

Class XII holiday homework

Session-2025-26

Subject -accountancy

Q1. Mohit and Rohit are partners in a firm with a capital of Rs 80,000 and Rs 40,000 respectively. The firm earned a profit of Rs 30,000 during a year calculate Mohit share of profit

Q2. Amit Sumit and Kiara are partners sharing profit and losses in the ratio of 2:2:1 sumit is entitled to a commission of 15% of net profit after charging such commission. The net profit before charging commission is Rs 9,20,000. Calculate the amount of commission payable to sumit.

Q3. X, Y and Z are partners in a firm. Their capital on 1<sup>st</sup> April 2015 were Rs. 30,000, 20,000 and 10,000 respectively. On 1<sup>st</sup> August, 2015, X introduced Rs. 20,000 & Z introduced Rs. 10,000 as fresh capital. On 1<sup>st</sup> Dec, 2015 Y withdrew Rs. 5000 from his capital on 31<sup>st</sup> March 2016 calculate interest on capital @ 10% P.A.

Q4. M, H and R are partners in a firm at the end of the year, 31<sup>st</sup> March, 2014, their capital showed balance of Rs 80,000, 60,000 and 50,000 respectively. During the year firm earned Rs. 75,000 as net profit. Drawing of M, H, and R Rs. 10,000, 15,000 and 5000. Calculate interest on capital @ Rs. 10% P.A on 31<sup>st</sup> March, 2014

Q5. Mr. Rahul is a partner in a firm. During the year he withdrew the following amounts :-

Date	Amount
1 <sup>st</sup> April, 2014	1000
31 <sup>st</sup> August, 2014	2000
1 <sup>st</sup> October, 2014	5000
1 <sup>st</sup> December, 2014	3000
31 <sup>st</sup> January, 2015	2000

Calculate interest on drawing @ 10% p.a. for the year ended 31<sup>st</sup> March 2015

Q6. X, Y and Z are partners in a firm. X withdrew Rs. 5,000 at the beginning of each month, Y withdrew Rs. 6,000 at the end of each month and Z withdrew Rs. 10,000 at the middle of each month. Calculate interest on drawings @ 12% P.A. On 31<sup>st</sup> March, 2015

Q7. Mohit Shyam and Rahul are partners in a firm sharing profits in the ratio of 3:2:1. Rahul wants that he should share equally with Mohit and Shyam. He further wants that change in ratio should be applicable respectively for the last 3 years. Other partners have no objection the profits for the last three years were Rs. 20,000, 25,000, and Rs. 18,000. Record adjustment entry.

Q8. Vinay and Vijay were partners in a firm sharing profit in the ratio of 3:2. Their fixed capital were Vinay Rs. 1,80,000 and Vijay Rs. 1,20,000.

The partnership deed provided the following :-

(i) Interest on capital @ 5% P.A.

(ii) Rs.12000 P.A Salary to vinay and Salary of Rs. 400 P.M to Vijay .

The net profit earned by the firm for the year ended 31-03-2014 was Rs. 46800. The Profits were divided equally without providing for the above . Pass adjustment entry

Q9. P ,Q and R are partners in a firm with the capital of Rs.20000 , 50,000 and 80,000. Interest On capital charged 12% P.A instead of 9 % P.A . Pass journal entry to rectify the above error.

Q10. Preeti , Neetu and Rita were partners in a firm sharing profit in 2:3:5 ratio . Preeti was guaranteed a maximum profit of Rs. 1,00,000. Any deficiency on this account was to be borne by Rita . The profit of the firm for the year ended 31-03-2006 was Rs. 4,50,000 .

Prepare Profit and Loss Appropriation Account of Preeti , Neetu and Reeta for the year ended 31-03-2006

Q11. Rajat , Vinod and Suresh are partners sharing profits in the ratio of 5:4:1 . Suresh is given a guarantee that his share of profit in any year would be Rs.6000. Deficiency if any , Would be borne by Rajat and Vinod 3:3 . The profit for the year 1998 amounted to Rs.40,000.

Pass necessary journal entries in the books of the firm.

Q12. Amitabh and Babul are partners sharing profits in the ratio of 3:2 , with capitals of Rs 50,000 and 30,000 respectively . Interest on capital is agreed @ 6% p.a. Babul is to be allowed an annual salary of Rs 2,500. During the year 2019-20, the profits prior to the calculation of interest on capital but after charging Babul's salary amounted to Rs 12,500. A provision of 5% of the profit is to be made in respect of commission to the manager. Prepare profit and loss account.

Q13. A firm's average profits are Rs 70,000. it includes abnormal profits of Rs 5,000 capital invested in the business is Rs 5,50,000 and the normal rate of return is 10%. Calculate goodwill at four times of average profit.

Q14. A firm's average profits are Rs 180,000. Capital invested in the business is Rs 5, 00,000 and the normal rate of return is 20%. Calculate the goodwill of the Firm.

(i) On the basis of capitalizations of (a) average profit (b) super profit

**MCQ BASED QUESTIONS**

- Q1. Successful organisations do not achieve goals by chance but by following a deliberate process known as
- (a) Planning
  - (b) Co-ordination
  - (c) Controlling
  - (d) Management
- Q2. Efficiency is concerned with
- (a) Doing the right thing
  - (b) Doing things right
  - (c) Achieving end results
  - (d) None of the above
- Q3. Which of the following statements is true with reference to principles of management?
- (a) The principles of management have evolved.
  - (b) The principles of management are yet to be evolved.
  - (c) The principles of management are in the continuous process of evolution.
  - (d) None of the above.
- Q4. The principles of management are intended to be applied to all types and sizes of organisations. This statement
- reflects that the principles of management are
- (a) General guidelines
  - (b) Flexible
  - (c) Universally applicable
  - (d) Mainly behavioural
- Q5. Rohan works as a production manager in Global Enterprises Limited. He has been given the task of getting 1000 units
- of hand woven table mats manufactured at the cost of ₹150 per unit within 10 days. In order to be acknowledged as
- an effective manager, he must ensure that
- (a) The cost of production does not exceed ₹150 per unit
  - (b) The work is completed within 10 days even at higher cost per unit
  - (c) The cost of production is less than ₹150 per unit
  - (d) All of the above
- Q6. Principles of management can be modified by the manager when the situation demands. This statement implies that
- the principles of management are
- (a) Rigid
  - (b) Contingent
  - (c) Flexible
  - (d) Universally applicable
- Q7. Jay is working as a marketing manager in a company. Has been given the task of selling 100000 units of a product at
- the cost of ₹100 per unit within 20 days. He is able to sell all the units within the stipulated time, but had to sell last
- 1000 units at 20% discount in order to complete the target. In such a situation, he will be considered to be
- (a) An efficient manager
  - (b) An effective manager
  - (c) Both effective and efficient manager
  - (d) None of the above
- Q8. Management is equally important to run a political organisation as it is to run an economic organisation. Which

feature of management is being reflected in the given statement?

- (a) Management is goal oriented
- (b) Management is multidimensional
- (c) Management is all pervasive
- (d) Management is a group activity

Q9. Keeping in view the changes in the consumer demands and preferences 'Tasitemaker Bakery' has reduced the sugar

and fat content in its products. This approach of business shows that management is

- (a) An intangible force
- (b) A group activity
- (c) A dynamic function
- (d) A multidimensional activity

Q10. According to this principle of general management, "an organisation should safeguard against abuse of managerial

power, but at the same time a manager should have the necessary authority to carry out his responsibility." Name the

principle of management being described in the given statement.

- (a) Discipline
- (b) Authority and responsibility
- (c) Unity of command
- (d) Unity of direction

Q11. Name the principle of management suggested by Henri Fayol, which advocates that, "there should be good superiors

at all levels, clear and fair agreement and judicious application of penalties."

- (a) Authority and responsibility
- (b) Esprit De Corps
- (c) Order
- (d) Discipline

Q12. Through this principle of management, Henri Fayol guides the managers to exhibit exemplary behaviour and advises

that they should not fall into temptation of misusing their powers for personal benefit at the cost of general interest

of the organisation. Which principle of management is being described in the above statement?

- (a) Remuneration of employees
- (b) Centralisation and decentralisation
- (c) Subordination of individual interest to general interest
- (d) Equity

Q13. Management is considered to be an art because

- (a) The principles of management have universal validity
- (b) The principles of management have universal application
- (c) Different principles of management are brought into effect differently by different managers
- (d) It is not important for the practising managers to be a member of a professional association.

Q14. Which of the following is not a designation related to middle level management?

- (a) Operations Head
- (b) Sales Manager
- (c) Chief Operating Officer
- (d) Divisional Manager

Q15. Which of the following is a function of top level management?

- (a) Ensuring quality of output
- (b) Assigning necessary duties and responsibilities to their departments
- (c) Taking responsibility for all the activities of the business and its impact on the society
- (d) Ensuring that the safety standards are maintained within the organisation.

Q16. Which of the following statements is not true for lower level management?

- (a) Analyse the business environment and its implications for the survival of the business.
- (b) Ensure the quality of the output

- (c) They strive to reduce the wastage of resources
- (d) They ensure that the safety standards are maintained within the organisation.

Q17. Which principle of general management advocates that, "Employee turnover should be minimised to maintain

organisational efficiency."?

- (a) Stability of personnel
- (b) Remuneration of employees
- (c) Equity
- (d) Esprit De Corps

Q18. Principles of management emphasize on logical and rational decision making rather than on the basis of bias and

prejudice. The given statement highlights that the knowledge of principles of management leads to

- (a) Providing managers with useful insight into reality
- (b) Scientific decisions
- (c) Meeting changing environmental requirements
- (d) All of the above

Q19. The main task of this level of management is to determine the overall organisational objectives and strategies for

their realisation.

- (a) Operational management
- (b) Middle level management
- (c) First line managers
- (d) Top level management

Q20. Co-ordination is considered to be the essence of management because

- (a) It is a common thread that runs through all the activities within the organisation
- (b) It is implicit and inherent in all functions of the organisation
- (c) It is a force that binds all the functions of management
- (d) All of the above

## **Case studies based questions**

### **Case 1**

Read the following text and answer the question:

Priya, Riya and Seema are best friends They started a manufacturing unit of garments in Delhi. After a successful establishment in Delhi. They decided to open one of its branches in rural areas in Haryana with the objective of reducing the cost and offering jobs to the locals. They assessed and analyzed the type and number of employees required, keeping in mind that they have to encourage women in rural areas. They also offered employment opportunities to physically challenged people of rural areas. They satisfy the financial needs of employees. This step has raised the living standard of people living in rural areas.

1. "They have to encourage women in rural areas and they offered employment opportunities to physically challenged people in rural areas." Which objective of management is highlighted here?
  - i. Personal
  - ii. Organisational
  - iii. Social
  - iv. Economic
2. "They decided to open a branch in rural areas with the objective of reducing cost and offering job to the locals. Which social objective is fulfilled by this effort?
  - i. Using eco-friendly methods of production
  - ii. Providing financial support to community
  - iii. Contribution towards civic amenities
  - iv. Generation of employment opportunities
3. "They satisfy the financial needs of employees by offering good salaries." This statement highlights which objective of management?
  - i. Social
  - ii. Economic
  - iii. Personal

iv. Organisational

4. "Priya decides all variety, quantity and colour of all the items or products for maximising sale in the market."

The primary function of every manager is \_\_\_\_\_.

- i. Directing
  - ii. Organising
  - iii. Planning
  - iv. Staffing
5. "Allocation of resources for their purchase from different suppliers." Which function of management is highlighted here?
- i. Planning
  - ii. Organising
  - iii. Coordination
  - iv. Controlling
6. "She prefers to use eco-friendly methods of production." Which objective of management is highlighted here.
- i. Economic
  - ii. Social
  - iii. Personal
  - iv. Organisational
7. Which function of management ensures actual activities conform to planned activities?
- i. Planning
  - ii. Coordination
  - iii. Directing
  - iv. Controlling

## **Case 2**

**Read the following text and answer the question:**

In Shekhawat Ltd., Karanpreet working as a 'Production Manager' is a different person and has his own personalized and unique style of managing things and people. He tells his employees that we should work with team spirit, coordination and towards achieving the organisational goals. In a board meeting, it has been decided that the company will change some of its product features so as to make it more useful for the customers and to face intense competition. Karanpreet explains the decision taken in a board meeting to all the employees of the organisation.

- 1. "In Shekhawat Ltd. Karanpreet working as 'Production Manager' is a different person and has his own personalized and unique style of managing things and people." Identify the nature of management highlighted in the statement.
  - i. Profession
  - ii. Art
  - iii. Science
  - iv. None of the above
- 2. "In a board meeting, it has been decided that the company will change some of its product features so as to make it more useful for the customers and to face the intense competition." Which characteristic of management is reflected in the statement?
  - i. Management is a continuous process
  - ii. Management is group activity
  - iii. Management is multi-dimensional
  - iv. Management is a dynamic function
- 3. At which level Karanpreet is working?
  - i. Top-level
  - ii. Middle-level
  - iii. Lower-level
  - iv. Supervisory level
- 4. Karanpreet tells his employees that we should work with team spirit, coordination and towards achieving organisational goals. Identify the characteristic of management highlighted here.
  - i. Management is a goal-oriented
  - ii. Management is all-pervasive

- iii. Management is a continuous process
- iv. Management is a group activity

### ASSERTION AND REASONING BASED QUESTIONS

**1. Assertion (A):** Management is a systematic body of knowledge.

**Reason (R):** Management has its own theory and principles that have developed over a period of time.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**2. Assertion (A):** Participating actively in social service projects of the Government is not a legal obligation.

**Reason (R):** It provides various tax deductions to the enterprise.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**3. Assertion (A):** In any organisation, coordination is required so that production and sales department can work hand in hand.

**Reason (R):** Coordination integrates group efforts.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**4. Assertion (A):** Coordination begins at the planning stage and continues till controlling.

**Reason (R):** Coordination is a one-time process.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**5. Assertion (A):** One of the main differences between efficiency and effectiveness is based on the things they emphasise upon.

**Reason (R):** Efficiency emphasises doing the right task whereas effectiveness emphasises doing the task

in the right way.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**6. Assertion (A):** Coordination integrates group efforts.

**Reason (R):** Coordination unifies unrelated or diverse interests into purposeful work activity.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**7. Assertion (A):** Scientific Principles are developed through observations and repeated experiments.

**Reason (R):** Management is an inexact science as there are no Laboratories available in this field.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**8. Assertion (A):** Coordination is an all-pervasive function.

**Reason (R):** Coordination ensures unity of action.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**9. Assertion (A):** Employees have the tendency to resist changes.

**Reason (R):** Management had to bring necessary changes in the organisation to survive in this

competitive world and dynamic environment.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**10. Assertion (A):** In the field of Management, only theoretical knowledge is not sufficient.

**Reason (R):** Managers have to use their personal skills and creativity to apply that knowledge under different situations.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**11. Assertion (A):** Management is a dynamic function and has to adapt itself to the changing environment.

**Reason (R):** The effect of management is noticeable in an organisation where targets are met according to plans.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.



- c. A is true but R is false.
- d. A is false but R is true.

**12. Assertion (A):** Staffing is finding the right people for the right job and is an important aspect of management.

**Reason (R):** Staffing makes sure that right people with the right qualifications are available at the right

places and times to accomplish the goals of the organisation.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**13. Assertion (A):** Management tries to integrate the personal objectives of the employees with the organizational objectives.

**Reason (R):** Workers may lose interest in work if their objectives are neglected and it will be better if

their objectives are in the same line with that of organizational objectives.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**14. Assertion (A):** Middle Management is the link between top and lower level managers.

**Reason (R):** Middle management are subordinate to top managers and superior to the first line managers.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

**15. Assertion (A):** Profession involves skillful and personal application of existing knowledge to achieve desired results.

**Reason (R):** Experts in their respective areas have derived certain basic principles which are applicable

to a particular form of art.

- a. Both A and R are true and R is the correct explanation of A.
- b. Both A and R are true but R is not the correct explanation of A.
- c. A is true but R is false.
- d. A is false but R is true.

## CLASS XII MARKETING

### Holiday home work

Q1. From which stage of PLC can an organisation observe an onset of decline in profits?

- (a) Introduction stage      (b) Growth stage
- (c) Maturity stage      (d) Decline stage

Q2. Which of the following is an external factor that affects pricing decisions?

- (a) Product differentiation      (b) Cost of production
- (c) Objectives of the firms      (c) Competition

Q4 Explain the importance of product

Q5. Explain the following: (a) augmented product (b) customized product (c) differentiated product

Q6. What are the functions of packaging? Explain various packaging strategies.

Q7. Explain the various stages of product life cycle on the basis of sales, cost, profits, customers and competitors

Q8. Explain speciality and unsought product.

Q9. Fill in the blanks

- (i) The----- product aims to enhance the value of product /offer through voluntary improvements
- (ii) The ----- indicates the sales and profit of the product over time
- (iii) Marketers define packages as the -----of marketing
- (iv) Symbols and pictures ensure ----- identification
- (v) Product is the ----- and all marketing activities revolve around it.

Q10. Name and explain the various factors affecting pricing which are within the control of a firm up to a certain extent

Q11. Distinguish between generic market and product market

Q12. In India all the packaged foods are sold are required to comply the food and safety regulations, 2011 issued By the food safety and standard authority of India functioning under the ministry of health and family Welfare whereby the products required more extensive descriptions of their nature and use along with safety Warnings, if any. Identify the concept discussed above and explain its role.

## **ENGLISH:**

1. Interview atleast 5 people in your neighbourhood on the topic" Evolving hazards due to social media in my neighbourhood" . Create a presentation of the interview and draft the article on word file.
2. Write an interesting short script based on any one of the themes of the three lessons you have learnt (The Last Lesson, My Mother @Sixty Six and Third Level) .  
Use A4 size paper.
3. The roads are being widened, forests are being cut, buildings are being constructed, Companies are being set-up, Technology is ever-growing yet we find something is missing. Write an article on "Humanity Missing in Human World".
4. Read any book written by APJ Abdul Kalam and write a review in 200 words.
5. Write a poem on your own using some literary devices and make it as rhythmic as

---

possible . Write the poem with the theme  
Save The Green World , Save Life.

---

# APPLIED MATHEMATICS

## Grade XII

### Summer Holiday's Home Work

#### EXERCISE-1

1. Find the sum of 132 and 121 mod 23.
2. Find  $7^n \pmod{3}$ .
3. Find the value of  $x$ , given that  $x \equiv 23 \pmod{7}$ ; if  $21 \leq x < 31$
4. Find the remainder when  $226 \times 369 \times 122 \times 461 \times 1025$  is divided by 8.
5. Evaluate  $(16 \times 29) \pmod{7}$
6. If  $x \pmod{9} = 2$ , find all the possible values of  $x$ ; where  $0 < x < 47$ .
7. Find the positive integers less than 50 forming the equivalence class 4 for modulo 6
8. What time will it be after 200 hours, if the present time is 5:00 am?

#### EXERCISE-3

9. In what ratio must rice at ₹ 69 per kg be mixed with rice ₹ 100 per kg so that the mixture be worth ₹ 80 per kg?
10. The average salary per head of the entire staff of a small factory including the supervisor and labours is ₹ 5750. The average salary per head of the supervisor is ₹ 20,000 and that of the labours is ₹ 5000. Find the number of labours in the factory if there are 4 supervisors.
11. A container contains 70 l of orange squash. The squash being too concentrated 7 l of squash was taken out from this container and replaced by water. This process was repeated thrice to reduce the concentration of squash. How much quantity of orange squash is left in the container?

#### EXERCISE-4

12. Find the speed of the boat, if a boat moves downstream at the rate of 16 km/hr and upstream at the rate of 10 km/hr.
13. The speed of a boat in still water is 14 km per hour. While going downstream it moves at the rate of 24 km per hour. Find the speed of the boat against the stream.
14. A boat goes 8 km upstream and then returns. Total time taken is 4 hours 16 minutes. If the speed of current is 1 km/hr, find the actual speed of the boat.

#### EXERCISE-5

15. Pipe A can fill a tank in 30 hours and pipe B in 45 hours. If both the pipes are opened in an empty tank, how much time will it take to fill the tank?
16. A pipe can fill a cistern in 6 hours. Due to a leakage in the tank the cistern is just full in 9 hours. How much time the leakage will take to empty the tank?
17. A cistern can be filled by pipes A and B in 4 hours and 6 hours respectively. When full, the cistern can be emptied by pipe C in 8 hours. If all the pipes were turned on at the same time, in how much time will the cistern be filled?

#### EXERCISE-6

18. In a 1000 metres race, A defeats B by 300 metres and B defeats C by 200 metres. In the same race by how many metres will A defeat C?
19. In a 1000 metres race, A can give a start of 100 metres to B and a start of 280 metres to C. In the same race, how much start can B give to C?
20. In a 500 metres race, A defeats B by 60 metres (or) 12 seconds. What is the time taken by A to complete the race?

# EXERCISE-7

21. A, B and C enter into a partnership. B contributes  $\frac{1}{3}$  of the capital, while A contributes as much as B and C together contribute. Find the ratio of their capitals.
22. Rahul got ₹ 5000 as his share out of the total profit of ₹ 9000. Ramesh had invested ₹ 3000 for 6 months, while Rahul invested for the whole year. Find the amount invested by Rahul.

23.

Solve:  $4x - 2 < 6$ , when  $x \in \mathbb{Z}$

Show that the numbers 16 and 4, satisfy the numerical inequality AM > GM.

Solve the following inequality.

(i)  $(-2 \leq -6) < 10$

(ii)  $2a < a - 4 \leq 3a + 8$

(iii)  $\frac{(y-1)}{3} + 4 < \frac{(y-5)}{5} - 2$

24. Construct matrix  $A = [a_{ij}]$  of order  $2 \times 3$  where  $a_{ij} = \frac{(i+2j)^2}{2}$

25. Construct matrix  $B = [b_{ij}]$  of order  $2 \times 2$  where  $b_{ij} = \frac{(i-j)}{3}$

26. How many distinct  $2 \times 2$  matrices can be formed by using numbers 5, 7 and -1? Justify your answer.

27. Given  $A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$ ,  $B = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$ , find:

i.  $2A - 3B$

ii.  $AB$

iii.  $BA$

iv.  $AB - BA$

28. For  $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 4 & 2 & 1 \end{bmatrix}$  show that  $A^3 - 23A - 40I = O$ , where  $I$  is an identity matrix of order 3, and  $O$  is zero matrix.

29. → Find the area of the triangle with vertices  $(-2, -3)$ ,  $(-1, -8)$  and  $(3, 2)$ .

30. → For what value of "k" the points  $(k, 7)$ ,  $(-4, 5)$  and  $(1, -5)$  are collinear.

31. → Represent the given matrices as the sum of a symmetric and skew symmetric matrices

i.  $\begin{bmatrix} 3 & 1 \\ -1 & 8 \end{bmatrix}$

ii.  $\begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix}$

32. → Prove the following using properties of determinants:

i.  $\begin{vmatrix} -a^2 & ab & ac \\ ab & -b^2 & bc \\ ac & bc & -c^2 \end{vmatrix} = 4a^2b^2c^2$

ii.  $\begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix} = xy$

iii.  $\begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix} = (a-b)(b-c)(c-a)$

iv.  $\begin{vmatrix} \alpha & \beta & \gamma \\ \alpha^2 & \beta^2 & \gamma^2 \\ \beta+\gamma & \gamma+\alpha & \alpha+\beta \end{vmatrix} = (\alpha-\beta)(\beta-\gamma)(\gamma-\alpha)(\alpha+\beta+\gamma)$

v.  $\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 1+3p+2q \\ 3 & 6+3p & 1+6p+3q \end{vmatrix} = 1$

33. → Find adjoint A if

i.  $A = \begin{bmatrix} 2 & 1 \\ -3 & 5 \end{bmatrix}$

ii.  $A = \begin{bmatrix} -52 & 11 \\ 0 & 51 \end{bmatrix}$

34. → Find the inverse of the given matrices, by using elementary transformations:

i)  $\begin{bmatrix} -5 & -1 \\ 3 & 2 \end{bmatrix}$

ii)  $\begin{bmatrix} -3 & -1 \\ 5 & 2 \end{bmatrix}$

iii)  $\begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$

iv)  $\begin{bmatrix} 3 & 2 & 1 \\ 4 & 1 & 3 \\ 1 & 1 & 1 \end{bmatrix}$

35. → Find inverse of the given matrices, by using Adjugate (matrix) method.

i.  $\begin{bmatrix} 4 & -1 \\ 3 & 2 \end{bmatrix}$

ii.  $\begin{bmatrix} 2 & -1 & 4 \\ 4 & 0 & 2 \\ 3 & -2 & 7 \end{bmatrix}$

36. → Solve the following system of equations by i) Matrix method ii) Row reduction method:

a)  $2x - 3y = -4$ ,  $3x + 5y = 13$

b)  $x + y = 1$ ,  $5x - 7y = 29$

c)  $5x - 4y = 9$ ,  $3x + 7y = -4$

d)  $x - y + 2z = 1$ ,  $2y - 3z = 1$ ,  $3x - 2y + 4z = 2$

e)  $2x - 3y + 5z = 1$ ,  $3x + 2y - 4z = -5$ ,  $x + y - 2z = -3$

37. → Solve the following system of equation using Cramer's rule.

i)  $2x - 3y = -4$ ,  $3x + 5y = 13$