

## Insolvency and Bankruptcy Board of India

28<sup>th</sup> February 2020

### Subject: Syllabus of Valuation Examination for Asset Class- Plant and Machinery with effect from 1<sup>st</sup> June 2020

In pursuance of the rule 5 (3) of the Companies (Registered Valuers and Valuation) Rules, 2017, the Insolvency and Bankruptcy Board of India, being the Authority, hereby publishes the syllabus, format and frequency of the 'Valuation Examination' for the asset class: **Plant and Machinery** to be commenced from 1<sup>st</sup> June 2020.

#### I. Syllabus

Sl. No.	Coverage	Weight (%)
1.	<b>Principles of Economics - Microeconomics</b> <ul style="list-style-type: none"><li>- Consumption: Indifference curve, consumer surplus, elasticity</li><li>- Price mechanism: determinants of price mechanism; individual and market demand schedules; conditions, exceptions and limitations of law of demand; individual and market supply schedules; conditions and limitations of law of supply; highest, lowest and equilibrium price; importance of time element</li><li>- Pricing of products under different market conditions: perfect and imperfect competition, monopoly etc.</li><li>- Factors of production and their pricing: land, labour, capital, entrepreneur and other factors</li><li>- Theory of rent</li><li>- Capital and interest: types of capital, gross interest, net interest</li><li>Organisation and profit: functions of entrepreneur; meaning of profit and theories of profit</li></ul>	3
	<b>Macroeconomics</b> <ul style="list-style-type: none"><li>- Functions and role of money</li><li>- Inflation: types of inflation; causes and effects of inflation; Inflationary gap</li><li>- Control of inflation: monetary, fiscal and direct measures</li><li>- Deflation: causes and effects of deflation; deflationary gap; measures to control deflation; deficit financing</li><li>- Savings and investment: savings and types of savings; determinants of savings; investment and types of investment; determinants of investment; relationship between savings and investment</li><li>- Components of economy: primary sector, secondary sector, tertiary sector; informal sector in urban economy; parasitic components in urban economy</li><li>- Concepts of gross domestic product and gross national product; capital formation etc.</li></ul>	3
	<b>Parallel Economy</b> <ul style="list-style-type: none"><li>- Definition of parallel economy; causes of parallel economy and effects on use of land and its valuation</li><li>Impact on real estate market and construction industry</li></ul>	1

Sl. No.	Coverage	Weight (%)
2.	<p><b>Book-keeping and Accountancy</b></p> <ul style="list-style-type: none"> <li>- Meaning and objects of book-keeping; double entry book-keeping</li> <li>- Books of prime entry and subsidiary books: cash book, bank book, journal, ledger, purchase and sale books, debit and credit notes register; writing of books; posting and closing of accounts</li> <li>- Trading account; profit and loss account; income and expenditure account</li> <li>- Preliminary analysis of financial statements</li> <li>- Cost and costing; elements of cost - fixed expenses, variable expenses, break-even point</li> </ul>	3
3.	<p><b>Law - General</b></p> <ul style="list-style-type: none"> <li>- Indian legal system: salient features of the Indian Constitution, fundamental rights, directive principles of state policy</li> <li>- Government: executive, legislature and judiciary</li> <li>- Laws of contract: formation of a contract, parties, void, voidable and unenforceable contract, contingent contract, misrepresentation, fraud and effect thereof, termination of contract, remedies for breach, performance of contract, indemnity and guarantee, law of agency</li> <li>- Tort: general principles of tort, tort affecting valuation</li> <li>- Law of arbitration and conciliation: salient features</li> <li>- Auction: authority of auctioneer, duties of vendor, purchaser and public, mis-description and misrepresentation, advertisements, particulars and catalogues, statements on the rostrum, conduct of sale, reservation of price, right to bid, bidding agreements, memorandum of the sale, deposit, rights of auctioneer against vendor and purchaser</li> <li>- Laws of evidence: burden of proof, presumptions, conclusive proof</li> </ul>	7
	<ul style="list-style-type: none"> <li>- Salient features of the Insolvency and Bankruptcy Code, 2016 concerning valuation</li> <li>- The Companies Act, 2013: Section 192(2), 230 (1), 230 (2), 230 (3), 231, 232, 247 and 281(1)</li> <li>- Salient features of the Companies (Registered Valuers and Valuation) Rules, 2017</li> <li>- Salient features of the Securitization and Reconstruction of the Financial Assets and Enforcement of Security Interest Act, 2002 (SARFAESI Act, 2002) concerning valuation</li> <li>- Section 5(n) of the Banking Regulation Act, 1949 on “secured loan or advance”</li> </ul>	3
4.	<p><b>Introduction to Statistics</b></p> <ul style="list-style-type: none"> <li>- Data classifications and processing, graphical representation of data, frequency distributions</li> <li>- Measures of central tendency, dispersion and skewness</li> <li>- Elementary theory of probability and probability distributions, sampling and sampling distributions</li> <li>- Simple test of significance, regression and correlation, multiple correlation coefficient</li> <li>- Time series</li> <li>- Index numbers</li> </ul>	2

Sl. No.	Coverage	Weight (%)
5.	<p><b>Environmental Issues in Valuation</b></p> <ul style="list-style-type: none"> <li>- Environment and valuation - differences between the market price and the negative value consequent on environmental impact</li> <li>- Environmental issues of air pollution, water pollution, environmental factors and their effects, measures to restore the damage, cost to cure</li> <li>- Outlines of environmental legislations: the Indian Forest Act, 1927, the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986</li> <li>- Laws related to industrial health and safety</li> </ul>	3
6.	<p><b>Professional/Business Ethics and Standards</b></p> <ul style="list-style-type: none"> <li>- Model code of conduct under the Companies (Registered Valuers and Valuation) Rules, 2017: professional competence and due care, independence and disclosure of interest, confidentiality, information management, gifts and hospitality</li> <li>- Integrity and fairness, remuneration and costs, occupation, employability and restrictions, business ethics</li> <li>- Ethical considerations under terms of engagements: engagement letter, management representation, guidance on use of work of experts, independence and conflict of interest, quality review process of valuers, rights and responsibilities of valuers</li> </ul>	4
7.	<p><b>Valuation of Plant and Machinery</b></p> <ul style="list-style-type: none"> <li>- Role, functions and responsibilities of a plant and machinery valuer</li> <li>- Cost, price, value and valuation</li> <li>- Types of market</li> <li>- Annuities; capitalisation and rate of capitalisation; years purchase; sinking fund; redemption of capital; reversionary value</li> <li>- Construction and use of valuation tables</li> <li>- Definitions of the various terms: plant, machinery, furniture, fixtures, fittings - judicial interpretation of these terms; market value, highest and best use value</li> <li>- Basis of valuation: value in use, value in exchange, value to the buyer, value to the seller, value to the occupier, value in existing use in-situ/ex-situ, value in alternative use in in-situ/ex-situ, liquidation value in-situ/ex-situ, orderly liquidation value, forced sale value</li> <li>- Characteristics and approaches to value investment property, marketable non-investment property and non-marketable non-investment property</li> <li>- Factors having direct bearing on value (valuation maxims) like physical, legal, social, economic, utility, marketability, transferability, scarcity; present worth of future benefits; intangible rights</li> </ul>	6
	<p><b>Identification and Physical Verification of Plant, Machinery and Equipment (PME)</b></p> <ul style="list-style-type: none"> <li>- Inventory (listing of machinery) and data to be collected while taking inventory</li> <li>- Importance of technical specifications of PME in valuation exercise</li> <li>- Assessment of condition of PME based on visual inspection</li> </ul>	2

Sl. No.	Coverage	Weight (%)
	<ul style="list-style-type: none"> <li>- Comparing inventory with plant and machinery records maintained by the company</li> <li>- Ascertaining discrepancy</li> <li>- Identification of productive, non-productive, surplus and off-balance sheet assets</li> <li>- Age, effective age, total economic life, economic balance life, physical life and their importance in valuation</li> <li>- Factors affecting life, both in terms of years or hours of use, depending on type of assets and maintenance</li> <li>- Definition and distinction of the terms - historical cost, acquisition cost, book cost, written down value and net book value</li> <li>- Items in the nature of buildings to be treated as plant and machinery-like chimneys to the boiler, brick, concrete or RCC foundation for plant and machinery, Water and Sewerage installations, Effluent treatment plant etc.</li> </ul>	
	<ul style="list-style-type: none"> <li>- Depreciation under the Income Tax Act, 1961 as well as the Companies Act, 2013</li> <li>- Useful lives to compute depreciation as per Schedule II of the Companies Act, 2013</li> <li>- Factors to be considered for componentization of asset</li> <li>- Installed capacity of the plant and actual production; raw material availability and level of technology used such as current or obsolete, issues if any regards to these</li> <li>- Part, fraction and whole valuation</li> <li>- Relationship of earnings and assets</li> <li>- Difference between business specific economic viability and economic obsolescence</li> <li>- Efficiency of plant layout, imbalances in different production sections and their relevance in valuation</li> </ul>	3
	<p><b>Cost Approach</b></p> <ul style="list-style-type: none"> <li>- Reproduction cost new; replacement cost new; depreciated reproduction cost/depreciated replacement cost (DRC); Difference and similarity in DRC and market value</li> <li>- Difference between reproduction cost new and replacement cost new</li> <li>- Methods of computation of reproduction cost new</li> <li>- Market inquiry of current cost of brand: new machine with identical specifications from same manufacturer i.e. replica indexation and its limitations; cost to capacity method and its limitation</li> <li>- Methods of computation of replacement cost new when identical machine/plant is not available and factors to be taken into consideration.</li> <li>- Direct and indirect costs for estimation of reproduction new /replacement cost new</li> <li>- Meaning of the term depreciation for wear and tear; Factors influencing depreciation, its measurements and application by valuers</li> <li>- Salvage value and scrap value along with the basis of the same</li> <li>- Methods of depreciation: observed deterioration; straight line; diminishing balance (written down value)</li> </ul>	5

Sl. No.	Coverage	Weight (%)
	<ul style="list-style-type: none"> <li>- Difference between accounting and technical depreciation</li> <li>- Factors to be taken into consideration for selection of depreciation method</li> <li>- Obsolescence: technological, functional and economic</li> <li>- DRC subject to potential profitability</li> <li>- Limitations of cost approach</li> </ul>	
	<p><b>Market Approach- Sales comparison method</b></p> <ul style="list-style-type: none"> <li>- Data collection</li> <li>- Elements of comparability and application of appropriate weights to identified comparable to estimate value of subject asset.</li> <li>- Instances when sales comparison method is not feasible and limitations of sales comparison method</li> </ul>	2
	<p><b>Income Approach</b></p> <ul style="list-style-type: none"> <li>- Concept of income approach</li> <li>- Gross income-outgoings; net income and years purchase</li> <li>- Actual income Vs potential income</li> <li>- Terminal income</li> <li>- Remunerative and accumulative rates of interest and various methods of determining the same</li> <li>- Capitalization of earnings method</li> <li>- Discounted future earnings method (Discounted cash flow- DCF technique)</li> <li>- Pitfalls of DCF technique</li> </ul>	2
	<p><b>Process of Valuation</b></p> <ul style="list-style-type: none"> <li>- Check list for valuation of plant and machinery; documents to be studied prior to plant visit/inspection; ABC analysis</li> <li>- Items to be treated as plant and machinery</li> <li>- Items to be treated as land and buildings</li> <li>- Physical verification (survey and inspection)</li> <li>- Data collection and valuation analysis for replacement cost new Method (cost approach)</li> </ul>	3
	<p><b>Broad categories of machines</b></p> <ul style="list-style-type: none"> <li>- Valuation of a machine for which current cost of identical brand-new machine is available</li> <li>- Valuation of a machine for which current cost of identical brand-new machine is not available</li> <li>- Valuation of a machine which is no longer manufactured</li> <li>- Reasons for difference in price of machines with same technical specifications and features by different manufacturers</li> <li>- Factors to be considered while adopting cost approach</li> <li>- Data collection and valuation analysis under: cost, market and income approaches</li> </ul>	2
	<p><b>Leasing of plant and machinery</b></p> <ul style="list-style-type: none"> <li>- Definition of lease</li> <li>- Leasing, Hiring and Renting</li> </ul>	2

Sl. No.	Coverage	Weight (%)
	<ul style="list-style-type: none"> <li>- Obligations of supplier of asset, user of asset, hire purchase company/lessor in cases of loan; supplier's credit; hire purchase and leasing</li> <li>- Leasing as an instance of bailment; nature of the bailment agreement; features of bailment; contracts law on bailment.</li> <li>- Leasing rules</li> <li>- Types of leases and their characteristics</li> <li>- Structure of a lease agreement and steps in structuring a lease contract</li> <li>- Leasing from point of view of lessor/lessee</li> <li>- Limitations of leasing</li> <li>- Treatment of leased assets in company accounts – accounting practice for leased plant and machinery as per Indian Accounting Standards</li> <li>- Assessment of lease related risk</li> <li>- Risk and return trade-off</li> <li>- Valuation of leased plant and machinery</li> </ul>	
	<p><b>Valuation of plant and machinery for following purposes</b></p> <ul style="list-style-type: none"> <li>- Mergers and Acquisitions (including purchase price allocation)</li> <li>- Financial statements</li> <li>- Impairment</li> <li>- Auction</li> <li>- Insurance</li> <li>- Leasing</li> <li>- Disposal</li> <li>- Capital raising</li> <li>- Corporatization and privatization</li> <li>- Stamp duty</li> <li>- Any other purpose</li> <li>- Valuation Standards as per the provisions of the Companies Act, 2013</li> <li>- Indian Accounting Standards (Ind AS 16, Ind AS 36, Ind AS 105, Ind AS 113, Ind AS 116) as applicable to valuation</li> <li>- Valuer as an expert witness in Court</li> <li>- Valuers' functions and responsibilities, error of judgement and professional negligence</li> </ul>	6
	<p><b>Case laws</b></p> <ul style="list-style-type: none"> <li>- Holland Vs. Hodgson (1872) L.R.7 C.P.328 at 335 (Australia)</li> <li>- Duncan Industries Ltd. Vs. State of U.P. and Other AIR 2000 SC 355</li> <li>- Westinghouse Elect. Corporation 93 NC App. 710, 379 S.E.2D 37(1989) (U.S.A)</li> <li>- Sirpur Paper Mills Pvt. Ltd. Vs. The Collector of the Central Excise, Hyderabad AIR (1998) 1 SCC 400: (1998 AIR SCW 366: AIR 1998 SC 1489)</li> <li>- Official Liquidator Vs. Sri Krishna Deo and Ors. (AIR 1959 All 247)</li> <li>- Symex Holdings Ltd. Vs. Commissioner of State Revenue, Supreme Court of Victoria, Australia-(2007) VSC 159</li> </ul>	1
8.	<p><b>Law - Plant and Machinery</b></p> <ul style="list-style-type: none"> <li>- Sale of goods and agreements to sell; seller's obligations as to delivery time, title, description, fitness, quality and quantity; exclusion of</li> </ul>	3

Sl. No.	Coverage	Weight (%)
	obligations; sales by sample; passing of property in goods; transfer of title by non-owner; breach of contract and remedies; rights of unpaid seller against goods - Licensing of Industries and regulation of industrial activities under various industrial licensing laws etc - Salient features of various acts such as the Factory Act, 1948, the Electricity Act, 2003, Labour laws with regards to regulatory measures for industrial undertakings	
9.	<b>Principles of Insurance and Loss Assessment</b> - Principles and legal concepts in relation to insurance of Plant and Machinery; contract of insurance; insurable interests; liability to insure; duties of the insurer and the insured - Types of fire policies; reinstatement value, indemnity policies and policies for other perils; terms and conditions; perils, beneficial and restrictive clauses - Value at risk, sum insured and condition of average, over and under insurance; provisions regarding inflation, depreciation, obsolescence and betterment; other provisions - Preparation of claim for damages due to insured perils - Obligations and rights of insurer and insured	3
10.	<b>Machine Tools, Factory, Utility Equipment and Electrical Installations</b> - Machine Tools: milling, turning, cutting, drilling and threading, grinding, shaping, casting, plastic deforming, powder forming, sheet metal, welding, fabrication - Factory equipment: material handling and fire protection - Utility equipment for energy generation, energy consuming devices, for energy utilisation - Electrical installations	2
11.	<b>Industrial Processes</b> - Factory planning and layout: types of plant layout; production techniques; automation; mass production, batch and one-off production - Principles of industrial processes: material flow, process sequences, automation and process control - Industrial processes: Normal processes, Methods of manufacture, Plant and machinery utilised, Flow diagrams and Inventory compilation for the following specific industries: Iron, Steel, Non-ferrous metal Production, Power, Cement, Petro-chemicals, Chemical and Pharmaceutical, Plastic and Rubber, Paper and paper Products, Printing, Binding and Publishing, Textiles, Dairy, Vegetable Oil, Food and Drink - Nature and function of trade specific machinery in the above industries	6
12.	<b>Report writing</b> - Reports: Quality, Structure, Style - Report writing for various purposes of valuation: sale, purchase, purchase, mortgage, taxation, insurance, liquidation etc	3

Sl. No.	Coverage	Weight (%)
	- Contents of the report: instructions (including basis of valuation) received from the clients showing scope of work; date as on which valuation is made and date of report; site inspection; purpose of valuation; location of assets; valuation definition considered; approach/method of valuation; procedure adopted; summary of valuation; assumptions and limiting conditions including caveats; schedule of plant and machinery with make, model, description, year, condition, values	
13.	<b>Case Study</b> Two case studies on valuation of plant and machinery: - One case study with six 2 - mark questions for 12 marks - One case study with four 2 - mark questions for 8 marks (This section will have case studies for application of valuation techniques. For each case there will be a comprehension narrating the transaction based on which questions will be asked from the case.)	20
	<b>Total</b>	<b>100</b>

Note: Wherever any Law, Act of Parliament or any Rule/Regulation is referred in the syllabus, the same shall be taken as updated as on 29<sup>th</sup> February 2020.

## II. Format and Frequency of Examination

- a. The examination is conducted online (computer-based in a proctored environment) with objective multiple-choice questions;
- b. The examination centres are available at various locations across the country;
- c. The examination is available on every working day;
- d. A candidate may choose the time, the date and the Examination Centre of his choice for taking the Examination. For this purpose, he needs to enrol and register at <https://certifications.nism.ac.in/nismaol/>;
- e. A fee of Rs.1500 (One thousand five hundred rupees) is applicable on every enrolment;
- f. The duration of the examination is 2 hours;
- g. A candidate is required to answer all questions;
- h. A wrong answer attracts a negative mark of 25% of the marks assigned for the question;
- i. A candidate needs to secure 60 % of marks for passing;
- j. A successful candidate is awarded a certificate by the Authority;
- k. A candidate is issued a temporary mark sheet on submission of answer paper;
- l. No workbook or study material is allowed or provided;
- m. No electronic devices including mobile phones and smart watches are allowed; and
- n. Use of only a non-memory-based calculator is permitted. Scientific Calculators (memory based or otherwise) are not allowed.

Further details of the Examination, if any, will be provided subsequently.

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