



**St. Mary's School, Dwarka**  
**Holiday Homework**  
**Class XII**  
**Worksheet 4**

**Subject: English**

General Instructions:

- 1) The work should be done neatly and in a systematic way.
- 2) The given questions are to be done in the English notebook.
- 3) Attempt all questions.

**Q1. Read the passage carefully.**

1. Philosophy of Education is a label applied to studying education's purpose, process, nature and ideals. It can be considered a branch of both philosophy and education. Education can be defined as the teaching and learning of specific skills, and the imparting of knowledge, judgment and wisdom, and is something broader than the societal institution of education we often speak of.

2. Plato is the earliest important educational thinker, and education is an essential element in "The Republic" (his most important work on philosophy and political theory, written around 360 B.C.). In it, he advocates some rather extreme methods: removing children from their mothers' care and raising them as wards of the state, and differentiating children suitable to the various castes, the highest receiving the most education, so that they could act as guardians of the city and care for the less able. He believed education should be holistic, including facts, skills, physical discipline, music and art. Plato believed talent and intelligence are not distributed genetically and thus can be found in children born to all classes. His proposed system of selective public education for an educated minority of the population does not follow a democratic model.

3. During the Medieval period, the idea of Perennialism was first formulated by St. Thomas Aquinas in his work "De Magistro". Perennialism holds that one should teach those things deemed to be of everlasting importance to all people everywhere, namely- principles and reasoning, not just facts (which are apt to change over time). One should teach first about people, not machines or techniques. It was originally religious, and it was only much later that a theory of secular perennialism developed.

4. During the Renaissance, the French sceptic Michel de Montaigne (1533 - 1592) was one of the first to view education critically. Unusually for his time, Montaigne was willing to question the conventional wisdom of the period, calling into question the whole edifice of the educational system, and the implicit assumption that university-educated philosophers were necessarily wiser than uneducated farm workers.

**Q1. Based on the reading of the passage, choose the correct option. (1x5=5)**

**i. What is the main focus of the Philosophy of Education? 1**

- A. The history of education
- B. The purpose, process, nature, and ideals of education
- C. The administrative aspects of educational institutions
- D. The financial aspects of education

**ii. How does Plato's view on talent and intelligence differ from common genetic beliefs?**

**He believes**\_\_\_\_\_.

1

- A. talent and intelligence are distributed based on social class.
- B. intelligence is solely a product of genetic inheritance
- C. only the upper class possesses talent and intelligence.
- D. talent and intelligence are not distributed genetically.

**iii. From Plato's educational philosophy, what can be inferred about his view on societal roles?**

**He believed**\_\_\_\_\_.

1

- A. societal roles should be inherited
- B. education should determine societal roles
- C. everyone should have the same education.
- D. education was unnecessary for societal roles.

**iv. What does the term "holistic" imply in the context of Plato's educational philosophy?**

- A. Focused on religious teachings
- B Exclusive to the elite class
- C. Comprehensive, including various disciplines
- D. Centered on physical discipline

**v. The word, "edifice", according to Montaigne's view of the educational system means**

**a**\_\_\_\_\_.

1

- A. large, complex system
- B. small part
- C. religious building
- D. piece of machinery

**Q2. The Literary Club of Salwan Public School is staging a play based on, 'The Jungle Book'. You are Ravit/Rhea, Secretary of the Club. Draft a notice inviting the students of Std. VI-XII to audition for the same. Invent all the necessary details like date, time etc. (50 words) (4)**

**Q3. Read the extract and answer the questions given below. (1X5=5)**

I'm just an ordinary guy named Charley, thirty-one years old, and I was wearing a tan gabardine suit and a straw hat with a fancy band; I passed a dozen men who looked just like me. And I wasn't trying to escape from anything: I just wanted to get home to Louisa, my wife. I turned into Grand Central from Vanderbilt Avenue, and went down the steps to the first level, where you take trains like the Twentieth Century. Then I walked down another flight to the second level, where the suburban trains leave from, ducked into an arched doorway heading for the subway- and got lost. That's easy to do.

**i. What was Charley's destination when he entered Grand Central?**

1

- A. The Twentieth Century train
- B. The suburban trains
- C. The subway
- D. A different city

**ii. Charley mentions passing "a dozen men who looked just like me" to**\_\_\_\_\_

1

- A. emphasise his feeling of being ordinary and unremarkable

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- B. show that he was in a hurry and did not notice anyone
- C. indicate that he was in a very busy and crowded place
- D. suggest that he was in a uniformed profession

**iii. What does the passage imply about the layout of Grand Central?**

**1**

- A. It is straightforward and easy to navigate
- B. It is confusing and easy to get lost in
- C. It only has one level and is simple
- D. It is a small, uncomplicated station

**iv. The author includes details about the different levels and trains to\_\_\_\_\_.**

**1**

- A. illustrate the complexity of the station
- B. show Charley's interest in trains
- C. highlight the modernity of the station
- D. suggest that Charley is a train enthusiast

**v. Choose the correct option.**

**1**

**Assertion: Charley was trying to escape from something when he got lost in Grand Central.**

**Reason: He wanted to avoid his responsibilities.**

- A. Both the assertion and the reason are true, and the reason is the correct explanation for the assertion.
- B. Both the assertion and the reason are true, but the reason is not the correct explanation for the assertion.
- C. The assertion is true, but the reason is false.
- D. Both the assertion and the reason are false.

**Q4. Answer the following questions briefly in 40-50 words.**

**(2x3=6)**

- i.** How would you evaluate Sam's character? Elucidate any two qualities, and substantiate with evidence from the text. **2**
- ii.** Why do you think Mukesh is content to dream of cars and doesn't dream of flying a plane? **2**
- iii.** The manner of the Tiger King's death is a matter of extraordinary interest. Comment. **2**

**Q5. Activity: Research any 2 types of ships that have undertaken voyages to Antarctica and their features. Design a ship unique in appearance that you would take on the voyage to your dream destination. Mention 2 features that set your ship apart from the others. (Use an A-4 size pastel sheet. **(5)****

**Subject: Mathematics**

2x20=40

Q1 If a matrix has 8 elements, what are the possible orders it can have? What if it has 5 elements?

Q2 Construct a  $4 \times 3$  matrix whose elements are

$$(i) a_{ij} = 2i + \frac{i}{j} \quad (ii) a_{ij} = \frac{i-j}{i+j} \quad (iii) a_{ij} = i$$

Q3 If  $A = \begin{bmatrix} x-y & z \\ 2x-y & \omega \end{bmatrix} = \begin{bmatrix} -1 & 4 \\ 0 & 5 \end{bmatrix}$  find  $x, y, z, \omega$ .

Q4 Find a matrix  $X$  such that  $2A + B + X = O$ , where

$$A = \begin{bmatrix} -1 & 2 \\ 3 & 4 \end{bmatrix}, B = \begin{bmatrix} 3 & -2 \\ 1 & 5 \end{bmatrix}$$

Q5 If  $A = \begin{bmatrix} 2 & -1 \\ 3 & 2 \end{bmatrix}, B = \begin{bmatrix} 0 & 4 \\ -1 & 7 \end{bmatrix}$ , find  $3A^2 - 2B + I$

Q6 If  $A = \begin{bmatrix} \alpha & 0 \\ 1 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 0 \\ 5 & 1 \end{bmatrix}$ , find the values of  $\alpha$  for which  $A^2 = B$ .

Q7 Let  $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}, B = \begin{bmatrix} 5 & 2 \\ 7 & 4 \end{bmatrix}, C = \begin{bmatrix} 2 & 5 \\ 3 & 8 \end{bmatrix}$

Find a matrix  $D$  such that  $CD - AB = 0$ .

Q8 If the matrix  $A = \begin{bmatrix} 5 & 2 & x \\ y & z & -3 \\ 4 & t & -7 \end{bmatrix}$  is a symmetric matrix, find  $x, y, z$  and  $t$ .

Q9 If  $A = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$  satisfies  $A^4 = \lambda A$ , then write the value of  $\lambda$ .

Q10 If  $S = [S_{ij}]$  is a scalar matrix such that  $s_{ij} = k$  and  $A$  is a square matrix of the same order, then  $AS = SA$  ?

- (a)  $A^k$                       (b)  $k + A$                       (c)  $kA$                       (d)  $kS$

Q11 If  $A$  is a square matrix such that  $A^2 = A$ , then  $(I + A)^3 - 7A$  is equal to

- (a)  $A$                       (b)  $I - A$                       (c)  $I$                       (d)  $3A$

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Q12

$$\text{If } \begin{bmatrix} 1 & -1 & x \end{bmatrix} \begin{bmatrix} 0 & 1 & -1 \\ 2 & 1 & 3 \\ 1 & 1 & 1 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix} = 0, \text{ find } x.$$

Q13

$$\text{If } A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix} \text{ and } I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}, \text{ then find } \lambda \text{ so that } A^2 = 5A + \lambda I.$$

Q14

$$\text{If } A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}, \text{ prove that } A^n = \begin{bmatrix} 1 & n \\ 0 & 1 \end{bmatrix} \text{ for all positive integers } n.$$

Q15

$$\text{If } A = \begin{bmatrix} \cos \theta & i \sin \theta \\ i \sin \theta & \cos \theta \end{bmatrix}, \text{ then prove by principle of mathematical induction that}$$

$$A^n = \begin{bmatrix} \cos n\theta & i \sin n\theta \\ i \sin n\theta & \cos n\theta \end{bmatrix} \text{ for all } n \in \mathbb{N}.$$

Q16

$$\text{If } A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & -2 \\ a & 2 & b \end{bmatrix} \text{ is a matrix satisfying } AA^T = 9I_3, \text{ then find the values of } a \text{ and } b.$$

Q17

$$\text{If } A = \begin{bmatrix} \cos \theta & \sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}, \text{ then find the values of } \theta \text{ satisfying the equation } A^T + A = I_2.$$

Q18

$$\text{Find the values of } x, y, z \text{ if the matrix } A = \begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix} \text{ satisfy the equation } A^T A = I_3.$$

Q19

$$\text{Express the matrix } A = \begin{bmatrix} 3 & 2 & 3 \\ 4 & 5 & 3 \\ 2 & 4 & 5 \end{bmatrix} \text{ as the sum of a symmetric and a skew-symmetric matrix.}$$

Q20 Let A and B be symmetric matrices of the same order. Then, show that

(i)  $A + B$  is a symmetric matrix

(ii)  $AB - BA$  is a skew-symmetric matrix

(iii)  $AB + BA$  is a symmetric matrix

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### Project -1

Make a project on Matrices and their applications ( ex- coding and decoding, cryptography).

### Project -2

Learn how to use Microsoft, Excel for addition , subtraction, and transpose of matrices. Make a soft copy of the same and paste screenshot of the output on the file along with project.

**Subject: Physics**

**General Instructions:**

- \* Neatly write the answers in your notebook.
- \* Attempt the questions keeping in mind the weightage of each question.

Q1 The force between two-point charges kept at a distance  $d$  apart in the air is  $F$ . If these charges are kept at the same distance in the water, how will the electric force between them change? 1

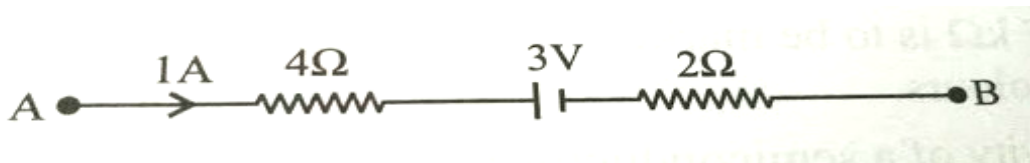
Q2. Plot  $F$  vs  $(1/r)$  where  $F$  is Coulomb's force between two-point charges kept  $r$  distance apart. 1

Q3. How much current will an electric heater, rated  $1\text{kW}$ , draw when connected to a  $250\text{V}$  supply? 1

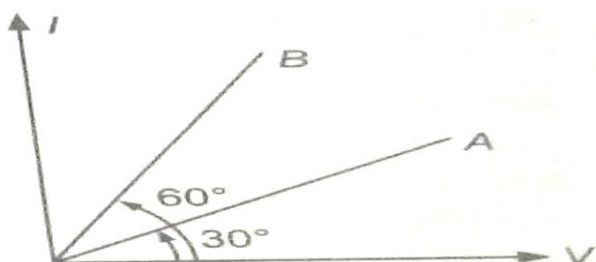
Q4. (i) An electric dipole of dipole moment  $20 \times 10^{-6}\text{Cm}$  is enclosed by a closed surface. What is the net flux coming out of the surface? Justify. (ii) In a certain  $0.1\text{m}^3$  of space, electric potential is found to be  $5\text{V}$  throughout. What is the electric field in this region? 2

Q5. (i)What is the effect of a rise in temperature on the drift velocity of free electrons? (ii) Define the temperature coefficient of resistance of electrical resistance. (iii)Depict the equipotential surfaces due to an electric dipole. 3

Q6. (i)Plot a graph, showing the variation of resistance of a conducting wire as a function of its radius, keeping the length of the wire and its temperature constant. (ii) The figure below represents a part of a closed circuit. Find the potential difference between the points A and B.



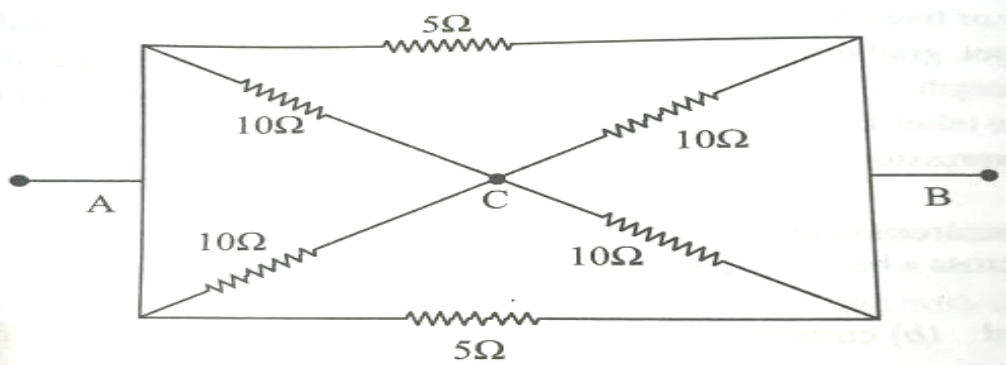
(iii)  $V - I$  graphs for two conductors A and B of the same length and radii are shown in the figure. What is the ratio of their resistivities? (1x3= 3)



Q7. (i) Under what conditions does the terminal potential difference of a cell (i) equal to its emf (ii) becomes greater than its emf? (ii) Find the equivalent resistance between the points A and B.

(1+2=3)

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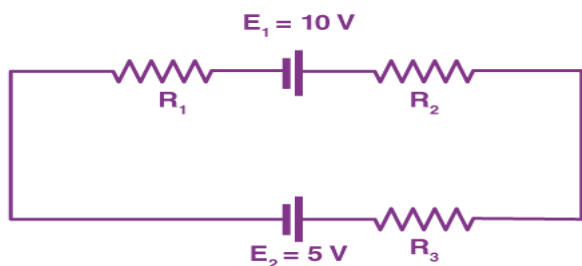


**Q8**

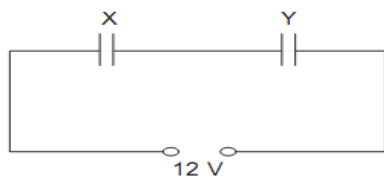
(i) Derive an expression for the drift velocity of free electrons. Hence, deduce Ohm's law. (ii) A wire whose cross-sectional area is increasing linearly from one end to the other is connected across a battery of  $V$  volts. (ii) Which of the following quantities remain constant in the wire? (a) Drift speed (b) Current density (c) Electric current (d) Electric field. Justify your answer. (2+1=3)

**Q9. Use Kirchoff's laws to determine the electric current that flows in the circuit given below If  $R_1 = 2\Omega, R_2 = 4\Omega, R_3 = 6\Omega,$**

**3**



**Q10.** Two parallel plate capacitors X and Y, have the same area of plates and the same separation between them. X has air between the plates while Y contains a dielectric medium of  $\epsilon_r = 4$ . (i) Calculate the capacitance of each capacitor if the equivalent capacitance of the combination is  $4\mu\text{F}$ . (ii) Calculate the potential difference between the plates of X and Y. (iii) What is the ratio of electrostatic energy stored in X and Y? (2+1.5+1.5=5)



**Subject: Chemistry**

- Q.1 How will you convert ethanol to ethene? 1
- Q.2 Why phenol does not give a protonation reaction readily? 1
- Q.3 Write the equation involved in Reimer-Tiemann reaction. 1
- Q.4 Arrange the following:
- (i)  $C_6H_5-NH_2$ ,  $C_6H_5-CH_2-NH_2$ ,  $C_6H_5-NH-CH_3$
- (ii)  $C_2H_5-OH$ ,  $CH_3CH_2-NH_2$ ,  $CH_3-NH-CH_3$  2
- Q.5 How can the following conversions be carried out
- (i) Aniline to bromobenzene
- (ii) Chlorobenzene to 2-chloroacetophenone
- (iii) Chloroethane to butane
- Q6. How will you bring about the following conversions?
- (a) Aniline to Benzonitrile
- (b) Aniline to iodobenzene
- (c) Phenol to Picric acid 3
- Q7. How will you distinguish between the following pairs by chemical reactions?
- (i)  $CH_3OH$  and  $C_2H_5OH$  (ii) Phenol and cyclohexanol
- (iii) Aniline and N-Methyl aniline 3
- Q8. Write the name of the reaction, structure and IUPAC name of the product formed when:
- (a) phenol reacts with  $CHCl_3$  in presence of  $NaOH$  followed by hydrolysis.
- (b) Phenol reacts with Zinc dust.
- (c) Phenol reacts with concentrated Nitric acid. 3
- Q9. An organic compound A with the molecular formula  $(+)C_4H_9Br$  undergoes hydrolysis to form  $(+)C_4H_9OH$ . Give the structure of A and write the mechanism of the reaction. 3
- Q10. (a) Write the structure of the main products when aniline reacts with the following reagents.
- (i)  $Br_2$  water (ii)  $(CH_3CO)_2O$ /pyridine
- (b) Arrange the following in the increasing order of basicity in the vapour phase:  
 $C_2H_5NH_2$ ,  $(C_2H_5)_3N$ ,  $(CH_3CH_2)_2NH$
- (c) Complete the following:
- (i)  $CH_3CH_2CH_2NH_2 + CHCl_3 + KOH(alc.) \rightarrow$
- (ii)  $CH_3CONH_2 + Br_2 + KOH \rightarrow$  5



**Subject: Biology**

- Q1. What do you understand by semi-conservative nature of DNA? (1)
- Q2. What is meant by leading and lagging strands? (1)
- Q3. How is a heterogeneous RNAbe converted into m-RNA? (1)
- Q4. Define a test cross. (1)
- Q5. Why did Morgan select *Drosophila melanogaster* to study sex-linked genes for his lab experiments? (2)
- Q6. Write the type of sex determination mechanisms, the following crosses show. Give an example of each type.
- (a) Female XX and male XO.
- (b) Female ZW and male ZZ. (1.5+1.5 = 3)
- Q7. Explain the laws that Mendel derived from his dihybrid crosses. (3)
- Q8. Write the three basic facts that are highlighted in Mendel's Law of dominance. (3)
- Q9. In our society the women are often blamed for giving birth to daughters. Can you explain why this is not correct? (5)
- Q10. Define spermiogenesis and spermiation. (5)

**Subject: Computer Science**

Q.1 What is protocol? How many types of protocols are there?	2
Q.2 What is the difference between networking and remote networking?	2
Q.3 What is point-to-point protocol?	2
Q.4 How gateway is different from router?	2
Q.5 What is the role of network administrator?	2
Q.6 What is the difference between baseband and broadband transmission?	2
Q.7 What are the difference between domain and workgroup?	2
Q.8 What is the differences between POP3 and IMAP Mail Server?	2
Q.9 Name different layer of the ISO OSI Model.	3
Q.10 What is FDM? Give example.	3
Q.11 Describe the following in brief:	3
i) MOSAIC ii) USENET iii) WAIS	

**Subject: Psychology**

- Q1. Define self. 1
- Q2. In value assessment we try to determine the \_\_\_\_\_ values of a person. 1
- Q3. Define personality. 2
- Q4. People who are confident, can solve problems, confront the things that frighten them and nurture themselves are all qualities of which Behavioural aspect of self. Write a note on it. 2
- Q5. Rita is learning music. Many times, she has to miss her favourite serial as she has to go for music classes. Also, she wakes up early to practice despite her love her sleep. Which concept from the chapter self and personality can you link to this situation? 2
- Q6. Which concept of self is based on Bandura's social learning theory? Write a note on it. 2
- Q7. If a psychologist is evaluating you by asking your response to ink blots, which form of assessment is the psychologist using? List any two features of this form of assessment. 3
- Q8. Is there difference between self-actualization and a fully functioning individual? Support your answer with the help of examples. 4
- Q9. Distinguish between type and trait approach of personality. Give suitable examples. 4
- Q10. What is meant by delay in gratification? Discuss the technique used for self-control. 4

**Subject: Informatics Practices**

**Answer the following questions:**

Q1 Write a SQL command to create the following table STUDENT.

2

	school_id	s_id	score	status
1	1004	1	23	Fail
2	1008	2	95	Pass
3	1012	3	97	Pass
4	1016	4	67	Pass
5	1020	5	100	Pass
6	1025	6	73	Pass
7	1030	7	88	Pass
8	1035	8	13	Fail
9	1040	9	16	Fail
10	1050	10	53	Pass

Q2 Consider the following table: Movierental and write SQL statement for (a) and (b):

2

reference_number	transaction_date	return_date	membership_number	movie_id	movie_returned
11	20-06-2012	NULL	1	1	0
12	22-06-2012	25-06-2012	1	2	0
13	22-06-2012	25-06-2012	3	2	0
14	21-06-2012	24-06-2012	2	2	0
15	23-06-2012	NULL	3	3	0

a) to get the number of times that the movie with id 2 has been rented out( omit duplicates)

b) to display the latest movie rented.

Q3 Describe the following clauses in SQL: GROUP BY and HAVING.

2+2

Q4 Write a short note on INSERT Statement.

3

Q5 Explain the SQL commands based on the following:

2x3=6

- **Conditions based on a range**
- **Conditions based on a list**
- **Conditions based on Pattern**

**Q6** Based on the following tables **PRODUCT** and **CLIENT**, answer the following queries: 1x5=5

**PRODUCT:**

P_ID	ProductName	Manufacturer	Price	Discount
TP01	Talcom Powder	LAK	40	
FW05	Face Wash	ABC	45	5
BS01	Bath Soap	ABC	55	
SH06	Shampoo	XYZ	120	10
FW12	Face Wash	XYZ	95	

**CLIENT:**

C_ID	ClientName	City	P_ID
01	Cosmetic Shop	Delhi	TP01
02	Total Health	Mumbai	FW05
03	Live Life	Delhi	BS01
04	Pretty Woman	Delhi	SH06
05	Dreams	Delhi	FW12

- i) to display ProductName and Price for all products whose Price is in the range 50 to 150.
- ii) to display details of product whose manufacturer is either XYZ or ABC
- iii) to display ProductName, Manufacturer and Price for all products that are not given any discount.
- iv) to display ClientName, City, P\_ID and ProductName for all clients whose city is Delhi.
- v) Which column is used as Foreign Key and name the table where it has been used as foreign key?

**Q7** a) Consider the following Table: **CUSTOMER** 1x6=6

customer_id	cust_name	city	grade	salesman_id
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozv Altidor	Moscow	200	5007

**Write the SQL statements for the following conditions (a) to (f):**

- a) to display all customers in New York who have a grade value above 100.
- b) to display those customers who are neither belongs to the city London nor grade value is more than 200
- c) to sort out those customers with all information whose ID value is within any of 3007, 3008 and 3009.
- d) to find those customers with all other information and name started with any letter within 'A' and 'K'
- e) to display the grade with the percent sign (%) with salesman ID and city columns for all the customers
- f) fetching the “cust\_name” from customer table in upper case.

**Subject: Physical Education**

**Answer the following questions:**

1. In which Olympics P.T. Usha secured 4th place in 400 m hurdle race? 1  
(a) 1980 Olympics    (b) 1984 Olympics  
(c) 2016 Olympics    (d) None of the above
2. In which Olympic games, Saina Nehwal and M.C. Mary Kom secured one bronze medal each? 1  
(a) 2008 Olympics    (b) 2012 Olympics  
(c) 2016 Olympics    (d) None of the above
3. In which Olympics did women participated for the first time? 1  
(a) 1896                (b) 1900  
(c) 1904                (d) 1908
4. Mary Kom belongs to which sports? 1  
(a) Tennis              (b) Wrestling  
(c) Badminton         (d) Boxing
5. What do you mean by specific sports programmes? Explain about health runs and run for unity in detail. 3
6. What do you mean by specific sports programmes? Explain any three. 3
7. While specifying all calculations, prepare a 'knock-out fixture' for 21 teams. 3
8. Draw a knock-out fixture of 21 teams mentioning all the steps involved. 5
9. Being the captain of the school, prepare five important committees with their responsibilities to conduct one day run for health race. 5
10. Explain the reasons for the less participation of women players in sports. 5

**Subject: Economics**

**Answer the following questions:**

- Q1. Explain the currency authority function of Central Bank. 2
- Q2. Explain lender of the last resort function of the Central Bank. 2
- Q3. Explain the banker to the government function of the Central Bank. 2
- Q4. Explain the meaning of Cash Reserve Ratio and Statutory Liquidity Ratio. 2
- Q5. State three main functions of commercial bank. Explain any one of them. 2
- Q6. Explain any two functions of a Central Bank. 3
- Q7. What is bank rate policy? How does it work as a method of credit control? 3
- Q8. What are open market operations? How do these work as a method of credit Control? 3
- Q9. State three methods of credit control used by the Central Bank. 3
- Q10. Explain any two main functions of commercial banks. 3