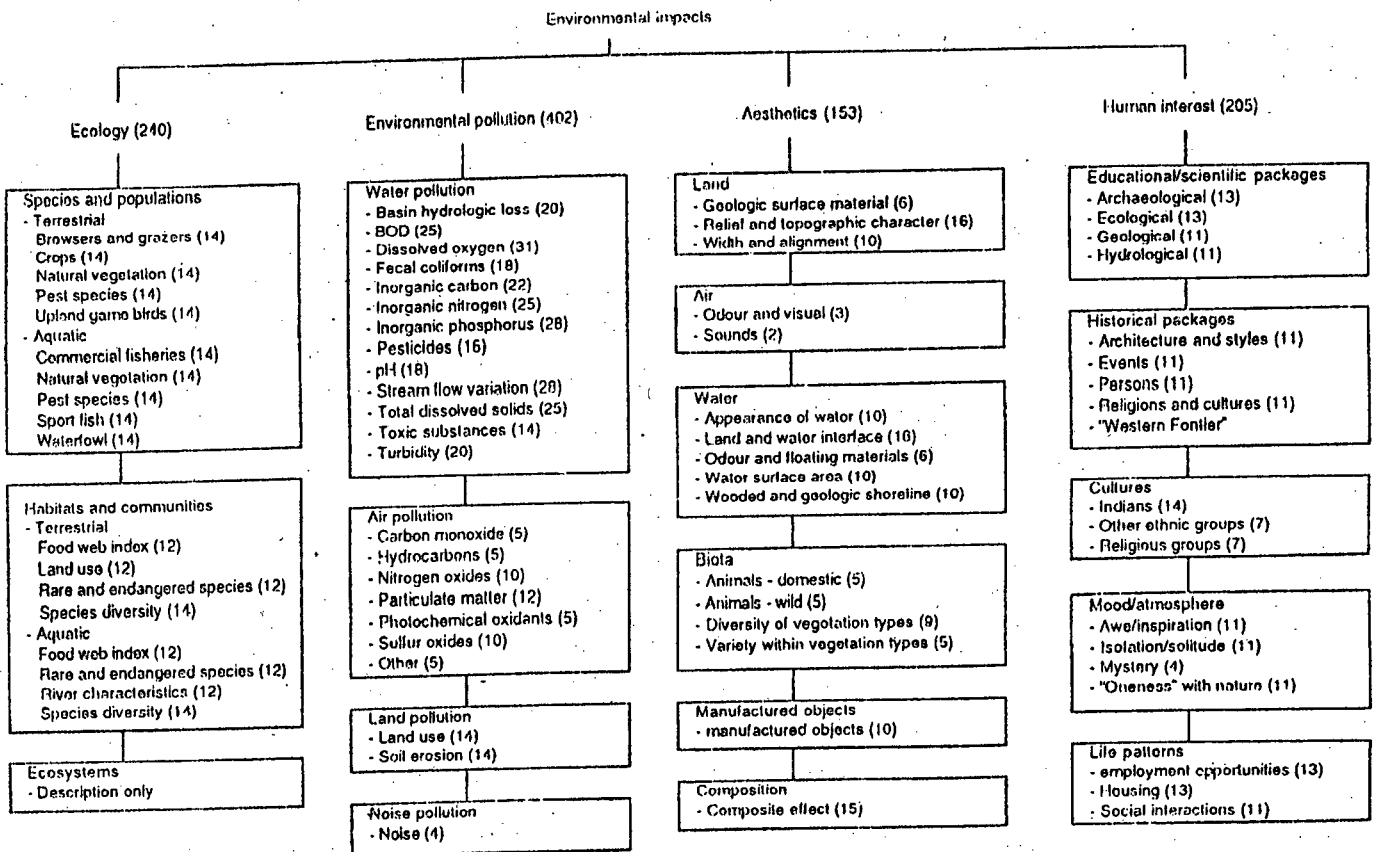


Figure 02: Framework for the Battelle EES. (Source: Dee et al. 1973)

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-4/T-1 BURP Examinations 2012-2013

Sub : **PLAN 403** (Legal Basis of Planning)

Full Marks : 210

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this Section. Answer any **THREE**.

1. (a) According to the Building Construction Act 1952, the government can prepare a code to carry out the purpose of the stated act. What is the name of that code and what are the issues it addressed? (5)

(b) In table 1, if the first column (double of the summation of road width and front open space) is 20 m for the first building and 20 m for the second building (both are type 1 building). According to BNBC 2006, what should be the amount of open space (O) between these two buildings? (20)

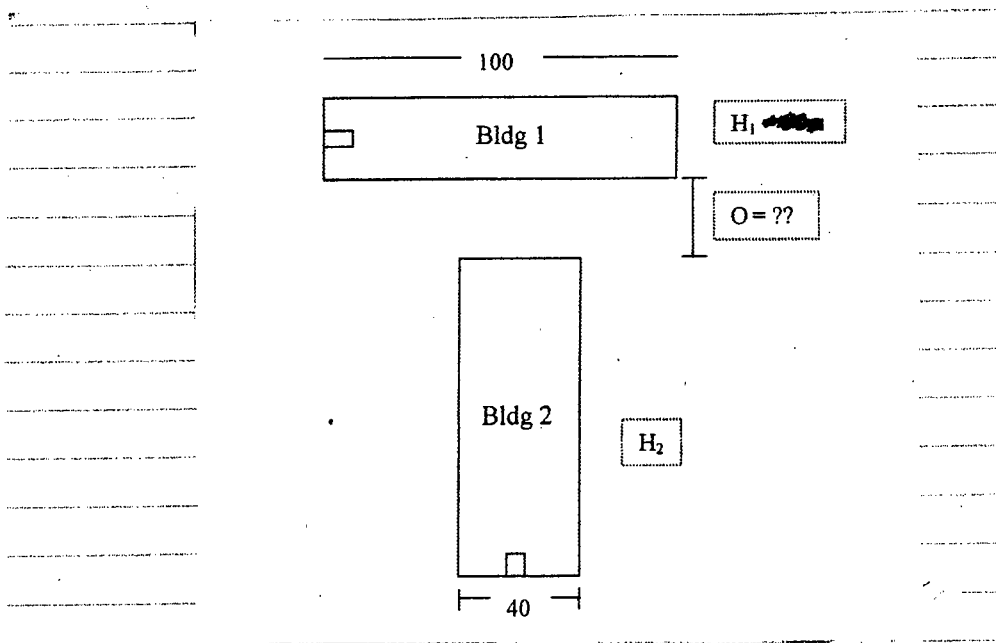


Table 1
Height Limitations Based on Road Width and Front Open Space

2 times (Front Road Width Plus Front Open Space)	Maximum Permissible Height					
	Type 1 pg 3-3		Type 2 pg 3-3		Type 3 pg 3-3	
	No. of storeys	Height (m)	No. of storeys	Height (m)	No. of storeys	Height (m)
Below 10.6 m	3	11	2	8	2	8
10.6 m to below 13.6 m	4	14	3	11	2	8
13.6 m to below 16.6 m	5	17	4	14	3	11
16.6 m to below 19.6 m	6	20	4	14	3	11
19.6 m to below 22.6 m	7	23	4	14	3	11
22.6 m to below 25.6 m	8	26	4	14	3	11
25.6 m to below 28.6 m	9	29	4	14	3	11
28.6 m to below 31.6 m	10	32	4	14	3	11
31.6 m to below 34.6 m	11	36	4	14	3	11
34.6 m to below 37.6 m	12	39	4	14	3	11
37.6 m to below 40.6 m	13	42	4	14	3	11
40.6 m to below 43.6 m	14	45	4	14	3	11
43.6 m to below 46.6 m	15	48	4	14	3	11
and so on in increments of 3 m						

Note:

- For plots with front road width (Sec 1.8.2.5) not less than 23 m, residential and business & mercantile buildings of Type 1 construction shall have no height restriction subject to additional open space requirements (Sec 1.8.2.2).
- The maximum permissible height for Type 2 construction is 4 storeys or 14 m (Sec 1.8.2.3)
- The maximum permissible height for Type 3 construction is 3 storeys or 11 m (Sec 1.8.2.4)

PLAN 403

Contd ... Q. No.1

- (c) Write down the following definitions according to the building construction Rules, 2008 – (10)
- (i) height of building,
 - (ii) Unsafe building,
 - (iii) High rise building,
 - (iv) Ground Coverage,
 - (v) Set back line.
2. (a) How do you think “House Rent Control Act 1991” can help restoring the rights of tenants? (5)
- (b) What conditions are to be fulfilled to develop private residential land according to the “Private Residential and Development Rules 2004”? State the sections (of the stated rule) related to ownership and rehabilitation. (20)
- (c) Differentiate between “Will” and “Heba” to the land Law system of Bangladesh. (10)
3. (a) Name atleast five types of land handover systems where you think mutation is needed. (5)
- (b) According to “Local government Pourashava Act 2009” what are the responsibilities vested on Pourashavas of the country related to water supply and drainage? (15)
- (c) How do you think the Dhaka city corporation ensures public safety according to the “Dhaka City Corporation Ordinance 1983”? (9)
- (d) Write down the definitions according to the local Government Pourashava Act 2009- (6)
- (i) Occupier,
 - (ii) Rural Area,
 - (iii) Urban Area.
4. (a) Prepare a chart stating the policies related to Khas land, fiscal policy, civil society movement and land ceiling in the colonial and post-colonial (Pakistan) era of land laws of Bangladesh. (25)
- (b) What are the rules government can prepare for management and preservation of any park and for regulating the use of the parks according to the “Bengal Public Parks Act 1904”? (10)

PLAN 403

SECTION – B

There are **FOUR** questions in this Section. Answer any **THREE**.

5. (a) Briefly discuss the major phases of development of planning laws particularly in relation to urban development in UK and Europe. (10)
- (b) Discuss ten different concepts of justice by providing examples from the transport sector. (25)
6. (a) “Along with provision for punishment, planning law should also keep provision for incentives for compliance to Uses and users. Plus such law should take account of the situation when people violate or abide by the requirements stated in it” – keeping this in mind discuss how does socio-historical approach to law-making help bottom up and participatory approach of planning? (13)
- (b) Why and how can positivist approach of making and applying law sometimes become counter-production? Explain with example with regard to urban planning and development. (6+6=12)
- (c) The constitution of Bangladesh has declared and acknowledged some fundamental rights for the citizens of Bangladesh. Name ten fundamental rights according to the constitution of Bangladesh. (10)
7. (a) “While interpreting and applying law, including planning law, understanding its intention is as important as its statement or test” – explain. (7)
- (b) What are the ways a section of land developers are violating or evading provisions in Private Residential Land Development Rules, 2004? (6)
- (c) Following documents are to be checked while buying land or checking legality of land ownership: (4+10+4+4=22)
- (i) Deeds,
(ii) Settlement records/Dakhila/Porcha,
(iii) Mutation and separation Receipt (Namjari and Khatian),
(iv) Clearing record.
- Explain all the documents.
8. (a) Discuss the spirit and merit (with respect to Fundamental Human Rights and Fundamental Rights of Citizen declared by the Constitution of Bangladesh) based on which public interest litigation are suit in the court. Also put relevant examples in each case. (15)
- (b) Metropolitan Development Plan (i.e. DMDP) and Detailed Area Plan (i.e. DAP) for Dhaka are violated both at individual level and area/space level. Explain how? (12)
- (c) Why is strong political will essential for the application of planning laws execution of plans and planned development of a city? (8)
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