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Principles & Practice of Accounting

Concept and Accounting of Depreciation

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CHAPTER 5
CONCEPT AND ACCOUNTING OF DEPRECIATION

INTRODUCTION

Property, plan and equipment are tangible items that:

(a) are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and

(b) are expected to be used during more than a period of twelve months.

These are also called xed assets in common parlance. When a xed asset is purchased, it is recorded in books of account at it original or acquisition/purchase cost. However xed assets are used to earn revenues for a number of accounting periods in future with the same acquisition cost until the concerned fixed asset is sold or discarded. It is therefore necessary that a part of the acquisition cost of the xed assets is treated or allocated as an expense in each of the accounting period in which the asset is utilized. The amount or value of xed assets allocated in such manner to respective accounting period is called depreciation. Value of such assets decreases with passage of time mainly due to following reasons.

1. Wear and tear due to its use in business
2. Efflux of time even when it is not being used
3. Obsolescence due to technological or other changes
4. Decrease in market value
5. Depletion mainly in case of mines and other natural reserves

It is important to account for value of portion of property, plant and equipment utilized for generating revenue during an accounting year to ascertain true income. This portion of cost of Property, Plant & Equipment allocated to an accounting year is called depreciation.

As per Schedule II under the Companies Act, 2013, Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life. The depreciable amount of an asset is the cost of an asset or other amount substituted for cost, less its residual value. The useful life of an asset is the period over which an asset is expected to be available for use by an entity, or the number of production or similar units expected to be obtained from the asset by the entity.

Depreciation	1. Depreciation is permanent and continuous decrease in the book value of fixed assets due to use , efflux ion of time ,obsolescence ,expiration of legal rights or any other cause 2. Depreciation is non cash operating expenses which is to be provided whether there are profits or losses . 3. Depreciation is concerned with historical cost and not with the fluctuations in market price .
Depletion	Depletion refers to physical deterioration of natural resources like over deposits in mines , oil wells
Amortization	Amortization refers to the economic deterioration of intangible assets like goodwill ,patent obsolescence .
Obsolescence	Obsolescence refers to economic deterioration by change in technology or taste or fashion .
Depreciation Accounting	Depreciation Accounting is the process of allocation and not valuation .

DISTINCTION BETWEEN STRAIGHT LINE METHOD AND WRITTEN DOWN VALUE METHOD

Basis of Distinction	**Straight Line**	**Written Down Value Method**
1. Basic of calculation	Depreciation is calculated at a fixed percentage on the original cost.	Depreciation is calculated at a fixed percentage on original cost (in first year) and on written down value (in subsequent years)
2. Amount of Depreciation	The amount of depreciation remain constant.	The amount of depreciation goes on decreasing .
3. Total Charge (I.e. depreciation plus repairs)	Total charges in later years is more as compared to that in earlier years since renewals goes on increasing as the asset grows older , whereas the amount of depreciation remains constant year after year .	Total charge remain almost uniform year after year , since in earlier years the amount of depreciation is more and the amount of repairs and renewals is less whereas in latter years ,the amount of depreciation is less and the amount of repairs & renewals is more

HOW TO CALCULATE AMOUNT AND RATE OF DEPRECIATION UNDER VARIOUS METHODS

Method of Depreciation	**Amount and Rate of Depreciation**
1. Straight Line Method (SLM)	Amount of Depreciation = Original Cost less Residual Value / Expected Useful Life of the Assets $\text{Rate of Depreciation} = \frac{\text{Amount of Depreciation} \times 100}{\text{Original Cost}}$

2. Written Down Value (WDV)

$$\text{Rate of Depreciation} = \left(1 - \sqrt[n]{\frac{S}{C}}\right) \times 100$$

Where , n = Useful life of the asset (in years)

S = Scarp value at the end of useful life of the as

C = Cost of Asse

Amount of Depreciation = Book Value of the Asset × Rate of Depreciation .

3. Annuity Method

Fixed Amount of Depreciation = [Original Cost less Scrap Value × (Value of Annuity for a given period at a given rate of interest] Plus Interest on Scrap value (if any) for a year at a given rate of interest.

4. Depletion Method

Rate per Depreciation per Unit = Original Cost less Residual Value .

Useful Life in terms of Effective Hours

Amount of Depreciation = Actual Output (in units) × Rate of Depreciation per Unit.

5. Machine Hour Method

Rate per Hour = Original Cost less Residual Value .
Useful Life in terms of Effective Hours

Amount of Depreciation = Actual Hours × Rate of Depreciation per Hour.

6. Production Units Method

Rate per Depreciation per Unit = Original Cost less Residual Value .

Useful Life in terms of Productive output

Amount of Depreciation = Actual Production (in units) × Rate of Depreciation per Unit.

7 Sum of years 'Digits Method (SYD)

Rate per Depreciation

For 1st Year = $\frac{\text{nth year}}{\text{Sum of year's Digits}} \times 100 = ...\%$

For 2nd Year = $\frac{\text{(n-1)th year}}{\text{Sum of year's Digits}} \times 100 = ...\%$

For 3rd Year = $\frac{\text{(n-2) nth year}}{\text{Sum of year's Digits}} \times 100 = ...\%$

For nth Year = $\frac{\text{nth year}}{\text{Sum of year's Digits}} \times 100 = ...\%$

Note :- sum of Year's Digits = $\frac{n(n+1)}{}$

2Where 'n' refers to useful life of the assets (in years) .
Amount of Depreciation= (Original Cost less Estimated scarp Value) × Respective

Rate of depreciation for the given year .

CLASS WORK

SLM

Q-1 Cost of asset purchased Rs. 500000, Date of purchase- 01/04/2014

Installation exps. Rs. 100000

Rate of depreciation 10% p.a. as per SLM.

Prepare Assets A/c. and Depreciation A/c. upto 31/03/17.

Q-2 Cost of asset purchased Rs. 1500000, Date of purchase- 01/07/2013

Installation exps. Rs.150000

Rate of depreciation 8% p.a. as per SLM.

Date of sale 1/1/2016, sale value- 650000

Prepare Assets A/c.

Q-3 Cost of asset purchased Rs. 1200000 and 800000, Date of purchase- 01/07/2012 and 01/10/2013

Rate of depreciation 6% p.a. as per SLM.

Date of sale – 1St Asset 1/1/2016 , sale value- 550000

Prepare Assets A/c upto 31/03/16.

Q-4 The LG Transport company purchased 10 trucks at ` 45,00,000 each on 1st April 2014. On October 1st, 2016, one of the trucks is involved in an accident and is completely destroyed and ` 27,00,000 is received from the insurance in full settlement. On the same date another truck is purchased by the company for the sum of ` 50,00,000. The company write o 20% on the original cost per annum. The company observe the calendar year as its -nancial year.

Give the motor truck account for two year ending 31 Dec, 2017**.**

Q-5 M/s. Prabha Pharmaceuticals has imported a machine on 1st July, 2014, for Pound 8,000, paid custom duty and freight ` 80,000 and incurred erection charges ` 60,000. Another local machinery costing `1,00,000 was purchased on 1st Jan 2015. On 1st July, 2016, a portion of the imported machinery (value one-third) got out of order and was sold for ` 1,34,800. Another machinery was purchased to replace the same for ` 50,000. Depreciation is to be calculated at 20% p.a on cost. Show the machinery account for 2014, 2015, and 2016. Exchange rate is ` 80 per pound.

Q-6 A firm's plant and machinery account at 31st December, 2015 and the corresponding depreciation provision account, broken down by year of purchase are as follows:

Year of Purchase	Plant and Machinery at cost `	Depreciation Provision `
1998	2,00,000	2,00,000
2004	3,00,000	3,00,000
2005	10,00,000	9,50,000
2006	7,00,000	5,95,000
2013	5,00,000	75,000
2014	3,00,000	15,000
	30,00,000	**21,35,000**

Depreciation is at the rate of 10% per annum on cost. It is the Company's policy to assume that all purchases, sales or disposal of plant occurred on 30th June in the relevant year for the purpose of calculating depreciation, irrespective of the precise date on which these events occurred.

During 2015 the following transactions took place:

1. Purchase of plant and machinery amounted to ` 15,00,000
2. Plant that had been bought in 2004 for ` 170,000 was scrapped.
3. Plant that had been bought in 2005 for ` 90,000 was sold for ` 5,000.
4. Plant that had been bought in 2006 for ` 2,40,000 was sold for ` 15,000.

You are required to :

Calculate the provision for depreciation of plant and machinery for the year ended 31st December, 2015. In calculating this provision you should bear in mind that it is the company's policy to show any prot or loss on the sale or disposal of plant as a completely separate item in the Prot and Loss Account. You are also required to prepare the following ledger accounts during 2015.

(i) Plant and machinery at cost;

(ii) Depreciation provision;

(iii) Sales or disposal of plant and machinery.

WDV

Q-7 Cost of asset purchased Rs. 1000000 and 600000, Date of purchase- 01/05/2012 and 01/12/2013

Rate of depreciation 8% p.a. as per WDV.

Date of sale – 1St Asset 1/11/2015 , sale value- 550000

Prepare Assets A/c upto 31/03/16.

Q-8 The Machinery Account of a Factory showed a balance of ` 19,00,000 on 1st January, 2015. Its accounts were made up on 31st December each year and depreciation is written oat 10% p.a. under the Diminishing Balance Method.

On 1st June 2015, a new machinery was acquired at a cost of ` 2,80,000 and installation charges incurred in erecting the machine works out to ` 8,920 on the same date. On 1st June, 2015 a machine which had cost ` 4,37,400 on 1st January 2013 was sold for ` 75,000. Another machine which had cost ` 4,37,000 on 1st January, 2014 was scrapped on the same date and it realised nothing. Write a plant and machinery account for the year 2015, allowing the same rate of depreciation as in the past calculating depreciation to the nearest multiple of a Rupee.

Provision for Depreciation

Q-9 Cost of asset purchased Rs. 2000000 and 900000, Date of purchase- 01/10/2012 and 01/12/2013

Rate of depreciation 10% p.a. as per SLM.

Date of sale – 1St Asset 1/2/2016 , sale value- 850000

Prepare Assets A/c, provision for depreciation account and asset disposal account upto 31/03/16.

Q-10 In question no.4 prepare Assets a/c, provision for dep. a/c. and asset disposal a/c as per provision for depreciation method.

Change in method of Depreciation

Q-11 Cost of asset purchase Rs. 400000,

Date of purchase – 01/04/2014, rate of dep.15% p.a. as per SLM

Company wants to change method of dep. From SLM to WDV from year 16-17 @ 10% p.a.

Prepare asset account upto 31/03/17.

Q-12 M/s Anshul & Co. commenced business on 1st January 2011, when they purchased plant and equipment for `7,00,000. They adopted a policy of charging depreciation at 15% per annum on diminishing balance basis and Over the years, their purchases of plant have been:

Date	Amount `
1-1-2012	1,50,000
1-1-2015	2,00,000

On 1-1-2015 it was decided to change the method and rate of depreciation to straight line basis. On this date remaining useful life was assessed as 6 years for all the assets purchased before 1.1.2015 with no scrap value and 10 years for the asset purchased on 1.1.2015.

Change in estimation of life

Q-13 A Machine costing ` 6,00,000 is depreciated on straight line basis, assuming 10 years working life and Nil residual value, for three years. The estimate of remaining useful life after third year was reassessed at 5 years. Required to Calculate depreciation for the fourth year.

Q-14 A Machine costing ` 12,00,000 is depreciated on straight line basis, estimated scrap value is Rs. 200000, assuming 5 years working life, company has provided depreciation for three years. The estimate of remaining useful life after third year was reassessed at 5 years. Required to Calculate depreciation for the fourth year.

Annuity method

Q-15 A lease is purchased on 1st April, 2012 for 4 years at a cost of ` 2,00,000. It is proposed to depreciate the lease by the annuity method charging 5 percent interest. A reference to the annuity table shows that to depreciate ` 1 by annuity method over 4 years charging 5% interest, one must write o a sum of ` 0.282012 Required Show the Lease Account for four years and also the relevant entries in the pro-fit and loss account.

Machine Hour Method/Production unit method/Depletion method

Q-16 A machine was purchased for ` 30,00,000 having an estimated total working of 2,40,000 hours. The scrap value is expected to be ` 2,00,000 and anticipated pattern of distribution of effective hours is as follows :

Year

1 – 3 3,000 hours per year

4 - 6 2,600 hours per year

7 - 10 1,800 hours per year

Required to Determine Annual Depreciation under Machine Hour Rate Method.

Q-17 A machine is purchased for ` 20,00,000. Its estimated useful life is 10 years with a residual value of ` 2,00,000. The machine is expected to produce 1.5 lakh units during its life time. Expected distribution pattern of production is as follows:

Year Production

1-3 20,000 units per year

4-7 15,000 units per year

8-10 10,000 units per year

Required to Determine the value of depreciation for each year using production units method.

Sum of digit method

Q-18 Cost of purchase Rs. 700000, estimated scrap value Rs. 100000, estimated life 5 years, calculate depreciation as per sum of digit method.

Q-19 Cost of purchase Rs. 1200000, estimated scrap value Rs. 200000, estimated life 4 years, calculate depreciation as per sum of digit method.

MULTIPLE CHOICE QUESTIONS

1. Original cost = `12,60,000; Salvage value = Nil; Useful life = 6 years. Depreciation for the first year under sum of years digits method will be
   (a) ` 3,60,000 (b) ` 1,20,000 (c) `1,80,000
2. Obsolescence of a depreciable asset may be caused by:
   I. Technological changes.
   II. Improvement in production method.
   III. Change in market demand for the product or service output.
   IV. Legal or other restrictions.
   (a) Only (I) above (b) Both (I) and (II) above
   (c) All (I), (II), (III) and (IV) above
3. The number of production of similar units expected to be obtained from the use of an asset by an enterprise is called as
   (a) Unit life (b) Useful life (c) Production life
4. If a concern proposes to discontinue its business from March 2015 and decides to dispose of all its plants within a period of 4 months, the Balance Sheet as on March 31, 2015 should indicate the plants at their
   (a) Historical cost (b) Net realizable value (c) Cost less depreciation
5. In the case of downward revaluation of a plant which is for the first time revalued, the account to be debited is
   (a) Plant account (b) Revaluation Reserve (c) Profit & Loss account
6. The portion of the acquisition cost of the tangible asset, yet to be allocated is known as
   (a) Written down value (b) Accumulated value (c) Realisable value
7. The main objective of providing depreciation is to
   (a) Create secret reserve (b) Reduce the book value of assets
   (c) Allocate cost of the assets
8. Original cost of a machine was ` 25,20,000 salvage value was ` 1,20,000, useful life was 6 years. Annual depreciation under Straight Line Method
   (a) ` 4,20,000 (b) ` 4,00,000 (c) ` 3,00,000
9. The cost of a machine is `20,00,000. Two years later the book value is ` 10,00,000. The Straight-line percentage depreciation is
   (a) 50% (b) 33-1/3% (c) 25%
10. Original cost `13,00,000, Salvage value `40,000, Useful life 6 years. Depreciation for the first year under sum-of-years digit methods will be
    (a) ` 60,000 (b) ` 1,20,000 (c) ` 3,60,000
11. Which of the following assets does not depreciate?
    (a) Machinery and equipment (b) Patents
    (c) Land
12. A company purchased a machinery on April 01, 2010, for ` 15,00,000. It is estimated that the machinery will have a useful life of 5 years after which it will have no salvage value. The depreciation charged during the year 2014-15 was
    (a) ` 5,00,00 (b) ` 4,00,000 (c) ` 3,00,000
13. If the equipment account has a balance of Rs. 22,50,000 and the accumulated depreciation account has a balance of Rs. 14,00,000, the book value of the equipment is
    (a) ` 36,50,000 (b) ` 8,50,000 (c) ` 14,00,000

HOME WORK

Q-1 A firm purchased on 1st January, 2015 certain machinery for ` 5,82,000 and spent ` 18,000 on its erection. On July 1, 2015 another machinery for ` 2,00,000 was acquired. On 1st July, 2016 the machinery purchased on 1st January, 2015 having become obsolete was auctioned for ` 38,600 and on the same date fresh machinery was purchased at a cost of ` 4,00,000.

Depreciation was provided for annually on 31st December at the rate of 10 per cent p.a. on written down value.

Required to Prepare machinery account.

Ans: Closing balance Rs.5, 51,000, loss 1, 27,000

Q-2 Jain Bros. acquired a machine on 1st July, 2015 at a cost of ` 14,00,000 and spent ` 1,00,000 on its installation. The -rm writes o depreciation at 10% p.a. of the original cost every year. The books are closed on 31st December every year.

Required to Show the Machinery Account and Depreciation Account for the year 2015 and 2016.

Ans: Closing balance of assets a/c. 12, 75,000

Q-3 Jain Bros. acquired a machine on 1st July, 2015 at a cost of ` 14,00,000 and spent ` 1,00,000 on its installation. The -firm writes of depreciation at 10% p.a. every year. The books are closed on 31st December every year.

Required to Show the Machinery Account on diminishing balance method for the year 2015 and 2016.

Ans: Closing balance of assets a/c. 12, 82,500

Q-4 Cost of asset purchased Rs. 300000 and 200000, Date of purchase- 01/5/2012 and 01/6/2013

Rate of depreciation 12% p.a. as per WDV.

Date of sale – 1St Asset 1/7/2016 , sale value- 75000

Prepare Assets A/c, provision for depreciation account and asset disposal account upto 31/03/17.

Ans: Closing balance assets a/c. 200000, closing bal. of provision for dep. a/c. 77,335

Q-5 A Machine costing ` 2,00,000 is depreciated on straight line basis, estimated scrap value is Rs. 10,000, assuming 5 years working life, company has provided depreciation for two years. The estimate of remaining useful life after two years was reassessed at 4 years.

Required to Calculate depreciation for the third year.

Ans: 28,500

Q-6 M/s Akash purchased a machine for ` 10,00,000. Estimated useful life and scrap value were 10 years and ` 1,20,000 respectively. The machine was put to use on 1.1.2010.

Required : Show Machinery Account and Depreciation Account in their books for 2015 by using sum of years digits method.

Q-7 A lease is purchased on 1st April, 2012 for 4 years at a cost of ` 2,00,000. It is proposed to depreciate the lease by the annuity method charging 5 percent interest. A reference to the annuity table shows that to depreciate ` 1 by annuity method over 4 years charging 5% interest, one must write off a sum of ` 0.282012 [To write off ` 2,00,000 one has to write off every year ` 56,402.40 i.e. 0.282012 × 2,00,000].

Required : Show the Lease Account for four years and also the relevant entries in the profit and loss account.

Q-8 A machine was purchased for ` 30,00,000 having an estimated total working of 24,000 hours. The scrap value is expected to be ` 2,00,000 and anticipated pattern of distribution of effective hours is as follows :

Year	
1 – 3	3,000 hours per year
4 - 6	2,600 hours per year
7 - 10	1,800 hours per year

Required : Determine Annual Depreciation under Machine Hour Rate Method

Q-9 A machine is purchased for ` 20,00,000. Its estimated useful life is 10 years with a residual value of ` 2,00,000. The machine is expected to produce 1.5 lakh units during its life time. Expected distribution pattern of production is as follows:

Year	**Production**
1-3	20,000 units per year
4-7	15,000 units per year
8-10	10,000 units per year

Required : Determine the value of depreciation for each year using production units method.

Q-10 M/s Surya took lease of a quarry on 1-1-2013 for ` 1,00,00,000. As per technical estimate the total quantity of mineral deposit is 2,00,000 tonnes. Depreciation was charged on the basis of depletion method. Extraction pattern is given in the following table:

Year	**Quantity of Mineral extracted**
2013	2,000 tonnes
2014	10,000 tonnes
2015	15,000 tonnes

Required : Show the Quarry Lease Account and Depreciation Account for each year from 2013 to 2015.

Q-11 A firm purchased on 1st January, 2015 certain machinery for ` 5,82,000 and spent ` 18,000 on its erection. On July 1, 2015 another machinery for ` 2,00,000 was acquired. On 1st July, 2016 the machinery purchased on 1st January, 2015 having become obsolete was auctioned for ` 3,86,000 and on the same date fresh machinery was purchased at a cost of ` 4,00,000.

Depreciation was provided for annually on 31st December at the rate of 10 per cent p.a. on written down value.

Required : Prepare machinery account.

Q-12 M/s Anshul commenced business on 1st January 2011, when they purchased plant and equipment for ` 7,00,000. They adopted a policy of charging depreciation at 15% per annum on diminishing balance basis and over the years, their purchases of plant have been:

Date	Amount
	`
1-1-2012	1,50,000
1-1-2015	2,00,000

On 1-1-2015 it was decided to change the method and rate of depreciation to straight line basis. On this date remaining useful life was assessed as 6 years for all the assets purchased before 1.1.2015 and 10 years for the asset purchased on 1.1.2015 with no scrap value.

Required : Calculate the difference in depreciation to be adjusted in the Plant and Equipment Account for the year ending 31st December, 2015.

Q-13 A Machine costing ` 6,00,000 is depreciated on straight line basis, assuming 10 years working life and Nil residual value, for three years. The estimate of remaining useful life after third year was reassessed at 5 years.

Required : Calculate depreciation for the fourth year.

Q-14 A machine of cost ` 12,00,000 is depreciated straight-line assuming 10 year working life and zero residual value for three years. At the end of third year, the machine was revalued upwards by ` 60,000 the remaining useful life was reassessed at 9 years.

Required : Calculate depreciation for the fourth year.

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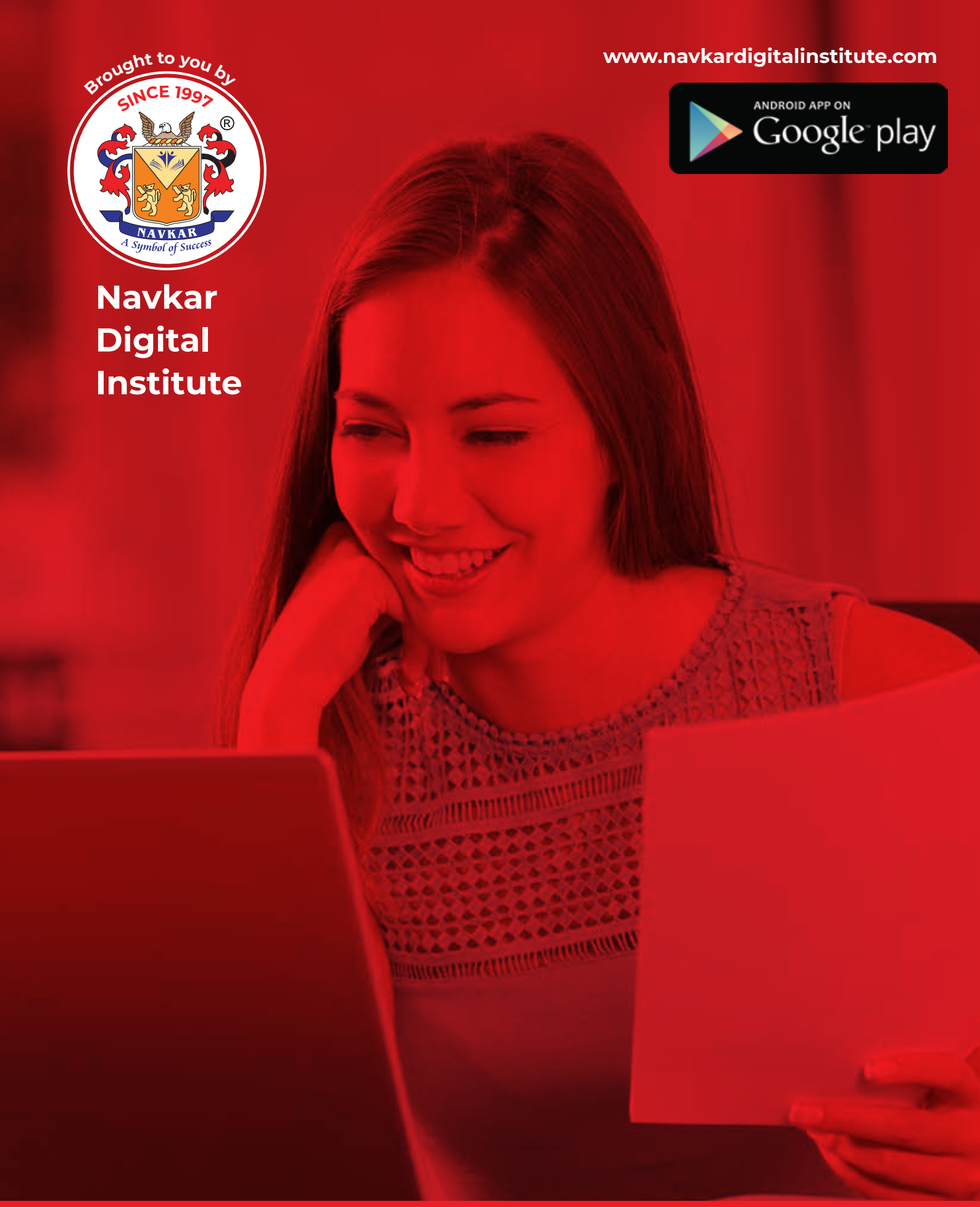

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