

**Project and Infrastructure Finance**  
**Subject code: DM-513/IB - 505**  
**Trimester – V, End-Term Examination, Dec. 2015**  
**PGDM and PGDM (IB) 2014-16)**

Time allowed: 2-1/2 Hours

Max Marks: 50

Roll No: \_\_\_\_\_

**Instruction:** Students are required to write Roll No on every page of the question paper, writing anything except the Roll No will be treated as **Unfair Means**. In case of rough work please use answer sheet.

Sections	No. of Questions to attempt	Marks	Marks
A	3 out of 5 (Short Questions)	5 Marks each	3*5 = 15
B	2 out of 3 (Long Questions)	10 Marks each	2*10 = 20
C	Compulsory Case Study	15 Marks	15
		<b>Total Marks</b>	<b>50</b>

**SECTION – A**

A.1 What are the limitations of discounted cash flow analysis approach in project finance deals?

A.2 Identify the major project participants and their roles in a project finance deals.

A.3 The scientists at Vigyanik have come up with an electric moped. The firm is ready for pilot production and test marketing. This will cost Rs.20 million and take six months. Management believes that there is a 70 percent chance that the pilot production and test marketing will be successful. In case of success, Vigyanik can build a plant costing Rs.150 million. The plant will generate an annual cash inflow of Rs.30 million for 20 years if the demand is high or an annual cash inflow of Rs.20 million if the demand is moderate. High demand has a probability of 0.6; Moderate demand has a probability of 0.4. Substantiate that the technique of Decision tree Analysis is useful in such situation.

A.4 Draw a typical project structure of an independent power plant.

A.5 In project and infrastructure finance deal, lenders prefer that the SPV enters into an EPC contract. The contractor and the project vehicle allocate risks based on standard risk mitigating principles. Both the participants have a vested interest to ensure that the project completion occurs on time. Elaborate standard risk management approach in such EPC contract.

**SECTION – B**

B.1 Explain the roles/uses of financial model during 5 distinct phases in project life.

B. 2 Energy price is tied to electricity produced during a particular period. The IPP is paid energy price only if it generates electricity. Under certain circumstances, energy price is essentially a pass-through, equal to cost of electricity generated.

- a. Energy price comprises the following components:
- b. Variable O&M expenses
- c. Fuel cost.

Assume for this purpose a 10 MW gas-fired power plant costing US\$ 8 million. The sponsor(s) is planning to finance 80% of the project cost (i.e., US\$6.4 million) from debt (with a 9.5% annual interest rate from Bank) and the rest (i.e., US\$1.6 million) from equity. We should ignore the construction period and assume 12 years of financing, including a two-year grace period for principal effective up to two years after commissioning. Other assumptions regarding the proposed power plant are as follows:

- I. PPA term 15 years
- II. Plant load factor 85% per year
- III. Fuel price (subsidized) US\$1.15 /GJ (gigajoule)
- IV. Heat rate 7,500 kJ/kWh
- V. Fixed O&M rate US\$ 53,000/MW
- VI. Variable O&M rate US\$0.0013/kWh/year
- VII. The sponsor(s) is planning to obtain a 20% IRR.

Compute the power tariff in US cent per kilowatt hour of power generation

B.3 Infrastructure projects, given their long life, require long term financing. What are the main sources of long term financings in India? Explain the steps taken by the government to enhance the flow of long term financing for infrastructure projects.

### SECTION – C

Contracting Cars recently introduced a new product line and built two assembly plants in the United States. Now it appears that a Chinese automaker is going to introduce a similar line of cars in the U.S. market at a 30% cheaper cost. Contracting Cars is contemplating scaling down its operations by either selling or outsourcing one of the two plants to gain efficiencies through consolidation within the next five years. It frames an option to contract the size of its current operation by a factor of two and gain \$250 million in savings because of lower general overhead expenses. Using the traditional DCF analysis and appropriate risk-adjusted discount rate, the present value of the future free cash flows of both plants is \$600 million. The annual volatility of the logarithmic returns on the future cash flows is estimated to be 35%, and the continuous annual risk-free interest rate is 5% over the option life. Carry out Real Option Analysis based on the binomial methods. What is the probability of survival of the project? What is the impact on ROV if volatility increases to 45%?