

## Model Question Paper

### Project & Operations Management (SMB110)

· Answer all 100 questions.

· Each question carries one mark.

1. Project management has derived most of its knowledge from other management disciplines and has evolved as a

specialized science over a period of time. Which of the following disciplines involves in identifying resources such as raw materials, equipment and services required for the project, preparing a list of suppliers and negotiating with them for procuring the material and managing the transportation system?

- (a) Finance management
- (b) Personnel management
- (c) Operations management
- (d) Purchase and logistics management
- (e) Marketing management.

2. Which of the following methods of project selection model enables the project manager to rank all the projects based on a set of predetermined attributes, ignoring the attributes that do not differentiate the project alternatives?

- (a) Weighted factor scoring model
- (b) Iterative rating method
- (c) Profitability index
- (d) Unweighted 0 – 1 factor model
- (e) Unweighted factor scoring model.

3. The project manager collects data from primary sources and secondary sources. Which of the following is **not** an

external source of collecting primary data?

- (a) Past and current sales of the firm
- (b) Feedback of the sales personnel
- (c) Opinions of the dealers
- (d) Sales trends
- (e) Survey.

4. Mr.Ronny wants to set up a sugar factory in his home town. He prepared a project proposal and approached Syndicate Bank for a loan. He was asked by the bank to submit the details pertaining to the location, land and site development, raw materials, manpower requirement, schedule of implementation etc., in order to decide on the proposal. Which of the following analyses was being carried out by the bank in order to grant the loan to Mr.Ronny?

- (a) Market Analysis
- (b) Economic Analysis
- (c) Technical Analysis
- (d) Financial Analysis
- (e) Management Analysis.

5. A questionnaire is a formalized set of questions for generating information. Classification questions are one of the

types of questions in the questionnaire. Which of the following is/are **true** about classification questions?

I. These questions are about the present project and its products.

II. These questions are about the respondent's characteristics, socio-demographic and behavioral information.

III. These questions should be carefully sequenced so as to be understood by all segments of target customers.

IV. These include respondent identification, interviewer identification, date and place of interview etc.

- (a) Only (II) above
- (b) Only (IV) above
- (c) Both (I) and (II) above
- (d) Both (III) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

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6. Which of the following forecasting techniques is used for estimating the demand for a particular good or service

on the basis of income and price elasticities of demand?

- (a) Chain ratio technique

- (b) End use technique
- (c) Leading indicator technique
- (d) Econometric technique
- (e) Consumption level technique.

7. Mr. Greg obtained a loan on 12% interest per annum and invested it on a project. He is expected to receive an income of Rs.1,762 at the end of 5 years. The present value of his expected income is

- (a) Rs. 800
- (b) Rs. 892
- (c) Rs. 976
- (d) Rs.1,000
- (e) Rs.1,076.

8. Different sales promotion techniques are used by project managers for increasing sales of the product after considering the characteristics of the market, nature of product and the distribution channel. Which of the following are the techniques?

I. Discounts.

II. Free gifts.

III. Sponsoring events.

IV. Coupons.

- (a) Both (I) and (II) above
- (b) Both (II) and (III) above
- (c) (I), (II) and (III) above
- (d) (I), (II) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

9. Which of the following is **not** a characteristic of the tasks that qualify to be projects?

- (a) Unique activities
- (b) Attainment of a specific goal
- (c) Internationalization
- (d) Specified time
- (e) Sequence of activities.

10. Which of the following techniques is used for assigning weights to each factor in weighted factor scoring model?

- (a) Attribute listing method
- (b) Checklist method
- (c) Black box method
- (d) Brainstorming technique
- (e) Nominal group technique.

11. The source of finance in which the supplier demands a bank guarantee equivalent to the value of machinery is

referred to as

- (a) Share capital
- (b) Deferred credit
- (c) Term loans
- (d) Supplier credit
- (e) Purchase credit.

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12. Conducting a market and demand analysis involves a series of activities. Which of the following is **false** with respect to situational analysis and objectives specification activity of market and demand analysis?

- (a) Situational analysis helps the project manager in studying customer preferences and their purchasing capacity
- (b) This activity helps in studying strategies of the competing firms and intermediaries
- (c) It involves in-depth study of all technical aspects related to basic manufacturing operations, detailed design, assembling, modeling and prototype testing
- (d) In the process of performing this activity, the project manager interacts with the project stakeholders
- (e) The questions required for the survey to elicit responses from the various project stakeholders are to be framed after clear statement of the objectives.

13. One of the important responsibilities of the project manager includes identifying the constraints influencing a project. Which of the following is **false** with respect to the common constraints influencing a project?

- (a) Project costs are costs associated with all the activities in the planning and implementation phases
- (b) Time, one of the important resources available to a project manager, is directly related to the cost of the

project

- (c) Resources include not only the physical and information resources but also the people and finances
- (d) Scope of a project describes the quality standards to be maintained in the project
- (e) A comprehensive quality management system ensures effective utilization of scarce resources to achieve the project objective.

**14.** Which of the following related to effective demand for a product or service is **false**?

- (a) In a perfect market, the effective demand for a particular product and its apparent consumption are same
- (b) Apparent consumption is calculated as the sum of production and trade surplus/deficit minus changes in stock level
- (c) Apparent consumption considers only the willingness and ability of the buyers
- (d) Effective demand is less than apparent consumption due to government controls over production and distribution
- (e) Effective demand considers the desirability of the buyers.

**15.** Which of the following characteristics of project selection models states that the model should explicitly state the

objectives of the project manager and the firm in selecting a particular project?

- (a) Realism
- (b) Flexibility
- (c) Ease of use
- (d) Capability
- (e) Cost.

**16.** Which of the following means of financing a project is raised by allotment of shares and through retention of earnings?

- (a) Preference capital
- (b) Debentures
- (c) Term loans
- (d) Equity capital
- (e) Trade credit.

**17.** For the purpose of scanning the environment, the whole business environment can be divided into various sectors.

In which of the following sectors does the project manager observe the trends of the income and consumption patterns of the target customers to assess the viability of new project ideas?

- (a) Economic sector
- (b) Governmental sector
- (c) Technological sector
- (d) Socio-demographic sector
- (e) Competition.

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**18.** Which of the following is a group creativity technique that is administered by a coordinator who notes down all

the ideas generated, including the positive and negative arguments of each idea, for future use?

- (a) Attribute listing method
- (b) Checklist method
- (c) Black box technique
- (d) Brainstorming technique
- (e) Nominal group technique.

**19.** Various kinds of market surveys are conducted for obtaining primary data. The survey whose results are more

reliable than sample survey, but the conduct of which is more expensive is referred to as

- (a) Census surveys
- (b) Opinion surveys
- (c) Attitude surveys
- (d) Information surveys
- (e) Future invention surveys.

**20.** Madura Inc. bought an equipment for Rs.15,000. The annual cash inflow from this equipment would be Rs.5,500

for 5 years. After five years, the equipment can be sold for Rs.2,000. In this context, the Average Rate of Return (ARR) from this equipment will be

- (a) 15.21%

- (b) 17.23%
- (c) 18.36%
- (d) 19.33%
- (e) 21.54%.

**21.** In which of the following steps of project deliverables does the project manager inform the client of his capabilities, his schedules and fees for undertaking the project?

- (a) Definition
- (b) Request
- (c) Clarification
- (d) Response
- (e) Agreement.

**22.** The Project Overview Statement (POS) first identifies the reasons for undertaking a project, and then proceeds to identify the project's goal. Which of the following parts of POS specify(ies) the exact boundaries of the project goal?

- (a) Project Problem/Opportunity
- (b) Project Goal
- (c) Project Objectives
- (d) Success Criteria
- (e) Assumptions, Risks and Obstacles.

**23.** Design modifications, increased plant capacity and newly framed statutory requirements of the government are the reasons for

- (a) Time overruns
- (b) Unforeseen contingencies
- (c) Scope changes
- (d) Rectifications and replacements
- (e) Cost overruns.

**24.** Which of the following aspects is **not true** regarding Work Breakdown Structure (WBS)?

- (a) Each lower activity should satisfy the test of completeness
- (b) An activity at level n is said to be completed when its decomposed activities at level n+1 are completed
- (c) It ensures that the project includes no unnecessary activities
- (d) Project goal statement is shown as a level 1 activity
- (e) The decomposition process makes easy for the project manager to estimate the resources required.

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**25.** Kalpana Project Works is required to produce an innovative moulding machine. All the features that are to be added to the machine are designed, built, tested and then implemented. Which of the following approaches is followed by the company for defining deliverables in the Work Breakdown Structure (WBS)?

- (a) Noun-type approaches
- (b) Verb-type approaches
- (c) Geographical approach
- (d) Departmental approach
- (e) Business functional approach.

**26.** For a project activity, the normal cost is Rs.1,500, normal time is 13 weeks, crash cost is Rs.2,100 and crash time

is 11 weeks. The crash slope of the activity is

- (a) 11 weeks
- (b) 12 weeks
- (c) Rs.150
- (d) 13 weeks
- (e) Rs.300.

**27.** Which of the following is **false** regarding the critical path method of network analysis?

- (a) The project manager identifies the critical activities of the project
- (b) Any delay in the critical activity results in the delay in the entire project
- (c) The series of the critical activities is called the 'critical path' of the project
- (d) The critical path of the project is the shortest path through the network
- (e) The length of the critical path gives the shortest allowable time for the completion of the project.

**28.** The minimum time within which an activity can be completed is referred to as

- (a) Optimistic time

- (b) Pessimistic time
- (c) Most likely time
- (d) Expected time
- (e) Earliest start time.

**29.** Calculate the completion time of a project from the given information.

Activity Duration

(Days)

1 – 2 20

1 – 3 25

2 – 3 10

2 – 4 12

3 – 4 5

4 – 5 10

(a) 45 days

(b) 42 days

(c) 40 days

(d) 37 days

(e) 35 days.

**30.** Which of the following project stages concentrates on carrying out status reviews, design reviews and process reviews?

- (a) Initial stages of the project life cycle
- (b) Planning stage of the project life cycle
- (c) Implementation phase of the project
- (d) Project completion stage
- (e) Auditing phase of the project.

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**31.** Depending upon the degree of detail and the frequency of reporting, project status reports can be classified into five categories, spotlight report being one of these categories. The spotlight reports use different color stickers to indicate the progress of project to the senior management. Which of the following stickers is/are used by the said report?

I. Green color stickers.

II. Orange color stickers.

III. Red color stickers.

(a) Only (I) above

(b) Only (II) above

(c) Only (III) above

(d) Both (I) and (III) above

(e) Both (II) and (III) above.

**32.** Some managers prefer complex and custom made formats of audit reports for their projects. However it is always

better to have a simple and straight forward structure. Which of the following parts of audit report provides information about the tasks that have been completed with the resources that have been spent to achieve the task?

(a) Introduction

(b) Risk analysis

(c) Present project status

(d) Limitations and assumptions

(e) Critical management issues.

**33.** Under the conditions of uncertainty, which of the following criteria is used by the project manager to identify the minimum payoff values for each strategy and to adopt the strategy that has the highest payoff value?

(a) Maximax criterion

(b) Maximin criterion

(c) Minimax regret criterion

(d) Minimin criterion

(e) Criterion of realism.

**34.** Which of the following aspects is **not true** regarding Total Quality Management (TQM)?

(a) TQM is not a tool or a product, but is a philosophy

- (b) According to the concept, there are two categories of customers, viz., external customers and internal customers
- (c) It seeks to improve quality by merely involving top management of the firm
- (d) The concept ensures that the product meets the set of specifications required by customers
- (e) It focuses to improve the quality at every stage of the production process.
- 35.** Which of the following relates to the time by which the start of an activity can be delayed without affecting the earliest start of any activities following immediately?
- (a) Free float
- (b) Total event slack
- (c) Total float
- (d) Head slack
- (e) Independent float.
- 36.** As the project has a life cycle, a project audit too has a life cycle. In which of the following stages of project audit life cycle has the objective of setting performance standards to enable the auditor to measure project performance and achievements against them?
- (a) Audit initiation
- (b) Defining the project baseline
- (c) Setting up an audit database
- (d) Preparing audit report
- (e) Project audit termination.
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- 37.** Various stakeholders are involved in project management. Which of the following stakeholders of project arranges the resources for the project?
- (a) Project manager
- (b) Customers
- (c) Project team members
- (d) Sponsor
- (e) Parent organization.
- 38.** Which of the following risks refer to the sudden breakdown of key machinery and exponential rise in installation and maintenance costs?
- (a) Economic risks
- (b) Production risks
- (c) Technical risks
- (d) Human risks
- (e) Financial risks.
- 39.** If for order placed by a client for iron rods of length 20 inches with an acceptable variation in length of 0.04 has a standard deviation of 0.007, the process capability of the production process will be approximately equal to
- (a) 0.56
- (b) 1.28
- (c) 1.67
- (d) 1.90
- (e) 2.48.
- 40.** Cost estimating, one of the steps in the process of cost management involves estimation of the costs of the resources required to execute a project. In which of the following techniques are costs estimates made using mathematical models?
- (a) Analogous estimating
- (b) Parametric modeling
- (c) Top-down estimating
- (d) Bottom-up estimating
- (e) Computerized tools.
- 41.** Developing an appropriate risk response requires certain criteria. The characteristic that defines the time within which the responses need to be completed is referred to as
- (a) Appropriate
- (b) Affordable

- (c) Actionable
- (d) Achievable
- (e) Agreed.

**42.** Which of the following types of insurance policies for projects covers all the risks arising out of perils like fire, burglary, and machinery breakdown and boiler explosion in case of a project?

- (a) Projects and advance loss of profits insurance
- (b) Erection all risks insurance
- (c) Industrial all risks insurance
- (d) Fire and natural calamities insurance
- (e) Workmen's compensation insurance.

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**43.** Cost of quality is referred to as the costs incurred by a firm to improve the quality. This cost of quality can be classified into three types, such as cost of prevention, cost of appraisal and cost of failure. Which of the following

costs is/are the example(s) of costs of failure?

I. Maintenance of test equipment.

II. Warranty charges.

III. Costs of rework.

- (a) Only (I) above
- (b) Only (II) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) Both (II) and (III) above.

**44.** Which of the following is **not** an advantage of Just-in-Time (JIT) purchasing system?

- (a) Administrative efficiency
- (b) Improved quality
- (c) Increased responsiveness
- (d) Production improvements
- (e) Increased capital requirements.

**45.** There are four ways in which a project can be closed—by extinction, by addition, by integration and by starvation.

Which of the following is **not true** when a project manager chooses to close the project by addition?

- (a) This method is adopted when in-house projects are to be closed
- (b) The project is made a part of the parent firm in a slow and a phased manner
- (c) The project can either be added to the parent organization as a department or as an independent subsidiary depending on the project's ability to be economically independent
- (d) The resources of the project are transferred from the account of the successful project to the account of the newly created department or subsidiary
- (e) The project's existence comes to an end as a result of declining budgets.

**46.** Which of the following statements is/are **true** in the context of an organization adopting a matrix structure?

I. In this structure, only project managers bear all the responsibility for directing work of individuals assigned to the project.

II. In this structure, project managers command a superior authority over functional managers.

III. In this organizational set up, staff members report to the functional managers as well as the project managers.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) Both (II) and (III) above.

**47.** New project ideas help firms to achieve their objectives in an efficient manner. These ideas can come from different sources such as

I. Customers.

II. Competitors.

III. Employees.

- (a) Only (I) above
- (b) Only (III) above
- (c) Both (I) and (II) above

- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

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**48.** Organizations employ market survey as a useful method of obtaining primary data. A market survey is useful for determining

- I. Total market demand.
- II. Demand growth rate in different segments of the market.
- III. Inner motives of the customers.
- IV. Unsatisfied needs of the customers.

- (a) Both (I) and (II) above
- (b) Both (III) and (IV) above
- (c) (I), (II) and (III) above
- (d) (II), (III) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

**49.** Numeric models of project selection are of two types such as profitability models and scoring models. Which of the following is a scoring model that gives equal weightage to the opinions of all the raters and produces an explicit final result?

- (a) Iterative rating method
- (b) Unweighted 0-1 factor model
- (c) Weighted factor scoring model
- (d) Profitability index method
- (e) Unweighted factor scoring model.

**50.** The per capita annual demand for wheat in the country is 85 kg and the elasticity of demand for wheat is 1.05. If

the projected per capita annual income three year hence is 13% more than the present, then the projected demand for wheat will be

- (a) 90.3 kg
- (b) 92.3 kg
- (c) 94.6 kg
- (d) 96.6 kg
- (e) 98.8 kg.

**51.** Gopal Gifts and Novelties, has a wide network of distributors and distributes its goods through them. As the distributors are demanding high margins and incentives, the company decided to distribute the products on its own. The given example is related to

- (a) Forward integration
- (b) Backward integration
- (c) Horizontal integration
- (d) Cross functional integration
- (e) Horizontal diversification.

**52.** Which of the following is/are the component(s) of forecast?

- I. Base demand.
- II. Promotional component.
- III. Mean forecast error.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) All (I), (II) and (III) above.

**53.** The reorder quantity of an electronic equipment is 1,760 units. It takes 8 days to receive the order. The average daily demand of the equipment is

- (a) 110 units
- (b) 220 units
- (c) 330 units
- (d) 420 units
- (e) 510 units.

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**54.** Which of the following issues falls under the purview of tactical decisions?

- (a) Assigning jobs to workers
- (b) Determining the appropriate inventory level for various materials
- (c) Facility location and layout
- (d) Production scheduling
- (e) Expansion of existing facilities.

**55.** Celestica Inc., a Canadian computer component manufacturer, uses equipment that is not fixed to the floor.

This

enables production lines to be reconfigured within hours or days to make new and different products. Which of the following is the operational strength for the company?

- (a) Shorter product cycle
- (b) Production flexibility
- (c) Low cost process
- (d) Quality
- (e) Convenience and Location.

**56.** The operations manager of Atul Forgings Ltd., designed the layout in such a way that people, material and machines are readily observable at all times. In this context, which of the following criteria for a good layout was satisfied in designing the layout?

- (a) Maximum flexibility
- (b) Maximum coordination
- (c) Maximum visibility
- (d) Minimum handling
- (e) Maximum accessibility.

**57.** Which of the following types of process design permits products or services to flow with backtracking or sidetracking?

- (a) Product-focused manufacturing system
- (b) Cellular manufacturing
- (c) Group technology production system
- (d) Discrete unit manufacturing
- (e) Process-focused production system.

**58.** Classification of inventory helps an organization to maintain proper control over it. Which of the following is an

inventory classification model that classifies goods on the basis of their turnover?

- (a) ABC
- (b) VED
- (c) FSND
- (d) JIT
- (e) RFID.

**59.** Computerization has brought about significant improvement in the production process. It has also helped in developing new concepts and technologies in the 1990s. Which of the following technologies helps programmable machines to perform multiple tasks that are repetitive or hazardous for a human being to perform?

- (a) Computer aided design
- (b) Computer aided manufacturing
- (c) Flexible manufacturing system
- (d) Robots
- (e) Automated storage and retrieval system.

**60.** Management uses different models for aggregate planning. Which of the following is a heuristic model that uses

the regression method to identify capacity requirements based on the management's past decisions?

- (a) Linear Programming
- (b) Linear Decision Rules
- (c) Management Coefficient Model
- (d) Computer Search Model
- (e) Graphical Model for Aggregate Output Planning.

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**61.** The cycle time of an assembly line is observed as 0.6 min. If the assembly line works for 8 hours a day, the expected output from the assembly line per day will be

- (a) 700 units
- (b) 800 units

- (c) 900 units
- (d) 1000 units
- (e) 1100 units.

**62.** Which of the following steps of nominal group technique allows group members to write down their suggestions regarding the question/problem posed by a mediator?

- (a) Generation of ideas
- (b) Round robin collection of ideas
- (c) Preliminary voting
- (d) Discussion
- (e) Final voting.

**63.** Which of the following aggregate planning strategies maintains stable employment of personnel and level of production?

- (a) Varying production rates through overtime or idle time
- (b) Varying the workforce size in response to the output requirements
- (c) Back-ordering during high-demand periods
- (d) Subcontracting
- (e) Varying the size of inventory.

**64.** In a linear programming problem, let the decision variable  $jX$  represent the number of units of product ' $j$ ' produced, and ' $jC$ ' the quantity of input utilized in producing a unit of product. For producing ' $n$ ' units of product, ' $j$ ' consumes ' $n$ ' times of the quantity of input ' $jC$ '. Which assumption of linear programming is considered in the present context?

- (a) Proportionality
- (b) Additivity
- (c) Projectivity
- (d) Certainty
- (e) Divisibility.

**65.** XYZ company procures automobile components in lots of 500 units to fulfill the annual requirement of 3,500 units. The component cost is Rs.150 per unit and the ordering cost is Rs.150 per lot. Carrying cost is estimated at 20% of the cost of the component. The annual inventory cost is

- (a) Rs.4,55,330
- (b) Rs.5,33,550
- (c) Rs.6,55,330
- (d) Rs.7,33,550
- (e) Rs.8,55,330.

**66.** Value analysis is an important responsibility of a purchasing manager. Which of the following statements is **true** regarding value analysis?

- (a) Value analysis is carried out by the association of customers and manufacturers
- (b) Value analysis is to be done by the engineering department
- (c) Value analysis is conducted by the production department
- (d) Value analysis is the coordinated effort of the engineering, production and purchase personnel
- (e) Value analysis is to be performed by the suppliers.

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**67.** Which of the following statements are **true** regarding linear programming problem?

- I. The objective is generally written as a linear function of the decision variables, each multiplied by an appropriate coefficient.
- II. The decision variables are continuous and they accept any positive, negative and fractional values within the specified range.
- III. The graphical method of linear programming problem is applicable for the problems involving maximum of two decision variables.
- IV. Formulation of linear programming is generally iterative.

- (a) Both (I) and (IV) above
- (b) (I), (II) and (III) above
- (c) (I), (II) and (IV) above
- (d) (I), (III) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

**68.** The following table provides information about the forecast and the actual demand of a product of a company.

(in units)

Forecast 290 280 270 265 295 285

Actual 270 295 275 285 260 280

The Mean Absolute Percentage Error (MAPE) of the forecast is

- (a) 4.30
- (b) 4.90
- (c) 5.20
- (d) 5.70
- (e) 6.10.

**69.** Auburn Machine Co., produces parts that are shipped nationwide. It has an opportunity to produce plastic packaging cases, which are currently priced at Re.0.70 each. Annual demand depends largely on economic conditions. If the company produces the cases itself, it must renovate an existing work area and purchase a molding machine which will result in annual fixed costs of Rs.8,000. Variable costs for labor, materials and variable overheads are estimated at Re.0.50 per case. What volume of production is more profitable to produce the cases in-house rather than purchase them from outside supplier?

- (a) Above 20,000 units
- (b) Above 22,000 units
- (c) Above 40,000 units
- (d) Above 42,000 units
- (e) Above 48,000 units.

**70.** Which of the following methods of transportation problem improves the solution by calculating net cost change of the unoccupied cells?

- (a) Simplex method
- (b) Vogel's approximation method
- (c) North-West corner method
- (d) Least cost method
- (e) Stepping stone method.

**71.** Which of the following industries considers market proximity to be the prime concern that affects the location decisions?

- (a) Paper industry
- (b) Textile industry
- (c) Petrochemical industry
- (d) Hospitality industry
- (e) Cement industry.

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**72.** The purchase department is one of the key players in achieving the strategic objectives of a firm. Which of the following is **not** a responsibility of a purchase manager?

- (a) Vendor development
- (b) Selection of suppliers
- (c) Value analysis
- (d) Designing the production system
- (e) Contract negotiation and communication interface.

**73.** Which of the following is/are the scientific management principles proposed by F.W.Taylor?

I. Customized product design.

II. Specialized labor.

III. A Standard output time is used to plan and schedule future tasks.

- (a) Only (II) above
- (b) Both (I) and (II) above
- (c) Both (I) and (III) above
- (d) Both (II) and (III) above
- (e) All (I), (II) and (III) above.

**74.** All manufacturing and service organizations need to carefully evaluate the location for setting up their plants and

service facilities because location has a serious effect on the success of an organization. Which of the following are the location evaluation techniques used by an operations manager?

I. Critical ratio method.

II. Computer search models.  
III. Point rating method.  
IV. Center of gravity method.

- (a) Both (I) and (II) above
- (b) Both (II) and (III) above
- (c) Both (III) and (IV) above
- (d) (I), (III) and (IV) above
- (e) (II), (III) and (IV) above.

**75.** Which of the following includes the cost incurred in counting items when the material is received at the warehouse or plant?

- (a) Setup cost
- (b) Ordering cost
- (c) Carrying cost
- (d) Stockout cost
- (e) Holding cost.

**76.** Which of the following departments involve monitoring the flow of raw materials, determining and adjusting inventory storage capacity, and identifying material flow bottlenecks?

- (a) Purchasing department
- (b) Receiving department
- (c) Production department
- (d) Raw materials inventory department
- (e) Finished goods inventory department.

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**77.** Implementation of Just-in-Time (JIT) manufacturing system requires the total transformation of the methods of

designing products and services, assigning responsibilities to workers and organizing work. Which of the following statements is/are **true** relating to JIT system?

- I. It helps in reducing the production lead time by keeping work-in-process inventory as low as possible.
- II. In this system, all components and inventory items are stored in advance so that delays in the execution of operations can be avoided.
- III. It helps organizations to maintain consistently high quality in their products and processes by ensuring the active participation of employees.

- (a) Only (III) above
- (b) Both (I) and (II) above
- (c) Both (I) and (III) above
- (d) Both (II) and (III) above
- (e) All (I), (II) and (III) above.

**78.** In order to achieve the desired standards in business processes, organizations need to reengineer their current processes. The objectives of business process reengineering include

- I. Reducing process cycle time.
- II. Reducing the number of decision points.
- III. Optimizing the information flow between different functions and departments.

- (a) Only (I) above
- (b) Only (III) above
- (c) Both (I) and (III) above
- (d) Both (II) and (III) above
- (e) All (I), (II) and (III) above.

**79.** Gantt charts display graphically the use of resources over a period of time. Which of the following statement(s)

is/are **true** relating to Gantt charts?

- I. The time estimates used in the workload charts are obtained from standard time estimates.
- II. Scheduling charts enable the manager to plan for routine maintenance for each facility.
- III. Scheduling charts are useful when a particular job requires the use of several machines.

- (a) Only (II) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

**80.** In a repetitive production process, the movement of materials can be minimized by placing the equipment in

cells instead of keeping them in functional departments. Which of the following arrangement of cells facilitates flexible production process?

- (a) Straight Line
- (b) L-form
- (c) Serpentine form
- (d) U-form
- (e) T-form.

**81.** Which of the following statement(s) is/are **true** in the context of sequencing of jobs?

- I. They are used for reduction of the processing costs of the firm in specified time.
- II. They help in minimization of processing time and idle time.
- III. They help in minimization of idle time in a single stage of production.

- (a) Only (II) above
- (b) Only (III) above
- (c) Both (I) and (II) above
- (d) Both (I) and (III) above
- (e) All (I), (II) and (III) above.

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**82.** In backward scheduling method, orders are scheduled according to their due dates. Which of the following is/are

**not true** with respect to the backward scheduling method?

- I. The start and finish times of the jobs are assigned according to the earliest available time slot.
- II. Operations manager determines the latest point as to when the production activity can be started for completing the order on time.
- III. The work-in-process inventory level is high.

- (a) Only (I) above
- (b) Both (I) and (II) above
- (c) Both (I) and (III) above
- (d) Both (II) and (III) above
- (e) All (I), (II) and (III) above.

**83.** Which of the following forces, shaping the supply chain, focuses on finding a balance between cost and quality, and customization and availability without compromising on any one of them?

- (a) Consumer demand
- (b) Globalization
- (c) Competition
- (d) Information and communication
- (e) Environment.

**84.** The department which prepares reports as a part of the production control function containing information on the

quantity, price, description and other technical specifications of the incoming materials is referred to as

- (a) Purchasing department
- (b) Receiving department
- (c) Accounts department
- (d) Production department
- (e) Raw materials inventory department.

**85.** Productivity is a measure of the efficiency of an organization in terms of the ratio of the outputs to inputs.

Outputs  
comprise

- I. Leadership skills.
- II. The number of customer requests processed in a bank.
- III. Customer satisfaction.
- IV. Wheat produced in a year.

- (a) Both (I) and (II) above
- (b) Both (I) and (IV) above
- (c) (I), (II) and (III) above
- (d) (II), (III) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

**86.** Segmenting the customers is one of the principles of supply chain management. Which of the following is considered to be the appropriate strategy in segmenting customers, in order to serve them properly?

- (a) Segmenting customers based on industry
- (b) Segmenting customers based on service needs
- (c) Segmenting customers based on trade channel
- (d) Segmenting customers based on product
- (e) Segmenting customers based on their income levels.

**87.** Which of the following is/are **not true** regarding JIT manufacturing system?

- I. It maintains zero inventory storage and maintenance costs.
- II. It benefits in reduced investment in inventory.
- III. It requires separate departments for correcting defects and maintaining quality.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) Both (II) and (III) above.

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**88.** A tractor manufacturing company uses infrared imaging to examine the problem areas identified without dismantling the machine so that the extent of damage can be determined before stopping the machine. This is an example of

- (a) Remedial Maintenance
- (b) Predictive Maintenance
- (c) Centralized Maintenance
- (d) Decentralized Maintenance
- (e) Contract Maintenance.

**89.** Maintenance in a firm is carried out in three major areas such as mechanical, civil and electrical. Which of the

following activities come under the purview of civil maintenance?

- I. Maintenance of fire fighting equipment.
- II. Maintenance of transport vehicles.
- III. Maintenance of waste disposal.
- IV. Maintenance of materials handling equipment.

- (a) Both (I) and (III) above
- (b) Both (II) and (IV) above
- (c) (I), (II) and (III) above
- (d) (I), (III) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

**90.** Which of the following drivers of Supply Chain Management brings proper coordination among various entities

that helps in improving the efficiency of the supply chain system?

- (a) Inventory
- (b) Transportation
- (c) Facilities
- (d) Information
- (e) Price.

**91.** Automated Storage and Retrieval Systems (AS/AR) are computer-controlled and mechanically-operated materials handling systems. Which of the following are those semi-automatic systems that can be specifically used to store and retrieve inventory items from stock?

- (a) Straddle trucks
- (b) Physically operated robots
- (c) Hydraulics
- (d) Hand pallet trucks
- (e) Automated guided vehicles.

**92.** A Kanban system uses three types of cards to initiate material transactions. Which of the following is/are the card(s) that describe(s) the list of materials needed for continuing the production process?

- I. Production authorization card.
- II. Vendor authorization card.
- III. Conveyance authorization card.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above

- (d) Both (I) and (II) above
- (e) Both (II) and (III) above.

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**93.** Gap analysis helps identify the areas that are not handled by the standard system. For which of the following gaps

can the steering committee take action?

- I. Gaps that can be eliminated with minimal programming.
- II. Gaps that require extensive rework and additional resources.
- III. Gaps that cannot be handled by the system.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) Both (II) and (III) above.

**94.** One of the critical steps of ERP implementation is development of an integrated data model. In connection with

this, which of the following statements are **true**?

- I. It increases connectivity between departments.
- II. It helps in smooth flow of information between departments.
- III. It increases data redundancy.
- IV. It ensures availability of right information.

- (a) Both (I) and (II) above
- (b) Both (II) and (III) above
- (c) (I), (II) and (III) above
- (d) (I), (II) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

**95.** In which of the following stages of a typical ERP implementation program are performance standards set for each

process, by using benchmarking techniques?

- (a) Identify the needs for the ERP package
- (b) Evaluating the “as-is” situation of the business
- (c) Decisions about the desired “would-be” situation for the business
- (d) Reengineering of business processes to achieve the desired results
- (e) Evaluation of available ERP packages.

**96.** Which of the following are the principles of supply chain management?

- I. Customize the logistics network.
- II. Enhance ability to meet customer requirements.
- III. Improve relationships with the suggestions.

- (a) Only (I) above
- (b) Both (I) and (II) above
- (c) Both (I) and (III) above
- (d) Both (II) and (III) above
- (e) All (I), (II) and (III) above.

**97.** Reducing the setup time is one of the characteristics of JIT systems. Firms adopt a procedure to reduce setup times. Which of the following **does not** form a part of the procedure to reduce setup times?

- (a) Analyze existing setup procedures
- (b) Separation of internal and external setup activities
- (c) Conversion of external setup activities into internal setup activities
- (d) Cleaning
- (e) Streamline work.

**98.** Which of the following is an important measure for managers to track progress in terms of the efficient use of resources in producing goods and services?

- (a) Cost of returned products
- (b) Process capability analysis
- (c) Productivity
- (d) Flowchart
- (e) Order fulfillment accuracy.

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**99.** The ratio of goods or services produced to the quantity of raw material and components used is known as

- (a) Single factor productivity
- (b) Multifactor productivity
- (c) Labor productivity
- (d) Material productivity
- (e) Total productivity.

**100.** Quality control charts, for attributes of a product from a manufacturing system, are called

- (a) X charts
- (b) R charts
- (c) P charts
- (d) Scheduling charts
- (e) Workload charts.

**END OF QUESTION PAPER**

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## Suggested Answers

### Project & Operations Management (SMB110)

**Answer REASON**

- 1.** D Purchase and logistics management involves in identifying resources such as raw materials, equipment and services required for the project, preparing a list of suppliers and negotiating with them for procuring the material and managing the transportation system for smooth implementation of the project.
- 2.** B Iterative rating method is used by project managers as an alternative to the scoring models. Here, the project manager ranks all the projects based on a set of predetermined attributes. The attributes that do not differentiate the project alternatives are ignored. Hence, option (b) is the answer.
- 3.** A Past and current sales of the firm are not an external primary source for collection of data. It is considered as the source for internal primary data.  
Hence the answer is (a).
- 4.** C Technical evaluation of a project idea is a very crucial aspect and any wrong decision at this stage will have far-reaching implications for the viability of a project. Technical analysis of a project idea includes an in depth study of the location, land and site development, raw materials, manpower requirement and schedule of implementation etc. So, the correct answer is (c)
- 5.** A Statement (II) is true about classification questions. These questions are about the respondent's characteristics, socio-demographic and behavioral information is true about classification questions.  
Hence the answer is (a).
- 6.** E Consumption level technique estimates the demand for a particular product or service on the basis of income and price elasticities of demand.
- 7.** D Present Value of a cash flow can be determined as  $PV = \frac{FV}{(1 + R)^n}$   
( )  
n  
k, n  
FV  
FVIF  
=  
(12, 5)  
1,762  
FVIF  
=  
1,762  
1.762  
=  
Rs.1,000, where future value interest factor can be calculated as  $(1 + R)^n = (1 + 0.12)^5 = 1.762$
- 8.** D Discounts, free gifts, coupons are some of the sales promotion techniques used by project managers to increase sales of the product.  
Sponsoring event is not a sales promotion technique used by project managers to increase sales of the product.
- 9.** C To perform unique tasks, organizations adopt project approach. Some of the characteristics of the tasks that qualify to be projects are:
  - Unique activities

- Attainment of a specific goal
- Sequence of activities
- Specified time
- Interrelated activities.

Internationalization is one of the socio-economic factors that influence projects.

**10. D** The Delphi technique or brainstorming technique is used to assign weights to each factor.

Normally, weights are associated in the range of 0 to 1.

**11. B** Deferred credit is the amount that a firm receives but has still not reported as income. In a project the machinery and equipment suppliers may provide credit facilities to firms. Generally, suppliers demand a bank guarantee which is equivalent to the value of the machinery.

**12. C** Option (c) is related to technical analysis. Technical analysis includes in depth study of all technical aspects related to basic manufacturing operations, detailed design, assembling, modeling and prototype testing.

**13. B** Time, one of the important resources available to a project manager, is inversely related to the cost of the project. All other statements are true.

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**14. C** Apparent consumption considers only the desirability and ability of the buyers. It does not consider the willingness of the buyers.

**15. A** Realism is the characteristic of project selection which states that the model should explicitly state the objectives of the project manager and the firm in selecting a particular project.

**16. D** Equity capital is raised by allotment of shares and through retention of earnings.

**17. A** The economic sector comprises the macro level factors like the state of the economy, the overall rate of economic growth, the growth rate of primary, secondary and tertiary sectors, position of balance of payments and trade deficit/surplus of the country. Therefore, the project manager analyzes this sector to assess the viability of new project ideas.

**18. E** Nominal group technique is administered by a coordinator who notes down all the ideas generated, including the positive and negative arguments of each idea, for future use.

**19. A** The surveys in which the project manager considers the entire market population for the projects are called census surveys, the results obtained from which are more reliable than the sample survey, but conducting the survey is more expensive.

**20. D** The Average Rate of Return (ARR) is calculated using the following formula:

$\text{Annual Cash Inflows} - \text{Depreciation} / \text{Initial Investment}$

Here, Depreciation is calculated as

$\text{Cost} - \text{Salvage Value} / \text{Useful Life}$

i.e.,  $(15,000 - 2,000) / 5 = \text{Rs. } 2,600$  per annum.

Therefore, ARR

$= (5,500 - 2,600) / 15,000$

$= 19.33\%$ .

**21. D** The list of project deliverables is developed in four steps. They are:

Request

Clarification

Response

Agreement

In 'response' step, the project manager explains what he can do to fulfill the client's request. He informs the client of his capabilities, his schedule, and fees for undertaking the project.

**22. C** The third part of the Project Overview Statement defines the objectives of the project. These project objectives specify the exact boundaries of the project goal. The project manager should ensure that the objective statement mentions the following aspects of the project:

An outcome

A time period

A measure

An action plan.

**23. C** Inadequate attention to detail at the time of project formulation is the main cause of these scope changes. Scope changes include the introduction of new features to the project product, design modifications, increased plant capacity and extra construction works, updated technical versions, and newly framed statutory requirements of the government may necessitate changes in scope.

**24. D** Option (d) is not true regarding Work Breakdown Structure.

The goal statement is shown at the top of the WBS as **level 0** activity.

**25. B Verb-Type approach:** The verb-type approach defines the project deliverables in terms of the actions to be performed to produce them. The 'design-build-test-implement' approach and 'objectives' approaches are two types of verb-type approaches. In design-build-test-implement approach, the features that are to be added to the deliverable are designed, built, tested and implemented. In the example, the features that are to be added to the moulding machine are designed, built, tested and implemented. This is the design-build-test-implement approach under the verb-type approach.

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**26. E Crash cost (crash slope):** The per unit crash cost is known as crash slope. Crash slope for an activity is calculated as,

(Crash cost - Normal cost)

Crash slope

(Normal time - Crash time)

=

-

(2100 - 1500) / 600

Crash slope Rs.300

(13 - 11) / 2

-

= = =

-

**27. D Critical path method** is a network analysis technique used to predict the project duration by finding out which sequence of activities has the least amount of scheduling flexibility. The project manager identifies the critical activities of the project. Any delay in the critical activity results in the delay in the entire project. The series of the critical activities is called the 'critical path' of the project. The critical path of the project is the longest path through the network. The length of the critical path gives the shortest allowable time for the completion of the project.

**28. A Optimistic time** is the minimum amount of time within which an activity can be completed. It is possible to complete an activity within the optimistic time only when the external environment is extremely favorable.

**29. A Network Diagram**

The critical path of the given network is 1 - 2 - 3 - 4 - 5.

Completion time ( $T_E$ ) = Sum of all the expected mean times ( $t_e$ ) i.e. duration on the critical path.

∴  $T_E$  for the above project = 20 + 10 + 5 + 10 = 45 days.

**30. C Status reviews, design reviews and process reviews** are usually carried out during the implementation stage of the project.

**31. D Spotlight reports** uses Green, yellow and red color stickers to indicate various types of problems. Orange color stickers are not used in these reports.

**32. C** The present project status of a project report is concerned with the performance measurement of the project. This part of the project report compares the tasks that have been completed with the resources that have been spent to achieve the task.

**33. B** In Maximin criterion of selecting a strategy for decision-making under uncertainty, the project manager identifies the minimum payoff values for each strategy and adopts the strategy that has the highest payoff value from among those minimum payoff values.

**34. C** TQM is not a tool or a product. It is a philosophy that seeks organisation-wide improvement by involving **every individual** in the organisation to improve the quality at every stage of the production process. It differs from the traditional quality control methods in the fact that in TQM, maintaining quality standards is the responsibility of **everyone** in the organisation.

Hence, option (c) is **not true** regarding Total Quality Management (TQM).

Options (a), (b), (d) and (e) are all **true** regarding Total Quality Management (TQM).

**35. E** Independent float is the amount of time by which the start of an activity can be delayed without affecting the earliest start of any activities following immediately.

**36. B** The stage of project audit life cycle in which the objective is to set performance standards to enable the auditor to measure project performance and achievements against them, is 'Defining the project baseline'.

**37. D** Sponsor is an individual or group within the parent organization who arranges the resources for the project.

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38. B Production risks refer to the shortage of necessary raw materials, sudden breakdown of key machinery, and exponential rise in installation and maintenance costs.

39. D ( )

{ ( ) }

( )

USL - LSL

Process capability (CP)  $6\sigma$

Since the variation in length acceptable by the client is 0.04, USL = 0.04 and LSL = 0.04.

Standard deviation of the process ( ) = 0.007

0.04 0.04

CP = = 6 0.007

$\sigma$

=

-

- -

$\therefore$

0.08

1.9048 1.90

0.042

= □

40. B Parametric modeling technique is used by the project manager to estimate costs using mathematical models.

41. C The criteria for selection of an appropriate response are very important. The project manager should ensure that the selected risk response has the following characteristics:

- Appropriate
- Affordable
- Actionable
- Achievable
- Agreed
- Accepted.

**Actionable** characteristic states that an 'Action Window' that defines the time within which responses needs to be completed should be developed.

42. C Option (c) is the correct answer since the Industrial all risks policy covers all the risks arising out of perils like fire, burglary, and machinery breakdown and boiler explosion in case of a project.

43. E Costs of rework and warranty charges are categorized as internal and external costs of failure.

Cost incurred for maintenance of test equipment is a cost of appraisal.

Costs of redesigning the process to remove the causes of poor quality are costs of prevention.

Hence, Statements (II) and (III) are examples of costs of failure and option (e) is the correct answer.

44. E In JIT purchasing system zero inventories is maintained. Hence it leads to reduced capital requirements.

45. E Option (E) is the correct answer since projects existence comes to an end as a result of declining budgets in case of projects closing by starvation and not by addition. Hence the statement is incorrect. Option (a), (b), (c) and (d) are all true in the context of projects closing by addition.

46. C In matrix organizations, project managers and functional managers are jointly responsible for assigning priorities and for directing the work of individuals assigned to the projects. In this setup, project managers have equal authority to functional managers and the staff members report to the functional managers as well as projects managers. Hence only statement(III) is true.

47. E Ideas can come from different sources like customers, competitors and employees.

48. E A market survey is useful in determining the total market demand, demand growth rate in different segments of the market, understanding the inner motives of the customer and measuring the unsatisfied needs of the customers.

49. B In the unweighted 0-1 factor Model, the evaluators rate every project idea, and the management selects the project with the highest factor score. The advantage of using this technique is that it gives equal weightage to the opinions of all the raters and produces an explicit final result.

50. D Per capita annual demand for wheat = 85 Kg

Elasticity of demand for wheat = 1.05

Projected per capita annual income three years hence = 13% = 0.13

Projected demand for wheat

= (Present per capita demand) {1+ (projected per capita income level income elasticity of demand)}

= 85 Kg (1+ (0.13 1.05))

= 85 (1+ 0.1365)

= 85 1.1365

= 96.60 = 96.6 Kg

×

×

×

×

51. A Forward integration is the expansion of ownership of production to the distribution chain, towards the market.

52. D Base demand and promotions are the some of the components of forecast. Mean forecast error is a measure of forecasting accuracy.

53. B

.

Reorder point = 1760 units.

Lead time (LT) = 8 days.

Reorder point = d LT

Where d = average daily demand

LT = Lead time

Average weekly demand (d) = Reorder point 1760 220 units Lead time 8

×

∴ = =

54. B Option (b) is a tactical decision.

Options (c) and (e) are strategic decisions.

Options (a) and (d) are operational decisions.

55. B **Flexible production system**:-To produce new and different products in each production cycle, the production facilities should be flexible. Rearrangement of equipment and reconfiguration of product lines should be made easy and fast. This is possible by adopting a flexible production system. Celestica's operational strength lies in its flexible production system where the production lines can be reconfigured conveniently.

56. C Maximum visibility is one of the criteria for a good layout. The layout should have no hiding places in which goods or information can get misled. All the people, machines and material should be readily observable at all times.

57. E The process-focused production system allows both sidetracking and backtracking in the product flow route.

58. C In FSND classification, the goods are classified on the basis of their turnover.

59. D In the 1990s, many new concepts and technologies have been developed to facilitate manufacturing systems. Programmable machines (like robots) which were capable of performing multiple tasks were introduced in the production process. Robots can perform many tasks that are repetitive or hazardous for a human being to perform.

60. C Management coefficient model is a heuristic model which uses the regression method to identify capacity requirements based on the management's past decisions.

61. B Cycle time = 0.6 min.

Production time per day = 8 hr = 480 min.

Production time per day 480

= 800 units.

Cycle time 0.6

Production time per day

Cycle time =

Re quired output per day

∴ Required output per day = =

62. A 'Generation of ideas' is the first step of a nominal group technique. In this stage, group members write down their suggestions regarding the question/problem posed by a mediator.

63. E Under the strategy 'varying the size of inventory', an organization maintains stable employment of personnel and constant level of production.

64. A In linear programming, we assume that the contribution of individual decision variables in the objective function is proportional to their numeric value. If the decision variable  $jX$  represents the number of units of product 'j' produced and ' $jC$ ' is the quantity of input utilized in producing a unit of product. For producing ' $n$ ' units of product 'j' consumes ' $n$ ' times of the quantity of input ' $jC$ '. Hence, the raw-material consumption per unit produced remains constant. This refers to the assumption 'proportionality'.

65. B Order quantity (Q) = 500

Annual demand = 3,500 units

Cost per unit (Cp) = Rs.150

Carrying cost per unit (Ch) = 20% of the cost of component

= 0.2 150 = Rs.30

Ordering cost

×

t(Co) = Rs.150 per lot

Annual inventory cost = Ordering cost + Carrying cost + Variable cost

TC = C D C Q C D o Q h 2 p

Where

Co Fixed cost per order

D = Annual demand

Q =

[ ] [ ] [ ] [ ] + [ ] [ ] + [ ] [ ] [ ]

=

Order quantity

Ch Carrying cost per unit

Cp = Cost per unit

TC = C D C Q C D o Q h 2 p

= 150 3500 + 30 500 + (150 3500)

500 2

= 1,050 + 7,500 + 5,25,000 = 5,33,550

=

[ ] [ ] [ ] [ ] + [ ] [ ] + [ ] [ ] [ ]

× × ×

66. D Value analysis is the coordinated effort of engineering, production and purchase personnel. None of the department can perform it independently because technical and economical factors are included.

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67. D The following statements are true regarding linear programming problem.

- The objective is generally written as a linear function of the decision variables, each multiplied by an appropriate coefficient.
- The decision variables are continuous and they accept any **positive and fractional** values within the specified range.
- The graphical method of linear programming problem is applicable for the problems involving maximum of two decision variables.
- Formulation of linear programming is generally iterative.

68. E

(in units)

Forecast (Ft) Actual (At) At - Ft At - Ft 100

At

×

290 270 20 7.41

280 295 15 5.08

270 275 5 1.82

265 285 20 7.02

295 260 35 13.46

285 280 5 1.79

Total 36.58

$100 \sum_{t=1}^n \frac{At - Ft}{At}$  Mean Absolute Percentage Error (MAPE) =

$= \frac{36.58}{6.09} = 6.10$

6

$\Sigma$

= □

**69. C** The break-even point is the volume of production where the total costs to make equal the total costs to buy

TC to make = TC to buy

$FC + VC(V) = P(V)$

$8000 + 0.50V = 0.70V$

$0.20V = 8000$

$V = 40,000$  units.

For volume above 40,000 units it is more economical to make the cases in-house

**70. E** In stepping stone method, the decision maker calculates the net cost change of unoccupied cells and checks the possibility of improving the solution.

**71. D** The market proximity is the prime consideration aspect for pure service providing organizations such as hotels, hospitals, retail stores and theatres as they must be located close to the market.

**72. D** Following are responsibilities of the purchase manager:

- Selection of suppliers
- Vendor development
- Value analysis
- Contract negotiation and communication interface.

Design of production system is carried out by production department in coordination of senior management.

**73. D** The following are some of the scientific management principles proposed by F.W.Taylor.

- **Standardized product design.**
- Specialized labor.
- A Standard output time is used to plan and schedule future tasks.

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**74. C** Several models and techniques are available that help managers make appropriate location decisions. Some of the models are:

- Cost-Profit-Volume analysis
- Point rating method
- Transportation method
- Center of gravity method
- Analytic Delphi method

Computer search models are used in aggregate planning and critical ratio method is used in scheduling.

**75. B** Ordering costs are associated with the process of purchasing inventory. These costs include cost associated with preparing the purchase order, postage, and telephone calls to the vendors and Counting items etc.

- Setup costs are production change costs and include items such as arranging specific equipment setups, filling out the required paper, etc.
- Carrying cost includes costs for storage, facilities, insurance, etc. i.e., cost incurred for holding inventory.
- Stockout cost is when the stock of an item is depleted.

Holding cost is the same as carrying cost.

**76. C** Production department involve monitoring the flow of raw materials, determining and adjusting inventory storage capacity, and identifying material flow bottlenecks.

**77. C** JIT system always keeps work-in-process inventory as low as possible, thereby reducing production leads times. Hence, statement (I) is correct.

Firms can achieve high quality and coordination only with the active participation, involvement and cooperation of all its employees. Hence, statement (III) is correct.

According to the JIT system, all components and other inventory items arrive as and when

required (i. e. just before the start of an operation) and it is not kept in advance. Hence, statement (II) is wrong.

**78. E** In order to achieve the desired standards in business processes, organizations need to reengineer their current processes. The objectives of business process reengineering include reducing process cycle time, reducing the number of decision points, optimizing the information flow between different functions and departments, etc. Hence, statements (I), (II) and (III) are correct.

**79. D** Work load charts helps in planning for routine maintenance for each facility, not scheduling charts. Hence, statement II is not correct.

**80. D** U-form cells make the production process more flexible.

**81. C** In a single stage of production, jobs can be simply scheduled one after the other; hence idle time does not exist. In two or more stages of production, it helps in minimizing the idle time.

**Statement III-false**

Sequencing of jobs helps in minimization of processing time, increases efficiency of operations and it results in reduction of the processing costs of the firm. **Statements I and II – True**

**82. C** · In backward scheduling, the start and finish times of the jobs are assigned according to the latest available time slot – statement (I) is wrong

· In backward scheduling, operations manager determine the latest point when the production activity can be started – statement (II) is correct.

· In forward scheduling, the work-in-process inventory level is high – statement (III) is wrong.

**83. A** Consumer demand is the force shaping the supply chain management that emphasizes that the key focus of an organization is to find a balance between cost and quality, and customization and availability without compromising on any one of them. The objective of supply chain management is to keep the customers satisfied by providing them with what they want, when they want it and at a price they can afford.

**84. B** The materials receiving report prepared by the receiving department consists of the information on the quantity, price, description and other technical specifications of the incoming materials.

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**85. D** · A leadership skill is an intangible input.

· The number of customer requests processed in a bank, the number of goods produced, production of wheat in a year and customer satisfaction all are outputs.

**Note:** Customer satisfaction is an intangible output.

**86. B** Most organizations segment customers based on the industry, product or trade channel. In order to serve customers properly, organizations should segment customers based on service needs i.e., the specific needs of the customers. It is one of the principles of supply chain management.

**87. C** JIT firms do not maintain separate departments for correcting defects. Each employee has to identify and correct his or her own mistakes and send it to his or her immediate customer.

A better coordination between JIT firm and supplier results in achieving zero inventory storage and maintenance costs.

**88. B** The set of Irregular Preventive Maintenance activities, which detect problems while the equipment is still performing at satisfactory levels and rectify the problems when the equipment is not scheduled to be used are referred to as Predictive Maintenance activities. Newly developed sophisticated technologies are used in this type of Maintenance.

Hence, from above discussion, we can infer that option (b) is correct.

**89. A** Civil maintenance includes maintaining fire fighting equipment and waste disposal.

Maintenance of transport vehicles and materials handling equipment come under the purview of mechanical maintenance.

**90. D** Information is one of the key drivers of supply chain management, which brings proper coordination among various entities that helps in improving the efficiency of the supply chain system. With proper information, organizations can predict the quantity to produce, when it is needed and where it is needed. This makes the supply chain more effective and responsive to market demand.

**91. E** AS/AR systems are computer-controlled and mechanically-operated materials handling systems which can also perform complex operations of loading and unloading the inventory with their dozens of automated pallet movers. Automated Guided Vehicles (AGVs) are the systems that can be used specifically to store and retrieve inventory items from stock. The semi-automatic AGVs (a combination of computer and human control) can move independently on their guided paths to a specific workstation and then signal (using built-in horns or lights) to the operator to perform the required operation.

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**92. A** The production authorization card authorizes the production department to start the production process and describes the product's name, identification number and description and the list of materials needed for continuing the production process.

**93. E** For the first category of gaps, the project team can take action, while for the second and third categories, the steering committee should take action such as allocating extra resources if required.

**94. D** Integration of data across departments helps in better connectivity and smooth flow of information. It reduces data redundancy and ensures availability of right information to the concerned department or personnel.

**95. C** Once the structure of the current processes is identified, the next stage involves the identification of desired attributes for each of the processes. Performance standards are set for each process by using benchmarking techniques.

**96. E** These all are the principles of supply chain management.

**97. C** Firms adopt the following procedure to reduce setup times:

Analyze existing setup procedures

Separation of internal and external setup activities

Convert internal setup activities into external setup activities

Heating

Cleaning

Streamline work.

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**98. C** Productivity is an important measure for managers to track progress in terms of the efficient use of resources in producing goods and services.

**99. B** Multifactor productivity =

Goods and/or services produced (output)

Quantity of raw material and components used (input)

Multifactor productivity uses a combination of factors. It takes into consideration more than one factor of production such as labor and materials.

**100. C** P charts are quality control charts for attributes of a product.

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