

# NEPAL ENGINEERING COUNCIL

LICENSE EXAMINATION PREPARATION COURSE

## **Project Management**

## 10.4 Project Management

- Information system
- Project risk analysis and management
- Project financing
- Tender and its process
- Contract management.

# Information System

- All firms/organizations operate in dynamic environment i.e continuous changes are occurring in the firms.
- To respond to these changes, the managers need to have accurate and timely information.
- The project management information system ( PMIS) provides such information to managers.

PMIS deals with the information of the following:

- a. People
- b. Equipment
- c. Procedure

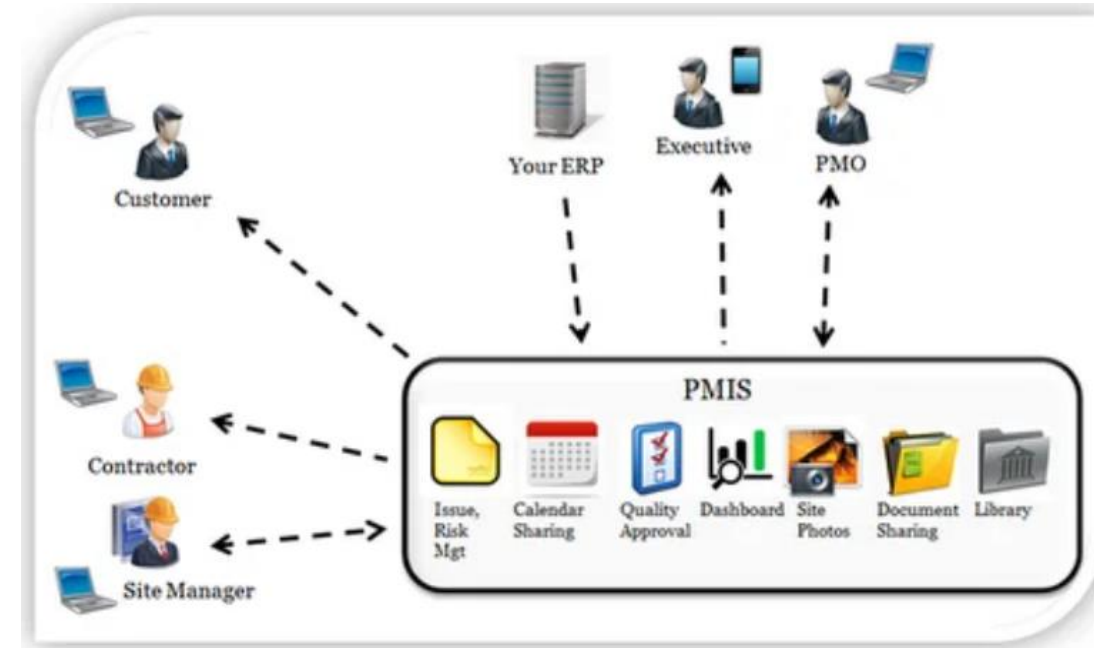
Here, dealing means : Obtaining, storing, retrieving and analyzing the information as and when needed.

# Information System Working

- A separate department/officer may be allotted with the task of management of the information in the organization
- PMIS needs separate manpower, funds , equipment and guidelines to operate itself.

The main task of PMIS is :

- a. Policy flow from management
- b. Information flow to management



# Objectives of PMIS

- To reduce project duration
- To make better use of resources
- To increase productivity
- To decrease price/cost
- To bring new facts to knowledge
- To reduce uncertainty in decision making
- To communicate effectively with the users
- To interpret feedbacks properly and work accordingly

# Project Risk Analysis and Management

Risk:

- Risk is an **uncertain event** , if occurs, has a **positive or a negative** effect on a project
- A risk has a **cause** and , if it occurs , a **consequence**.
- Risks can be positive, negative, or neutral.



# Project Risk Analysis and Management

## Risk Management:

- It is the process of **identifying, quantifying and responding** to risk throughout the life of the project to meet the project objectives .
- Risk management aims **to improve the likelihood** that a project will be completed on **time and on budget** .

## Elements of Risk Management:

- a. Risk identification
- b. Risk quantification
- c. Risk response development

# Sources of Project Risk

1. Change in project scope and requirements
2. Design errors and omissions
3. Inadequately defined roles and responsibilities
4. Inaccurate cost and schedule estimates
5. Insufficient skilled staff
6. Force majeure
7. New technology



# Types of Project Risk:

## A. INTERNAL RISK

### a. Local

- Labor
  - Materials
  - Plant
  - Site
  - Sub-contractor
- ### b. Global
- Client
  - Design
  - Financial
  - Management
  - Location

## B. EXTERNAL RISK

- a. Economic
- b. Physical
- c. Political
- d. Technological
- e. Environmental



# Effective Management of Project Risk

Recognize and identify risks

Rank and evaluate risks

Respond to significant risks: Tolerate, Treat, Transfer, or Terminate

Resource controls

Plan your reaction

Report and monitor performance

Review the risk management framework

- Risk Management Planning
- Risk Identification
- Qualitative and Quantitative Risk Analysis
- Risk Response Planning
- Risk Monitoring and Controlling

## Assessing Risk

Likelihood	Severity		
	Low	Medium	High
Likely			Focus efforts here first
Neutral			
Not Likely	Focus efforts here last		

## Responding to Risks

### The Four T's

Tolerate

Treat

Transfer

Terminate

Strategies for Negative Risks or Threats

- Avoid
- Transfer
- Mitigate
- Acceptance

Strategies for Positive Risks or Opportunities

- Exploit
- Share
- Enhance
- Accept

# Project Financing

- Project financing is a method of funding long term infrastructure, industrial projects and public services based upon a non-recourse or limited recourse financial structure where project debt and equity used to finance the project are paid back from the cash flow generated by the project.
- The funding is secured primarily based on the cash flow and assets of the project itself, rather than the creditworthiness or assets of the project sponsors
- Parties of Project Financing: Project Itself, Sponsors, Financial Advisors, Legal Advisors, Equity Investors, Regular Agencies etc.

# Capital Structure planning

- Capital structure is how a company funds its overall operations and growth.
- It represent long term investment in a business firm. It includes fund raise from ordinary and preference shares, bonds, debentures, term loans etc.

# Definition of Terms



## Sources of long-term finance

- **Overdrafts** are useful sources of short-term finance due for repayment in less than a year. Interest is only charged when the facility is used and the interest payments are tax-deductible. They can be arranged at short notice and are flexible in the amount borrowed at any time.
- **Loans** generally have higher rates of interest and are less flexible as payments need to be made for a pre-agreed amount and at a pre-agreed time. Loans can be repaid in stages or at the end of the loan period. The interest is also tax deductible and return on the loan can exceed the interest payments. The cost of borrowing money can be compared with the return from a project by calculating the Internal Rate of Return.

## Sources of long-term project finance

- **Sale and leaseback:**

Assets can be sold to a financial institution and then leased back for a certain term. This releases capital in assets, which can be used for investment, but should be offset by the rental payments and loss of capital growth should the assets increase in value.

- **Loan Capital:**

**Debentures:** Some loans are secured by a fixed or floating charge against a company's assets and are known as debenture loans. Debenture holders receive their interest payment before any dividend is paid to shareholders and if the business fails the holders will be preferential creditors



## Sources of long-term project finance

**Business Angels:** These are private investors who invest directly in a company in exchange for an equity stake and perhaps a place on the board. They are usually experienced entrepreneurs and can be a source of useful knowledge for the business.

**Venture Capital :** Venture Capitalists usually offer more to companies than other financial institutions might consider too risky. They exchange their capital for an equity share and involvement at a strategic level often through a non-executive position on the board. Their prime aim is to increase the value of their shares so that they can sell them at a profit.

## Sources of long-term project finance

- **Share Capital**

Share Capital is raised through the company shareholders. In exchange for their investment they receive a share of the profits through a dividend. They may also receive a capital gain through sale of their shares at some future date. There are two main types of shares. Ordinary shares are held by the owners of the business who have a right to a share of the company profits through dividends, which vary in value depending on performance. As owners of the company they have voting rights at Annual and Extra-Ordinary General Meetings, however they are liable should the company become insolvent and are therefore accepting a level of risk with their investment. Preference shares are less risky as the holders of preference shares are not owners of the company. They offer a guaranteed dividend although this may be less than that received by ordinary shareholders. As preference shareholders are not owners of the company they have limited voting rights.

## Sources of long-term project finance

- **Retained profits** Not all profits are distributed to shareholders: the company retains a proportion as reserves. This is usually the most significant source of equity finance, costs far less than external sources that charge interest and can be distributed as the company sees fit.
- **Issuing shares** Shares can be issued through new issues or rights issues. New issues are generally made at the same time as the company is floated on the stock market, and the capital raised is significant. The price of the new share is based on project growth rates, stability, market sentiment, and comparison with other similar companies and the capital structure of the company.

# Capital Budgeting Decision

- It is the investment decision of the firm
- It is the firm's decision to invest its current funds most efficiently in long term activities
- Answers questions like where to invest? How to invest?

The investment decision of the firm includes following types of investment

- a. Addition, modification or replacement
  - b. Introducing new product
  - c. Expanding the business
- The investment decision involves comparison between different alternatives or proposals
  - Each of the proposal should be evaluated on the criteria that suitably fits the objective of the organization.

# Investment Decision Criteria

## A. Traditional Criteria:

### a. Payback Period

#### i. Simple Payback Period

#### ii. Discounted Payback Period

### b. Accounting Rate of Return (ARR)

- ARR is obtained by dividing the average income after taxes by the average investment

$$\text{ARR} = ( \text{Average income} ) / ( \text{Average investment} )$$

$$\text{Avg. Income} = ( \text{Income} - \text{Expenses-Taxes} ) / \text{No. of years}$$

$$\text{Avg. Investment} = ( \text{Original investment} + \text{Salvage value} ) / 2$$

- Acceptance rule : Accept the project if ARR is more than the minimum rate established by the management

# Investment Decision Criteria

## B. Discounted cash flow criteria:

- a. Net present value / Net future value / Net annual value
- b. IRR
- c. Profitability index or B/C ratio

# Method of Work Execution in Public Procurement

Act → 2063 एन  
Regulation → 2064

## Procurement Procedure

Direct purchase

Emergency procurement

User's Committee

Nongovernmental organization

Force account

Sealed Quotation

National Bid

International Bid

Catalogue shopping

By Back Method

Limited Tendering

Lump Sum Method

### A. Direct Procurement:

- Procurement of works, goods or services from the contractors in the standing list of the entity
- Limit upto Rs. 10 lakh ( for goods and works)
- Limit upto Rs. 5 lakh ( for consulting)

### B. Sealed Quotation

- Limit upto Rs. 20 lakh
- Notice shall be published in national newspaper by giving a period of at least 15 days

### C. National Competitive Bidding

- Limit Rs. 20 lakh to Rs. 5 Billion
- Notice shall be published in national newspaper by giving a period of at least 30 days

### D. International Competitive Bidding

- Limit above Rs. 5 Billion
- For projects with estimates between Rs. 5 Billion and Rs. 10 Billion, there must be the involvement of domestic contractor (At least 25% share)
- 5% Domestic preference is given i.e. if a domestic contractor is involved, then the contract is awarded to such J.V even if their bid is 5% more than the lowest
- Notice shall be published in national/international English newspaper by giving a period of at least 45 days

# Work through User's Committee

- Cost estimate up to Rs. 5 crore may be carried out or obtained from users committee
- Rs 5 crore ( For Co- Operatives)
- Rs .1 Crore ( For Normal user's committee)
- Works with heavy equipment is prevented in this type i.e only labour intensive works are to be done through user's committee



# Laws and Regulations for public Procurement



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सार्वजनिक खरिद नियमावली २०६४



Public Procurement Act.pdf



## Approval of Estimates

१४. लागत अनुमानको स्वीकृति: \*१ (नियम १०, ११ र १३ बमोजिम तयार भएको लागत अनुमान देहायको अधिकारीबाट स्वीकृत हुनु पर्नेछ:-

- (क) पाँच करोड रुपैयाँसम्मको लागत अनुमान राजपत्राङ्कित तृतीय श्रेणीको कार्यालय प्रमुखबाट,
- (ख) दश करोड रुपैयाँसम्मको लागत अनुमान राजपत्राङ्कित द्वितीय श्रेणीको कार्यालय प्रमुखबाट,
- (ग) बीस करोड रुपैयाँसम्मको लागत अनुमान राजपत्राङ्कित प्रथम श्रेणीको कार्यालय प्रमुखबाट ,र
- (घ) बीस करोड रुपैयाँभन्दा बढी रकमको लागत अनुमान विभागीय प्रमुखबाट।

Wood & Works.

\*२ (नियम १२ बमोजिम तयार भएको लागत अनुमान देहायको अधिकारीबाट स्वीकृत हुनु पर्नेछ -:

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Consulting.

# Tendering/Bidding

Tender is an **offer** in writing by the tenderer (the person who offer the tender) to execute some specifies work or to supply some specified some goods at certain rate/ amount within a fixed time period under certain conditions of agreement

Purpose of tendering;

- a. Transparent use of fund
- b. Use of money in intended purpose
- c. Equal opportunity to all eligible bidders

PPMO

# Process of tendering

- **Bid Documents Preparation**
- **Invitation to Tender/Bid**
- **Sales and Registration of Bid Documents**
- **Bid Submission ( Earnest money by all bidder)**

<- 2-3% of estimated amount. ( Cost estimate should be given for projects of estimated cost upto 2 Crores )

Bid document fee.

3000 ~~upto~~ upto 2 C.  
5000 for 2 C ↑

Bid Validity

90 days NCB  
120 days ICB


Bid Security / Earnst money  
120 days  
150 days

# Process of tendering


- **Bid Opening**
- **Bid Evaluation**
- **Letter of Intent**
- **Letter of Acceptance ( Performance Security by successful bidder)**
- **Contract**
- **Notice to proceed – after which the actual work start**

<- Performance security amount = 5% of Bid amount if bid is within 85% of cost estimate  
=  $[(0.85 \times \text{Cost estimate} - \text{Bid Price}) \times 0.5] + 5\% \text{ of Bid Price}$  , otherwise

# Details of Tender Notice



**Thulung Dudhkoshi Rural Municipality**  
Office of the Rural Municipal Executive  
Mukli, Solukhumbu  
Koshi Province, Nepal



**Invitation for Online Bids**

Date of publication: 2080/05/31 (2023-09-17)

1. Thulung Dudhkoshi Rural Municipality, Solukhumbu invites electronic bids only from eligible bidders for the following contracts under National Competitive Bidding. Bidding is open to all eligible bidders for the following supply of work.

Contract ID	Description of Work	Estimated Amount (without Vat & Contingency)	Bid Validity	Bid Security	Bid Document fee	Remarks
TDRM/NCB/W/RD-01-2080/2081	Panchan-Mukli-Armas Road Upgrading Work	1,11,12,177.91/-	90 days	3,25,000/-	3,000/-	SSSE (IS, IE)

2. Eligible Bidders may obtain further Information from PPMO website: [www.bolpatra.gov.np/egp](http://www.bolpatra.gov.np/egp).

3. Bidder who submit their bid electronically may download the bidding documents from [www.bolpatra.gov.np/egp](http://www.bolpatra.gov.np/egp). Bidders, submitting their bid electronically, should deposit the cost of bidding document as stated above in the following account.  
**Name of the Bank : Laxmi Sunrise Bank Ltd.**  
**Name of Office : Thulung Dudhkoshi Rural Municipality, Solukhumbu.**  
**Office Account Name and No. : Antarik Rajaswa Khata Ga-1.1, 09503000016**

4. Bid security amount should be deposited at Name and A/C No- Sthaniya Taha Dharauti Khata Ga-3.1 09503000144 of Thulung Dudhkoshi Rural Municipality at Laxmi Sunrise Bank Ltd, Dudhkoshi Branch. Or Bidders who choose to submit their bid security amount as Bid bond, the bid bond should be issued from authorized and recognized commercial bank or financial institution eligible to issue bank guarantee as per prevailing law of Nepal. A scan copy of bid bond is mandatory.

5. If the last date of purchasing and /or submission falls on a government holiday, then the next working day shall be considered as the last date. In such case the validity period of the bid security shall remain the same as specified for the original last date of bid submission.

6. The Employer reserves the right to amend and correct at any time or to accept or reject, wholly or partly any or all bids without assigning reason whatsoever before the contract.

7. All the other condition of bidding process will be as per the Public Procurement Act, 2063 and Public Procurement Regulation, 2064 following all revision.

For. Chief Administrative Officer

1. Name of the authority publishing the notice
2. First date of publication
3. Brief description of the job.
4. Date time and place where and when the tender document is available and to be submitted.
5. Cost of the tender document
6. Cost estimate (optional) up to 2 crore work
7. Date, time and place of opening bid
8. Earnest money and security deposit amount
9. Expected date of acceptance of successful bids etc.

# Parts of Bidding Documents

- PART I Bidding Procedures

- Section I Instructions to Bidders (ITB)

- Section II Bid Data Sheet (BDS)

- Section III Evaluation and Qualification Criteria (EQC)

- Section IV Bidding Forms (BDF)

- PART II Requirements

- Section V Works Requirements (WRQ)

- Section VI Bill of Quantities (BOQ)

- PART III Conditions of Contract and Contract Forms

- Section VII General Conditions of Contract (GCC)

- Section VIII Special Conditions of Contract (SCC)

- Section IX Contract Forms (COF)



## Approval of Tenders

६७. बोलपत्र स्वीकृत गर्ने अधिकारी: \*१ (देहायको रकमको बोलपत्र स्वीकृत गर्ने अधिकार देहायको अधिकारीलाई हुनेछ -:

- (क) दश करोड रुपैयाँसम्मको राजपत्राङ्कित तृतीय श्रेणीको कार्यालय प्रमुख,
- (ख) बीस करोड रुपैयाँसम्मको राजपत्राङ्कित द्वितीय श्रेणीको कार्यालय प्रमुख,
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- (घ) पचास करोड रुपैयाँभन्दा बढीको विभागीय प्रमुख।



# Letter of Intent

 <p style="text-align: center;">Karnali Province Government Ministry of Physical Infrastructure Development Infrastructure Development Directorate <b>Infrastructure Development Office (IDO)</b> Kalikot, Nepal</p> <p style="text-align: center;"><b>Letter of Intent (LOI)</b></p> <p style="text-align: center;"><i>Date of Publication : 2077/06/01 (17<sup>th</sup> September, 2020)</i></p> <p>This is notify (as per section 27(2) of Public Procurement Act 2063) to all concerned bidders that, we are going to award following contracts as per IFB No: 01-2077/078 published on Rajdhani Daily published on 2077/04/01 (July 16, 2020) to following bidders selected as substantially responsive lowest evaluated bid fulfilling the qualification criterion.</p>				
S.N.	Contract ID No.	Project Name	Substantially Responsive Lowest Evaluated Bidders	Bid Amount Including VAT & PS (NRs.)
1	IDO/KKT/W/NCB/01/077-078	Design and Build of Karnali River Jarkot RCC Bridge along Jarkot Ramnkot, Kalikot	Hirchan - Caravan – Superstar JV, Kathamandu	131,439,340.00
2	IDO/KKT/W/NCB/02/077-078	Construction of Karnali River Baily Bridge Rengil, Kalikot	Jalap Nepal (P) Ltd. Chitwan	37,753,939.58
<b>Office Chief</b>				

# Tender and its process and contract management

## **Contract**

Contract is define as agreement concluded between two or more parties for performing or not performing any work.

### Elements of contract :

- a. Two or more competent parties
- b. Offer and acceptance
- c. Intention of creating legal relations
- d. Free consent
- e. Lawful purpose
- f. Possibility of performance
- g. Written and registration

# Tender and its process and contract management

## Types of Contract

- a. ~~Unit~~ Unit Rate Contract ✓✓
  - b. Lump Sum Contract ✓✓
  - c. Design and Built Contract
  - d. Turn Key Contract
  - e. EPC (Engineering, Procurement and Construction Contract)
  - f. Build Own Operate Transfer Contract (BOOT Contract)
-

# Contract Document

- The document that describes in detail the **scope of the agreement** and responsibilities of the parties of it is called “Contract document”.
- All the documents must be accurately cross referred according to the following serial.
  - iv. Conditions of contract
    - Special condition of contract/ condition of particular application
    - General condition of contract
  - v. The specifications
  - vi. The drawings
  - vii. Priced bill of quantities
  - viii. Addenda (It clarifies corrects and provide additional information)

## NOTE:

- The earnest money is returned to the **unsuccessful bidder**
- Within **Fifteen (15) days** of the receipt of Letter of Acceptance from the Employer, performance security should be deposited
- This is refunded after completion of **defect liability period (DLP)** i.e. Maintenance period.
- DLP generally taken as **365 days**
- Amount of earnest money and performance security = **Double the amount for foreign contractor.**
- Liquidated damage: The damage occurred to the owner, **due to the delay** in completion of job in time.

Fine is charged to the contractor in case of delay **@ of 0.05%** of contract amount per day but not exceeding **10 %**

# Pre Qualification

- It is a kind of **short listing** of eligible bidder and avoids crowding of bidder.
- Pre qualification is decided on the basis of the following criterias:
  - i. **Experience** and past performance on similar contracts.
  - ii. **Capabilities** with respect to personnel, equipments, and construction and manufacturing facilities
  - iii. **Financial position**
  - iv. **Litigation history**

Note : PQ is not required when amount of the work is less than **20 Million rupees( Rs. 2 crore)**

# Post Qualification

- All the eligible bidders participate in the bidding process.
- It may include **single envelop system** (Financial proposal only) or **double envelop system** ( Financial proposal in a envelop and technical proposal in another envelop).
- In double envelop system successful bidders are selected by adopting one of the three following methods:
  - i. Short list from technical proposal and select the lowest bidder to award the contact. ( Mostly followed in Nepal)
  - ii. Select the lowest bidder first and check the technical proposal. If technical proposal is ok select the party. If technical proposal is not ok select next lowest bidder and check the technical proposal.
  - iii. Give weight to both technical proposal as well as financial proposal. Select the bidder getting highest mark.

# Some Key Provisions

- Mobilization Fund : **up to 20%** (Half in first installment and half in 2nd Installment)
- Retention Money: **5 %** of total billing amount is retained as retention money. **Paid after Defect Liability Period**
- Price Escalation: Construction Contract having longer duration (**> 12 months** or multi year contract) should have price escalation clause. Should not exceed **25%** of original price



# Some Key Provisions

- Variation Order

<u>Up to 5 Percent</u>	<u>Gazetted Second Class</u> or Equivalent chief of concerned <u>public entity</u>
<u>Up to 10 Percent</u>	<u>Gazetted first Class</u> or Equivalent chief of concerned public entity
<u>Up to 15 percent</u>	<u>Head of department</u>
<u>15-25 percent</u>	Secretary of concerned ministry or equivalent chief of concerned body
<u>Above 25 %</u>	Government of Nepal, Council of Ministers

# MCQs

1. What is the purpose of project risk analysis and management?

- a) To eliminate all project risks completely ✗
- ✓ b) To identify and assess potential project risks
- c) To ignore project risks and proceed with the project ✗
- d) To allocate all project risks to external stakeholders ✗

2. Which of the following is a source of project financing?

- ✓ a) Venture capitalists
- b) Project charter
- c) Project team members
- d) Project auditors

### 3. What is the purpose of project financing?

- a) To determine the project's scope and objectives
- b) To ensure the project is completed on time
- c) To secure financial resources for project activities ✓
- d) To assess and manage project risks

4.

What is the primary objective of the tendering process in Nepal?

- a) To maximize profits for the project owner
- b) ~~To select the lowest bidder for the project~~
- c) To ensure transparency and fairness in procurement
- d) To expedite the project execution timeline

# MCQs

5 Which government body is responsible for overseeing the tendering process in Nepal?

- a) National Planning Commission
- b) Ministry of Finance
- c) Public Procurement Monitoring Office
- d) Department of Commerce

/ PPMU

6 Which of the following element is the source of risk to a project ?

- a. New technology
- b. Force majeure
- c. Lack of skilled staff
- d. All of the above

/

# MCQs

7. The political factors come under which of the following categories of risk ?

- a. Internal risk
- ☒ b. External risk
- c. Political factor is not a source of risk
- d. None of the above

PC

8. Contractor's Prequalification is required for the project cost above

- a. 2 million
- b. 10 Million
- c. 6 million
- ☒ d. 20 million 20

# MCQs

9. The bond issued without any collateral is called

- a. Preference share
- b. Equity share
- ☒ c. Debenture
- d. Debt capital

10. If two parties enter into an agreement for performing or not performing any work, then it is known as:

- ☒ a. Contract
- b. Tender
- c. Procurement
- d. Adjudication

# MCQs

11. Which of the type of contract is followed in construction of majority of Hydropower Projects in Nepal /

- a. EPC contract
- b. BOOT contract ✓
- c. Conventional Contract
- d. Construction Management Contract

12. Tender Document does not contains

- a. Tender Form
- b. Amount of earnest money
- c. BOQ
- d. ✓ Unit Rate

# MCQs

13. What is the upper limit of the cost of the works to be concluded through National competitive Bidding?

- a. Rs. 2 Billion
- b. Rs. 3 Billion
- c. Rs. 5 Billion ✓
- d. Rs. 7 Billion

14 . The ~~price escalation~~ is considered for project with life of

- a. Less than a year
- b. More than a year ✓
- c. More than 15 months
- d. More than 3 years



# MCQs

$$E.A = 1C$$

$$B.A = 80L$$

$$\text{below} = \frac{1C - 80L}{1C} \times 100\% = 20\%$$

15 . If cost estimate is Rs. 1 crore. The Bid amount submitted by the contractor is Rs. 80 Lakhs, then the possible amount of performance security is

- a. 6 Lakhs
- ☒ b. 6.5 Lakhs
- c. 7.5 Lakhs
- d. 8 Lakhs

If Bid price is up to 15% below Cost Estimate.

P.S = 5% of Bid price.

If Bid price is more than 15% below of Cost Estimate

$$\begin{aligned}
 P.S &= 5\% \text{ of Bid price} + (0.85 \times \text{Cost Estimate} - \text{Bid price}) \times 0.5 \\
 &= 5\% \text{ of } 80L + (0.85 \times 1C - 80L) \times 0.5 \\
 &= 4L + 5L \times 0.5 = 6.5L
 \end{aligned}$$

# MCQs

16 . The process of composing/raising the required fund from different sources such as equity, preferred stock, bond and debenture is known as

- a) capital structure planning
- b) project financing
- c) capital budgeting decision
- d) deducing earning per share