

**Std XI Science/Commerce 2010-11
Past Term End Papers**

ECONOMICS-I

Question numbers 1 to 5 carry 1 mark each [5]

1. Indifference curve analysis is based on the concept of _____ utility.
2. The ratio of change in demand of car to the change in price of petrol is known as _____.
3. According to _____ “Economics is a science of economizing.”
4. Total Revenue = _____.
5. If the price of petrol cash crops decreases, the supply of food grains _____.

Question numbers 6 to 11 carry 1 mark each [6]

6. State the importance of the law of diminishing marginal utility.
7. State the methods of economic analysis.
8. Why is economics said to be the science of economizing ?
9. Can the stock be greater than supply? Explain.
10. Explain the term ‘total outlay’
11. Give two examples of money cost ?

Question numbers 12 to 17 carry 2 mark each. [12]

12. ‘The classification of wants is flexible and relative in nature.’ Explain
13. Explain two causes of decrease in marginal utility.
14. 696 units of a commodity is demanded at a price of Rs. 16 per unit. The quantity demanded rises to 850 units with a fall in price to Rs 12. Find the price elasticity of demand by percentage method. Also state its type.
15. Differentiate between expansion and contraction of demand and increase and decrease in demand.
16. Why does the supply curve have a positive slope?
17. What is average fixed cost? What type of curve does it have?

Question numbers 18 to 21 carry 3 marks each [12]

18. Discuss fully the definition of economics as presented by Marshal.
19. Explain with example the concept of Rate of Marginal Substitution.
20. Explain the law of demand with the help of a demand schedule and diagram.
21. Explain the relationship between average cost and marginal cost.

Question numbers 22 to 24 carry 5 marks each [15]

22. What is consumer’s equilibrium? Explain with the help of a diagram how the consumer attains equilibrium.
23. Explain the factors effecting supply.
24. Explain the concept of average fixed cost, average variable cost and average cost with the help of a graph.

STATISTICS**A Question numbers 1 to 5 carry 1 mark each [5]**

1. When any authorized organization or investigator collects the data for the first time himself it is called _____ .
2. When the variable characteristics associated with a sample is qualitative, the characteristics is called _____ .
3. Class length = _____ - _____
4. In order to draw a circle diagram we take the _____ of the volume of data expressed in number for each unit as the radius of the circle.
5. The mean of 5 observations is 62.5. If 5 is added to each observation and the result is divided by 2, the new mean is _____ .

B Question numbers 6 to 11 carry 1 mark each [6]

6. State two limitations of the method of indirect inquiry.
7. Give two points of difference between discrete and continuous frequency distribution.
8. What is manifold classification ?
9. Which type of graph is best suited to represent statistics regarding production and sales, birth rates and death rates?
10. State two characteristics of an ideal measure of central tendency?
11. If the mean of the observation is calculated to be 13, taking the assumed mean as 13, then the sum of the deviations from assumed mean is _____ .

C. Question numbers 12 to 16 carry 2 marks each [10]

12. Write a short note on population inquiry.
13. Prepare an original frequency distribution from the following cumulative frequency distribution.

More than	25	30	35	40	45	50	55	60	65
c.f.	100	96	87	70	45	25	14	6	1
14. The mean of the observation $x_1, x_2, x_3, x_4, 8, 7, 6, 4, 3, 2$, is 7. If the mean of x_1, x_2, x_3 and x_4 is m , find the value of m .
15. Find the mean of the following distribution by the method of cumulative frequency. 10, 12, 13, 15
16. You are a member of an NGO and you are conducting a survey regarding the extent of awareness of aids in the city. Frame four questions you would like to in your questionnaire for this purpose.

D. Question numbers 17 to 21 carry 3 marks each. [15]

17. Write a short note on Importance of graphs and diagrams.
18. The daily consumption of cotton by textile mills of a city are shown in the form of frequency distribution as follows. Find the daily consumption of cotton in bushels per mill.

consumption of cotton (in 1000 bushels)	1	2	3-15	15-25	25-35	35-55
No. of mills	10	8	18	12	40	12
19. Explain the sources of secondary data.

20. In a sample study about the study habits in two towns- Agra and Jaipur, following data were observed.

Agra 52% were males
 25% were coffee drinkers
 16% male coffee drinkers
 Jaipur 55% were males
 28% were coffee drinkers
 18% were male coffee drinkers.

Tabulate the above observations.

21. Draw the histogram of the following frequency distribution.

Class	0-5	5-15	15-30	30-50	50-60
Frequency	8	24	42	32	8

E. Question number 22 carries 4 marks [4]

22. The following data give the annual expenditure (in Rs) on different categories of two families A and B. Draw the pie diagram for the data.

Category	Expenditure (in Rs)	
	Family A	Family B
Food	40,000	50,000
Rent	25,000	30,000
Clothing	10,000	20,000
Education	10,000	32,000
Savings	5,000	28,000
Total	90,000	1,60,000

F. Question numbers 23 and 24 carry 5 marks each [10]

23. In a survey of 24 employees of a municipal transport service relating to their age (in years) and daily pocket expense (in Rs) the following bivariate data are obtained. Prepare a bivariate frequency distribution of the data.

Age 26 53 42 37 33 29 48 52 37 41 56 32 50 54 40 48
 Expense 40 20 10 30 20 40 20 10 30 40 20 30 20 10 30 10
 Age 27 46 42 26 28 40 44 50
 Expense 40 30 30 50 40 30 20 20

24. The mean of the following frequency distribution of 125 observations is 22.12. Find the missing frequencies.

Class	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44
Freq	3	8	12	?	35	21	?	6	2

BUSINESS ORGANISATION**Section A**

Question no.1 to 5 are multiple choice questions. Choose the correct option and write its serial letter.
Questions 1 to 5 carry 1 mark each. (5 M)

1. A manager working in a bank is an example of----
a) business b)employment c)service d)professional
2. The businessman himself is the owner of business in-----
a) sole proprietorship b) cooperative Society
c) company d) joint sector
3. An imported goods on which custom duty has not been paid is stored in _____ warehouse.
a) bonded warehouse b) public warehouse
c) private warehouse d) special warehouse
4. The basic concept of insurance is -----
a) economic b)social c)scientific d)political
5. When banks are unable to recover the money lent-----are created.
a) performing assets b)non-performing assets c)liquid assets d)none of these

Section B

Answer the following questions in One-Two sentences only.

Questions 6 to 10 carries 1 mark each. (5 M)

- 6) Define Primary industry with Illustrations.
- 7) State any two characteristics of Profession.
- 8) Why sole proprietorship is dynamic?
- 9) Why does bank give maximum interest on fixed deposit account?
- 10) What is meant by insurance policy?

Section C

Answer the following questions in Brief.

Questions 11 to 16 carries 2 marks each. (12 M)

- 11) State the difference between sole proprietorship and partnership firm.
- 12) Differentiate between Private warehouse and Public warehouse (Any Four)
- 13) Explain the terms a) Minimum Subscription, b) Underwriter.
- 14) Define E-mail. State any two uses of E-mail.
- 15) How are Prices stabilized due to warehouses ?
- 16) State the uses of internet.

Section D

Answer the following questions in Brief.. Question 17 to 22 carries 3 Marks each. (18 M)

- 17) Explain the secondary purpose of business.

- 18) Explain different types of trade..
- 19) Explain the uses of Fax.
- 20) Give three illustrations of insurable interest.
- 21) Explain the advantages of registration of Partnership firm
- 22) Discuss-Communication instruments have made the world a global village.

Section E

Answer the following questions in detail. Question 23 and 24 carries 5 Marks each. (10 M)

- 23) Discuss the main functions of a warehouse.
- 24) Define partnership . Explain the characteristics of partnership firm.

OR

Explain the principles of Insurance .

ACCOUNTS-I**Section –A**

Questions No 1 to 5 are multiple choice questions .From the given options, select the correct one. Each question carries 1 mark. 5M

1. ----- is considered to be the first books of accounts.
a. Journal b. Journal Proper c. Rough book d. Cash book
2. Sometime a trader will accept or pay lesser amount in order to settle the accounts. The amount of such deductions is known as –
a. Allowances b. Cash Discount c. Trade discount d. Refund
3. Excess of assets over liabilities is known as –
a. Liability b. Current asset c. Fixed assets d. Net assets
4. Net amount of credit purchase of goods is -
a. Total Amount of credit purchase b. Total Amount of credit purchase-Trade discount
c. Total amount of credit purchase-Allowance d. Total amount of cash purchase
5. Contra transactions affects only---
a .Cash account b. Bank account c. Cash and bank account d. Discount account

Section-B

For Question No.6 to 10, give answer in one or two lines. Each question carries one mark

5M

6. Define Journal Proper .
7. State the types of cash book.
8. What is meant by subsidiary book?
9. What is an account?
10. State any two qualitative characteristics of accounting information.

Section-C

Answer briefly for Question No. 11 to 15. Each question carries two marks. 10M

11. Classify the following account into real ,nominal or personal account.
 1. Goods burnt by fire account A/c
 2. Income tax A/c
 3. Bank fixed deposit A/c
 4. Postal saving certificate A/c

12. Explain the interpretation of the following voucher in the books of Priya
1. Credit memo of Rs. 1000 prepared by Priya for Sunita
 2. Credit note of Rs. 700 issued by Priya
 3. Salary voucher of Rs. 1500 prepared by Priya for clerk's salary
 4. Receipt of Rs. 300 issued by Saumitra to Priya
13. Explain two fold effects of the following transactions and examine its effect on assets and liabilities with the help of accounting equation
1. Borrowed a loan of Rs. 10,000 from a friend Vinod
 2. Sold goods of Rs. 6,000 for Rs. 7,000 and received cheque
 3. Receive notice for paying tax of Municipal Corporation
 4. Goods of Rs. 250 destroyed by fire.
14. Explain giving reason whether the following transactions are cash or credit transactions.
1. Sold goods of Rs.1000 to Sadanand.
 2. Sold sample for Rs.200.
15. Explain giving reasons whether the following statements are true or false.
1. In sales return book all type of sales transactions are recorded.
 2. House rent and shop rent both are business expenses.

Section -D

Question No. 16-18 are essay type questions and each question carries 10 marks.

30 M

16. From the following transactions, prepare a three columnar cash book in the books of Rajni.
2008
June 1. Opening cash balance Rs.5,000 and bank overdraft Rs.2,000.
3. Goods of Rs.4000 sold to Vipul. Vipul issued a cheque of necessary amount which is deposited in the bank.
 4. Goods of Rs.8000 sold to Jhanvi at 10%cash discount .
Half of the amount is received in cash and remaining amount by cheque.
 5. Goods of Rs.3000 purchased from Paresh for cash at 10% cash discount.
 6. Rs.1000 deposited in the bank.
 7. Rs.800 for salary and Rs.300 for stationery expenses are paid by cheque.
 8. Rajvi paid Rs. 5900 by cash towards total debts of Rs.6000.

9. Cheque of Rs.8000 issued to Diana towards full settlement of account of Rs.8080.
10. Sales tax of Rs.3000 paid by cash.
11. Rs.2000 withdrawn from the business for personal use.
12. Postage expenses of Rs.200 paid by cash.
13. Paid cash of Rs.600 for wages.
14. After keeping cash on hand of Rs.2000 , remaining amount is deposited in the bank.
17. From the following transactions of Dina Kapad Bhandar, prepare purchase book, sales book, and return books with columns.
2007
March 1. Record the following transactions in purchase book, entered into with Ram Kapad Bhandar. 100 sarees at Rs.100 each at 10% trade discount, 200 meters of cotton cloth at Rs.25 per meter, at 10%trade discount 100 shirt pieces each of Rs.40 at 10%trade discount.
 4. Sold 20 sarees at Rs.200 each, to Sachin stores.
 10. Sold 100 meter cotton cloth at Rs.40 per meter and 50 shirt pieces at Rs 50 each, on credit to Parthiv stores.
 15. Received back half the goods, from Parthiv store, as they were damaged.
 - 18.150meter of cotton cloth purchased from Bharat Kapad Bhandar at a price of Rs.30 per meter at 10% trade discount and additional 4% cash discount if the payment is made with in 15 days.
 20. Half of the goods purchased from Bharat Kapad Bhandar were returned as they were not corresponding to the sample.
 25. Received 10 sarees back from Sachin stores.
 - 30.500 meters of cotton cloth purchased from Shah Bros. at a price of Rs.25 per meter. Half the amount is paid.
18. Write the journal entries from the following transactions of Radhika and Co., for the month of Jan 2009
2009
Jan 1. Radhika has commenced a business with cash Rs.50,000 furniture Rs. 3,000, stock of goods Rs. 6,000 and a loan of Rs. 10,000 from Ritu at 5%.
 2. Personal car worth Rs. 10,000 sold for Rs. 9,000 and out of this cash Rs. 5,000 was brought in the business
 3. Purchased a table fan of Rs.2500 for personal use. Paid the amount from business.
 4. Purchased a machine of Rs. 3,000 from Purvi and paid Rs. 500 as installation charges
 5. Goods of Rs. 800 were burnt by fire. Insurance company accepted the claim of Rs. 300.

6. Purchased furniture of Rs. 3,000 and gave goods of Rs. 2,800 in exchange.
7. Received Rs.3000 as apprentice premium from Ronit.
8. Sold goods of Rs. 12,000 to Rajesh at 10% trade discount and 10% cash discount. Received a cheque for full amount.
9. Priya was declared insolvent, there were bad debts of Rs. 300 and received a cheque for Rs. 1,000.
10. On our instruction, Vivek gave Rs. 2000 to Kesha.

MATHEMATICS-I**SECTION A****Q 1-8****(8M)**

1. The logically equivalent statement to $p \Rightarrow q$ is
a. $q \Rightarrow p$ b. $q \Rightarrow \neg p$ c. $p \Rightarrow q$ d. $p \Rightarrow \neg q$
2. $n(A-B) =$
a. $n(A) - n(B)$ b. $n(A) \cap n(B)$ c. $n(A) - n(A \cap B)$ d. $n(B-A)$
3. If $A \subset B$ then $A \cap B^1 =$
a. $A \cap B$ b. $B \cap A^1$ c. ϕ d. none of these
4. How many different teams each containing 3 students, can be formed out of six students?
a. $6C_3$ b. $6P_3$ c. 31 d. $6C_6$
5. The negation statement of $x \in A \Rightarrow x \in B$ is
a. $x \in A \Rightarrow x \in B$ b. $x \notin A \Rightarrow x \notin B$ c. $x \in B \Rightarrow x \in A$ d. $x \in A$ and $x \notin B$
6. A and B are not singleton and $n(A \times B) = 15$ and $A \subset B$ then $n(A) =$
a. 3 b. 5 c. 1 d. 15
7. $f: \mathbb{R} \rightarrow \mathbb{R}$ $f(x) = x^2 - 3x + 2$ then f is
a. one one and onto b. not one one and not onto c. inverse exists
d. none of these
8. * is defined on \mathbb{N} by $a * b =$ least common multiple of a & b. The identity element for * is
a. e b. b c. a d. 1

SECTION B**Q 9-18****(10m)**

9. How many 4-digit numbers are there, with all digits distinct?
10. The sum and product of three consecutive terms of an A.P. are 21 and 280 respectively. Find the three terms.
11. Find the G.P. of positive terms such that its first term is 4 and the fifth term is 324.
12. Find the zeroes of $\sec 2\theta$.
13. Solve $3 \cos x + 4 \sin x = 2$.
14. Find two harmonic means between $\frac{1}{5}$ and $\frac{1}{11}$.
15. The graph of the function $y = \cot x$ repeats after some length of an interval. Write the length of that interval. Why?
16. $\sec \theta + \tan \theta = p$ then find $\sin \theta$.
17. $f: \mathbb{R} \rightarrow \mathbb{R}$ $f(x) = 3x + 2$ and $\text{gof}: \mathbb{R} \rightarrow \mathbb{R}$, $\text{gof}(x) = 6x + 7$. Find $g: \mathbb{R} \rightarrow \mathbb{R}$.
18. Find the value $\sum_{r=1}^{15} (4r - r^3)$.

SECTION C**Q 19-27****(18M)**

19. For $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 2 \\ 1 & 2 \end{bmatrix}$, verify that $(AB)^{-1} = B^{-1}A^{-1}$.

20. Prove by Principle of Mathematical Induction

$$a+ar+ar^2+ \dots +ar^{n-1} = \frac{ar^{n-1}}{r-1} \quad (r \neq 1)$$

21. In a game throwing a die a player loses Rs. 3 if digit 1 or 2 turns up, wins Rs. 5 if digit 3 or 4 turns up and wins Rs. 8 if digit 5 or 6 turns up. If the amount gained by the player defines a random variable X , find the probability distribution of X .

22. There are 20 points in a plane, 6 of which are collinear. How many distinct lines can you get by joining these points with each other?

23. If distinct positive numbers a, b, c, d are in G.P. prove that

$$\frac{ab - cd}{b^2 - c^2} = \frac{a + c}{b}$$

24. Prove $\frac{(1 - \tan \theta)^2}{(1 - \cot \theta)^2} = \frac{1 + \tan^2 \theta}{1 + \cot^2 \theta}$

25. Prove $\sin^{-1} \frac{4}{5} + \sin^{-1} \frac{5}{13} + \sin^{-1} \frac{16}{65} = \frac{\pi}{2}$

26. Solve $\tan^{-1} 2x + 2 \tan^{-1} x = \frac{\pi}{2}$

27. With the help of graph find the solution set of following system of Inequalities $x \geq 0, y \geq 0, x+y \leq 12, 4x+6y \leq 60$.

SECTION D**Q28-35****(24m)**

28. Find the coefficient of x^4 in the expansion of the product $(1-x)^6 (1+2x)^5$

29. Find the square root of $\frac{1}{i} + \frac{1}{i^2} + \frac{1}{i^3} + \frac{1}{i^4} + \frac{1}{i^5} + \frac{1}{i^6}$

30. If $\log_z xy = a, \log_x yz = b, \log_y xz = c$. Prove that $\frac{1}{a+1} + \frac{1}{b+1} + \frac{1}{c+1} = 1$

$(x, y, z \in \mathbb{R}^+ - \{1\})$

31. Six boys and two girls are to be seated in a row. Find the probability of an arrangement in which two girls are not seated side by side. What is the probability of an arrangement where two girls are seated side by side?

32. Prove that
$$\begin{vmatrix} -2a & a+b & a+c \\ b+a & -2b & b+c \\ c+a & c+b & -2c \end{vmatrix} = 4(a+b)(b+c)(a+c)$$

33. Does the system

$5x+8y+z=2$, $2y+z=-1$, $4x+3y-z=3$ have a unique solution? If so find it. (Use Matrix)

34. Prove that
$$\cos \frac{2\pi}{17} \cos \frac{4\pi}{17} \cos \frac{8\pi}{17} \cos \frac{16\pi}{17} = -\frac{1}{16}$$

35. As observed from top of a hill, the angles of depression of the top and the foot of a tower are α and β respectively. The height of the tower is h . Find the height of the hill.

SECTION E

Q36-39

(20m)

36. Solve
$$\left(x - \frac{x}{x+1}\right)^2 + 2x \cdot \frac{x}{x+1} = 3$$

37. Find the mean, S.D., coefficient of variation of the following data.

class	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Freq.	5	12	10	8	2	2	1

38. If p_1, p_2, p_3 are the lengths of the altitudes of $\triangle ABC$ drawn from A, B, C respectively. Prove that

1.
$$\frac{1}{p_1} + \frac{1}{p_2} + \frac{1}{p_3} = \frac{1}{r}$$

2.
$$\frac{\cos A}{p_1} + \frac{\cos B}{p_2} + \frac{\cos C}{p_3} = \frac{1}{R}$$

39. If $\cos 15^\circ = \frac{\sqrt{6} + \sqrt{2}}{4}$, then $\cot 7\frac{1}{2} = \sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{6}$

PHYSICS-I

(Section - A)

Q 1 to Q 8 are MCQ's. Select the appropriate option from the given alternatives.**Each carries ONE mark.**

1. The velocity of a boat w.r.t. ground is $3\hat{i} + 4\hat{j}$ and the velocity of water w.r.t. ground is $-3\hat{i} - 4\hat{j}$. Hence the velocity of the boat w.r.t. water is _____.
(1) $8\hat{j}$ (2) $-6\hat{i} - 8\hat{j}$ (3) $6\hat{i} + 8\hat{j}$ (4) $6\hat{i}$
2. When an object is projected at angle 30° , its Range is R. Its range remains the same for another angle of projection which is _____.
(1) 40° (2) 45° (3) 50° (4) 60°
3. Which of the following statement is correct ?
(1) A body having constant velocity but a varying speed.
(2) A body has a constant speed but a varying acceleration.
(3) A body having a constant speed but varying velocity.
(4) A body having constant speed and Zero acceleration.
4. A bullet of mass m moving with a velocity v hits and gets embedded in a wooden block of mass M resting on a horizontal frictionless surface. The velocity of the composite system is _____.
(1) $\frac{mv}{M - m}$ (2) $\frac{Mv}{M - m}$ (3) $\frac{Mv}{M + m}$ (4) $\frac{mv}{M + m}$
5. The velocity of C.M. of a system of three particles of masses 5g, 10g & 15g moving with velocities of 10 cm/sec, 20 cm/s & 30 m/s respectively in the same direction is _____.
(1) 0 m/s (2) 20 cm/s (3) 23.3 cm/s (4) 33.2 cm/s
6. In the absence of external force the acceleration of the CM of a system is _____.
(1) Zero (2) constant (3) variable (4) increasing only.
7. Stress has same dimension as that of
(1) energy (2) pressure (3) torque (4) power
8. The dimensional formula for elastic constant is _____.
(1) $M^1L^{-1}T^{-2}$ (2) $M^2L^1T^{-2}$ (3) $M^2L^2T^{-3}$ (4) $M^1L^{-2}T^{-2}$

(Section B)

Answer the following questions in one word or sentence. Each carries ONE mark.

9. State triangle law of vector addition.
10. Define impulse and state its unit.

11. State Newton's 3rd Law of motion.
12. What is reference frame? State its type.
13. An object is at rest on a stationary surface due to static frictional force.
True / False. Justify your answer
14. There is cause and effect relationship between the action and reaction.
True/ False. Justify your answer with appropriate examples.
15. Which is more elastic rubber or steel. Justify your answer.

(Section C)

Answer the following seven questions in brief. Each carries TWO mark.

16. Obtain the equation for the maximum height of a projectile. (Draw the diagram.)
17. Define uniform circular motion & hence obtain an equation for centripetal acceleration. (draw the diagram.)
18. State and prove law of conservation of momentum.

Or

With the help of a diagram explain concurrent forces.

19. Show that the linear momentum of a rigid body is equal to the product of total mass of the body and velocity of centre of mass of a rigid body .
20. What is interaction? Is contact necessary for two objects to interact. Explain it by giving an example.
21. Explain graphically variation of strain and stress for a wire.
22. Explain the variation of interatomic forces and potential energy with respect to the interatomic distance.

(Section D)

Answer the following questions as directed. Each carries THREE mark.

23. An object is falling freely. Its velocity after traversing a distance h is v . If v depends upon gravitational acceleration g and distance h , prove that $v = k\sqrt{gh}$, where k is a constant.
24. The distance between two stations is 40km. A train takes 1 hour to travel this distance. The train, after starting from first station, moves with constant acceleration for 5 km; then it moves with constant velocity for 20 km and finally its velocity goes on decreasing continuously (for 15 km) and it stops at the other station. Find the maximum velocity of the train.
25. Two particles start their motion from points A and B with the velocities 252 km/h and 144 km/h and acceleration -4 ms^{-2} and 8 ms^{-2} respectively in the direction from A to B. Prove that they would meet each other twice. Find where and when they would meet.

26. Two blocks of masses 55kg and 35 kg are connected by a string, of negligible mass, which passes over a frictionless pulley fixed on the top of an inclined plane. Calculate the acceleration of the blocks and the tension produced in the string.

OR

A horizontal force of 300N pulls the blocks of masses $M_1 = 10$ kg and $M_2 = 20$ kg, which are connected by a light inextensible string and lying on a horizontal frictionless surface. Calculate the acceleration of

- (i) the system consisting of these blocks.
 - (ii) tension produced in the string
 - (iii) the resultant force on mass M_2
27. A balloon of mass M is going up with acceleration α . Prove that if the acceleration of the balloon is to be doubled, the mass to be detached from it should be $\frac{M\alpha}{2\alpha + g}$. Assume buoyant force to be the same.
28. A sphere of mass 4 kg collides with a wall at an angle of 30° with the wall and rebounds in the direction making an angle of 60° with its original direction of motion. Find the force on the wall if the ball remains in contact with the wall for 0.1s. The initial and the final velocities are the same equal to 1 m/s.
29. As shown in figure force F is applied at the two ends of a rod. Calculate stress in terms of F , A and θ for the section PR . The cross sectional area of the rod is A .

PHYSICS-II**SECTION – A**

- Question Nos. 1 to 15 are multiple choice questions. Each carries one mark. Choose the correct answer (a or b or c or d) from the given alternative response and write it.

- Volume of an ideal gas increases by 24% during an adiabatic process. Its pressure will decrease by _____. $\gamma = 5/3$
 (a) 40% (b) 20% (c) 76% (d) 48%
- The pressure inside two bubbles are 1.01 atm and 1.02 atm respectively. The ratio of their volume is _____.
 (a) 2 : 1 (b) 1 : 2 (c) 8 : 1 (d) 1 : 8
- The source of the gravitational field is _____.
 (a) static charge (b) moving charge (c) mass (d) moving mass
- An object is allowed to fall freely from a cliff. When it travels a distance 'h', its velocity is v. Hence, in travelling a further distance of _____ its velocity would become 2v.
 (a) 4h (b) 3h (c) 2h (d) h
- A ring of radius 4 cm is dipped into glycerine (surface tension 63 dyne.cm⁻¹) and pulled out of the liquid keeping it horizontal at the surface of the liquid. The force required to detach the ring from the surface, over and above its weight is _____ dyne.
 (a) 63 (b) 504 π (c) 1008 π (d) 1512 π
- In thermal steady state the temperatures of two ends of a meter scale are 30°C and 20°C. Temperature of the part of the scale at 60 cm from the hot end is
 (a) 25°C (b) 24°C (c) 23°C (d) 22°C
- A small sphere of mass m and radius r falls through a viscous medium. Its terminal velocity is proportional to _____.
 (a) only $1/r$ (b) only m (c) $\sqrt{m/r}$ (d) m/r
- When absolute temperature of a gas is increased three times, V_{rms} of its molecules becomes _____.
 (a) 3 times (b) 9 times (c) $\sqrt{3}$ times (d) $1/3$ times
- 100 gm ice at 0°C is placed in 100g water at 100°C. Final temperature of the mixture will be _____. Latent heat of melting of ice is 80 cal/g and specific heat of water is 1cal/g°C
 (a) 40°C (b) 10°C (c) 20°C (d) 30°C
- 3m long and 3 m wide boat floats in a lake. When a man rides it, the boat sinks by 1 cm. The mass of the person is _____ kg. (density of water is 1 gm.cm⁻³)
 (a) 62 (b) 72 (c) 60 (d) 108
- The displacement of a particle is given by : $y(t) = a + bt + ct^2 - dt^4$. Hence the initial velocity and initial acceleration of the particle are _____ and _____ respectively. (a, b, c and d are constants)
 (a) b, -4d (b) -b, 2c (c) b, 2c (d) 2c, -4d
- Newton.sec is a unit of _____.
 (a) acceleration (b) momentum (c) velocity (d) force
- Velocity of an object is 10 ms⁻¹. If magnitude of its momentum is 20 Ns, the K.E. is

- ___J.
- (a) 100 (b) 10 (c) 5 (d) 1
14. The effective acceleration due to gravity at the place on the earth, having latitude $\lambda=90^\circ$ is
- (a) minimum (b) maximum (c) infinite (d) zero
15. The volume of a rubber ball increases by 0.1% when it is taken from the bottom to the surface of a 100 meter deep lake. Hence the Bulk modulus of rubber is _____.
Take $g = 10 \text{ m/s}^2$
- (a) 10^6 Nm^{-2} (b) 10^7 Nm^{-2} (c) 10^8 Nm^{-2} (d) 10^9 Nm^{-2}

SECTION - B

- Questions , 16 to 30 are very short questions, each carrying ONE mark.
16. What is impulse of force ?
17. Define a rigid body.
18. Define vector product of two vectors.
19. Define gravitational potential energy .
20. What are elastomers ? Draw a strain vs stress graph for an elastomer.
21. What is guage pressure ? Give one of its example.
22. A person standing near a fast moving train has a danger of falling towards the train. Why ?
23. Plot the P vs V graph for steam for three different temperatures and write the inference.
24. What are the extensive and intensive variables ?
25. What is thermal expansion ?
26. Define total emissive power.
27. Define heat.
28. What are derived physical quantities ?
29. What is a unit vector ?
30. State the law of conservation of linear momentum.

SECTION - C

- Questions 31 to 40 are short answer type questions, each carries TWO mark. 20
31. For a ductile metal explain the relation between longitudinal stress and longitudinal strain with the help of a graph.
32. Derive the relation between two specific heats for an ideal gas.
33. Obtain an expression for terminal velocity of a small, smooth solid sphere falling through the steady fluid.
34. Explain the law of equipartition of energy and explain degree of freedom.
35. Explain, "the asymmetry of the graphs of intermolecular potential energy versus intermolecular distance is responsible for thermal expansion."
36. State Wein's displacement law and explain it with the help of a diagram.
37. Prove that the trajectory of a projectile is parabolic.
38. Explain static friction, limiting value of static friction with the help of diagram and necessary formulas.
39. Show that the linear momentum is conserved in case of explosion of a chemical bomb.
40. Obtain the magnitude and direction of $A + B$ for the vectors A and B.

SECTION - D

- Answer the questions 41 to 50 as directed. Each carries THREE mark. 30
- 41. 1 mole ideal gas at 27°C temperature and 2 atm pressure is compressed adiabatically to one eighth of its original volume. Find final pressure and temperature of the gas. Take $\gamma = 1.5$
- 42. The dimensions of a ceiling of a room are 4m x 4m x 10 cm. Thermal conductivity of the concrete in the ceiling is $1.26 \text{ W m}^{-1}\text{C}^{-1}$. At one moment, the temperatures outside and inside the room are 46°C and 32°C respectively. (i) Find the amount of heat flowing through the ceiling in one second. (ii) A layer of bricks of thickness 7.5 cm and thermal conductivity $0.65 \text{ Wm}^{-1}\text{C}^{-1}$ is laid on the ceiling. Find the new rate of flow of heat.
- 43. If the number density of oxygen gas is 2.69×10^{25} molecules/ m^3 at 0°C temperature and 1 atm pressure, and mass of oxygen molecule is 5.313×10^{-26} kg, find the density of oxygen gas, thereby, find V_{rms} of the molecules of oxygen.
- 44. Figure shows a cylindrical vessel having cross-sectional area A_1 in which liquid of density ρ is filled. At the bottom of the container there is a small hole of cross section A_2 . Find the velocity of liquid coming out of the hole when height of the liquid column is h from the hole. (here $A_1 \gg A_2$)
- 45. The pressure at the depth of the sea is 80 atm. If the density of water at the surface of the sea is $1.03 \times 10^3 \text{ kg/m}^3$ and the compressibility of water is $45.8 \times 10^{-11} \text{ Pa}^{-1}$, calculate the density of water at the mentioned depth. $1 \text{ atm} = 1.013 \times 10^5 \text{ Pa}$.
- 46. An object is allowed to fall freely from a distance r from the centre of the Earth. Calculate the speed of the object when it strikes the surface of the Earth.
- 47. A cricket ball of mass 150 g, moving horizontally with speed 30 m/s, strikes a bat (kept obliquely by right handed batsman) at an angle of 45° and rebounds, with speed 20 m/s, in the direction normal to the surface of the bat. If the time of contact between bat and ball is 0.1 s, find the force exerted on the bat by the ball. (take $\cos 45^{\circ} = 0.7$)
- 48. Two balls each of mass 80 g, moving towards each other, each with a velocity 5 m/s, collide and rebound with the same speed. What will be the impulse of force on each ball due to the other ?
- 49. An astronaut has reached some planet and he wants to determine the gravitational acceleration on that planet. For this he throws a stone in vertically upwards direction with velocity 15 m/s. If the stone comes back to him in 20 s, what will be the magnitude of gravitational acceleration on that planet ?
- 50. Derive the formula for the pressure of an ideal gas.

CHEMISTRY**Instructions:-**

1. This question paper contains ----- questions all are compulsory.
2. There are 5 sections A, B, C, D, E write all the sections starting with a new page & write answers according to the order of the question.
3. Write answers to the point state equations & draw figures as required.
4. Use log table & simple calculators.
5. $R = 0.0821 \text{ atm / k mol. At. No.}$

C = 12
O = 16
N = 14
H = 1

(Section A)

Q. 1 – 10 are multiple choice questions of 1 mark each. Select the true option & write the corresponding alphabet & the option both:-

[10m]

- 1) The number of moles of KMnD_4 required to oxidise of $\text{Fe} (2^{\circ}_4)$ in acidic medium is
a) 0.6 b) 1.67 C) 0.2 d) 0.4
- 2) Which of the following will have maximum electron affinity
a) Cl b) Br c) I d) F
- 3) Which of the following contains both covalent and ionic bonds?
a) ccl_4 b) cacl_2 c) $\text{NH}_4 \text{ cl}$ d) H_2O
- 4) If pressure is increased on the equilibrium $\text{H}_2 + \text{O}_2 \rightleftharpoons 2 \text{H}_2\text{O}$ the equilibrium will
a) Shift in forward direction
b) Shift in backward direction
c) Remain undisturbed
d) None
- 5) The P H of 10^{-8} molar solution of HCL in water is
a) 8 b) -8 c) between c) 7&8 d) between 7 & 8
- 6) The saline hydrides are
a) covalent b) ionic c) interstitial d) none
- 7) Which of the following is commonly used in refrigerants
a) CGcl_3 b) ccl_3Br c) $\text{CF}_3 \text{ Cl}$ d) CF_2cl_2
- 8) Which of the following is an unsaturated compound
a) C_6H_{14} b) C_4H_8 c) $\text{C}_3\text{H}_7\text{OH}$ d) CH_3OH
- 9) Toluene on reaction with acidic KMnO_4 gives
a) benzene c) benzaldehyde c) benzyl alcohol d) benzoic acid
- 10) Ethyl magnesium chloride on hydrolysis with acid gives
a) methane b) ethane c) ethene d) ethyne

(Section B)

Question 11 to 20 are very sort answer question each of 1 mark:-

[10m]

- 11) Why ice has a sharp melting point where as glass melts over a range of temperature
- 12) Give two example of species ----- to Ca^{2+}
- 13) State Hess's law of constant heat summation
- 14) Give expression for k_p for the reaction



- 15) What happens to the solubility of AgCl in water of NaCl solution is added to it.
- 16) What is the chemical composition of zeolite
- 17) Write balanced equation for reactions of KO_2 with water
- 18) Write structure of diborane
- 19) Suggest a technique to separate naphthalene from kerosene
- 20) Draw the structure of DDT of & give it's chemical name

(Section C)

Q. 21 to 28 are short answer type each of 3 marks:- [16m]

- 21) Explain Hund's rule
- 22) Write a note on electro negativity
- 23) Discuss the bonding in ammonia
- 24) Discuss effect of temperature on equilibrium
- 25) Explain cell potential
- 26) Write a note on acid rain
- 27) Explain roasting and calcinations
- 28) An organic compound contained 50.4% oxygen

(Section D)

Q. 29 to 36 are long answer type question of 3 marks each:- [24]

- 29) Explain law of multiple proportion
- 30) What will be the pressure exerted by a mixture of 3.2gm of methane and 4.4gm of carbon dioxide contained in a 9 litre flask.
- 31) Heat of formation of dimethyl ether carbon dioxide and water are -44.3, -94.05, -68.32 R.cal/ mole respectively. Calculate heat of combustion of dimethyl ether

$$\text{CH}_3\text{-O-CH}_3 + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 3\text{H}_2\text{O}$$
- 32) Explain Born haber cycle
- 33) Balance the following redox reaction by half reaction method

$$\text{MnO}_4^- + \text{H}_2\text{SO}_3 \rightarrow \text{Mn}^{2+} + \text{SO}_4^{2-} \text{ (acidic medium)}$$
- 34) Explain chemical method & ion exchange method to remove hardness of water
- 35) Explain occurrence, extraction of Sodium by Down cell. Discuss chemical properties of sodium.
- 36) Discuss the oxidation reaction of carbon as reducing agent

(Section E)

Question 37 – 41 are long answer question each 4 marks:- [20m]

- 37) Discuss Quantum numbers in detail
- 38) What is salt hydrolysis? Discuss acidic & basic behavior of eq/ Sol. Of salts of different kinds
- 39) A) explain SP hybridization with suitable example
 B) Explain meso meric effect with example
- 40) Give the following conversions
 - a) Phenetol from phenol
 - b) Methyl ethyl amine from ethyl chloride
- 41) Discuss:
 - a) Friedel craft reaction of benzene
 - b) Grignard reactions of alkyl halides

BIOLOGY**General Instructions:**

- There are 40 questions in this paper. All the questions are compulsory.
- Write answers of questions in order.
- Section A; Questions 1 to 8 are multiple choice questions, each carrying one mark. Write the correct alternative, which you feel is the most appropriate.
- Section B: Questions 9 to 20 are very short answer type questions, each carrying 1 mark. Answer them in about one word or one sentence each.
- Section C: Questions 21 to 28 are short type questions, each carrying 2 marks. Answer them in about 30 to 40 words each.
- Section D: Questions 29 to 36 are short answer type questions, each carrying 3 marks. Answer them in about 50 to 60 words.
- Section E: Questions 37 to 40 are long answer type questions, each carrying 5 marks. Answer them in about 80 words.

SECTION A

1. For which two Phylums , Peripatus is a connecting link?
(A) Arthropoda and Annelida (B) Annelida and Mollusca
(C) Platy helminthes and Nemathelminthes (D) Nemethelminthes and Annelida
2. The factor which is not responsible for isolation is:
(A) Geographical barrier (B) Seasonal Barrier
(C) Natural Barrier (D) Mechanical Barrier
3. Identify the odd one out:
(A) Pheritima (B) Neries (C) Ascaris (D) Leech
4. Which disorder is caused when a part of short arm of 5 chromosome becomes separated and is lost.
(A) Philadelphia (B) Cri-du chat (C) Klinefelter's (D) Down's
5. Which of the following is not possible?
(A) Child with O group of parents O and A.
(B) Child with O group of parents O and AB.
(C) Child with A group of parents A and AB.
(D) Child with A group of parents AB and AB
6. Which organ is modified to form pitcher in pitcher plant?
(A) aerial branch (B) leaf (C) stem (D) bud
7. The symbol A indicates that the flower has
(A) 2 bundles of stamens (B) 6 stamens
(C) infinite free stamens (D) one bundle stamen
8. Which cells produce allergy causing histamine in our body?
(A) Macrophage (B) Mast cells (C) fibroblasts cells (D) monocytes

SECTION B

9. Which type of WBC has kidney shaped nucleus?
10. Name five segments of walking legs of cockroach.
11. Give one example each of the apocarpous and syncarpous plants.
12. Define actinomorphic flower with an example.
13. Mention the type of chromosome based on the position of centromere of 2nd pair of chromosome of human being.
14. Draw only the diagram of mechanism of enzyme action.
15. Name 4 different glands found in the skin of rat.
16. State the type and ratio of Drosophila developed by fertilization of egg (AA+XX) by a sperm (AA+XY).
17. Give an example of homologous organs in plants and animals each.
18. Name any two vestigial organs in man.
19. Who gave the theory of natural selection? What does it say?
20. Name any two factors responsible for speciation.

SECTION C

21. Differentiate between Offset and Stolon giving examples.
22. How is sex determined in human?
23. Draw a labeled sketch of Maize stem.
24. Differentiate between natural and phylogenetic system of classification.
25. What are the draw backs of Lamarckism?
26. State the properties of energy according to 1st law of thermodynamics.
27. Explain any 2 types of epithelial tissue in man giving their location.
28. Describe excretory system of earthworm. (Diagram not required)

SECTION D

29. Describe the characteristics of class Cyclostomata. Give 2 examples.
30. Explain Epistasis and Incomplete Dominance.
31. Describe internal structure of earthworm. (Diagram not required)
32. Describe the microscopic structure of striated muscle fibre without diagram.

OR

32. Describe the nervous tissue in man with the diagram.
33. Draw and explain the structure of a bean seed.
34. What is a fruit? Explain different types of simple fleshy fruits.
35. Draw and explain different components of Xylem tissue.

OR

35. Draw and explain different components of phloem tissue.
36. Describe the composition of human blood in detail.

SECTION E

37. Explain DNA structure in detail. (Draw necessary diagram)

OR

37. Describe the disorders caused due to structural abnormalities in chromosome number.
38. Describe the characteristics of phylum Arthropoda with 2 examples

OR

38. Describe the characteristics of phylum Amphibia with 2 examples
39. Explain different Racemose type of inflorescence in detail giving an example of each.
40. Describe the reproductive system of rat with diagrams.

OR

40. Describe the reproductive system of frog with diagrams

ENGLISH-I**Section A: Textual Prose**

- Q1. Choose the correct answer and rewrite the complete sentence: 2**
- Dr. Ernst Weil agreed to give Einstein a certificate of nervous breakdown because
 - Yuri requested him to do so
 - he was inexperienced and was taken in by Einstein's story
 - he genuinely felt that Einstein was in a nervous state about the school
 - The postmaster understood Ali's heart and soul because
 - he had in his hand Miriam's letter
 - he heard the news of Ali's death
 - he himself had spent a night anxiously waiting for news of his daughter

- Q2. Read the following passage carefully and answer the questions given below: 3**
- The storekeeper picked up the baby and he saw something that made his blood run cold.

- What was the 'something' that made his blood run cold?
- Explain the phrase: 'made his blood run cold'.
- Where did the shopkeeper find the baby and how did it come to be there?

- Q3. Answer in about 6 to 7 sentences: 6**
- From your reading of 'The Letter', do you think Ali reaped what he had sowed?
 - "The short story, 'The Woman in Grey', has all the ingredients of a good ghost story: suspense, unexplained occurrence and the final revelation". Justify.

Section B: Textual Poetry, Supplementary Reader

- Q4. Read the following stanza carefully and answer the questions: 3**
- One day in the rainy month of ashad
 descend dark shadows of black clouds pregnant with water
 on the murmuring branches of the bamboo bush,
 and the grain fields start to come alive
 from plot to plot in small sprouts of young rice plants.

- Describe the word-picture the poet paints in these lines.
- Name and explain the figure/s of speech in the second line.
- Explain what the poet means when he writes: 'the grain fields start to come alive'.

- Q5. Answer in about 4 to 5 sentences: 4**
- What does Robert Frost imply by his discussion on the two divergent roads in a yellow wood?
 - "Roald Dahl was a children's writer with grown-up concerns". Do you think this observation is justified with reference to the poem, 'On Television'?

- Q6. Answer in about 7 to 8 sentences: 3**
- "It's a wicked world, and when a clever man turns his brains to crime it is the worst of all." What prompted Sherlock Holmes to make this comment? What is the 'crime' being referred to?

Section C: Grammar

- Q7. Use the appropriate form of the words given in the brackets and rewrite the sentences: 3**
- It is not a feasible _____. (propose)
 - He is well known for his _____. (philanthrop)
 - It is _____ that the man drove through the town at 90 miles an hour. (allege)
 - This room is not really comfortable but it will _____ for tonight. (sufficient)

5. Due to inadequate rainfall, vegetation in arid regions is _____ (Use antonym of lush).
6. I _____ at the prospect of missing school for a whole week due to my sister's wedding. (exult)

Q8. Rewrite the given sentences selecting the appropriate meaning of the idioms: 2

1. Don't meddle in my personal affairs.
(to interfere, to take a middle path, to be concerned)
2. A hot and humid climate makes life indolent.
(to make hot and sweaty, to make aggressive, to make lazy)

Q9. Rewrite the following in indirect form of narration: 3

Mrs. Rana: What are you two twins up to?

Dinesh: Oh, we were just revising for our examination tomorrow.

Diya: Yes. He's right. All we have been doing this year is to bury our nose in our books and study!

Mrs. Rana: Yes, I know, but it can't be helped. You know this is an important year in your academic life.

Q10. Rewrite the given sentences as directed: 4

1. She used to wake us up before dawn each day! (Begin with 'We')
2. We should grow more trees in order to control pollution. (Use 'controlled')
3. I am on the verge of it all. (Add a Question Tag)
4. Anyone taking admission in this school must participate in all activities. (Use a Relative Pronoun)

Section D: Reading

Q11. Make a précis of the passage below. Also, give it a suitable title. 4

Medicos advise that we should include more and more fruits in our daily diet to ensure sound health. It is true that some of the fruits are beyond the pocket of the common man but there are many varieties which are available at reasonable and affordable prices. So, it is for us to go in for such fruits and consume them liberally. After all, one cannot set any price on good health, can we? One such fruit is grapes. Their origin is a matter of debate. Some botanists believe that it was first found in Armenia; from there it went to West Asia, Europe, North Africa, India and other countries. Then, each country developed its own method of cultivating grapes in their vineyards. As a result, grapes from different countries have different tastes. Different vineyards in different parts of the same country produce grapes of varying taste with varying degrees of sweetness, colour and texture. That is the reason why wines from different vineyards have different flavours. There are those who believe that central Asia was the first home of grapes. In India, in the north, grapes are mainly grown in Kashmir and northern Uttar Pradesh. In the South, Poone, Coorg, Aurangabad, Nasik and Hyderabad are well known for their grapes. Some Indian varieties are seedless, some sweet while others are more tart. Due to advances in storage technology, one can now get grapes round the year. Grapes are essential for good health and both varieties – green and purple coloured – are packed with nutrients and vitamins. So, what are you waiting for? Go out and grab a bunch of good health!

Q12. Write an e-mail to your younger sister, advising her to include fresh fruits and green vegetables in her daily diet. 3

Section E: Writing

Q13. Anil / Anita Verma has just attended a lecture on the growing tendency in children to shy away from any sort of extra reading. As the Student Editor, he/she decides to write a report of the workshop proceedings for the school magazine. Write the report for him/her. Include at least 10 points in your report.

4

Q14 Write an application in response to the following advertisement:

6**URGENTLY REQUIRED****A Unique opportunity for Book Lovers**

Wanted candidates with Commerce background – fresh/experienced – to man the Customer Service desk in a premier bookstore. Good remuneration and excellent prospects of future growth. Interest in books and reading in general desirable. Apply to the Floor Manager, The Old Bookstore, 62, Ocean Street, Mumbai, with biodata.

ENGLISH-II**Section A: Textual Prose****Q1. Choose the correct answer and rewrite the complete sentence: 3**

1. the was a man with a head as sad and inexpressive as a pumpkin.
 - a) postman
 - b) postmaster
 - c) postal clerk
2. Albert Einstein hated staying in
 - a) Milan
 - b) Manila
 - c) Munich
3. Mihir Sen's swim, due to start on April 3, had to be postponed because.....
 - a) a storm made the sea too rough
 - b) he caught a chill
 - c) he didn't get the required permit

Q2. Read the following passage and answer the questions given below: 2 It

brought me to Ayelsbury. That's where I saw you.....in the car. Two other people saw you and started to talk. I listened. It looks like you're a bit queer. Kind of a mystery man.

1. Who is the speaker? Why was he observing the other person?
2. Explain what the speaker means by saying that the other person was a 'bit queer'?

Q3. Answer in about 6 to 7 sentences: 6

1. What are the characteristics of good articulation?
3. Write a comparative character profile of the Intruder and Gerrard.

Section B: Textual Poetry, Supplementary Reader**Q4. Read the following stanza carefully and answer the questions: 3**

One shade the more, one ray the less,
Had half impaired the nameless grace
Which weaves in every raven tress

1. Describe the lady's hair.
2. Name and explain the figure/s of speech in the first line.
3. What idea do you form of the poet's concept of 'grace' from these lines?

Q5. Read the following lines carefully and answer the questions: 2

All lovely things with beauty are,
And just deeds shine as just,
And faith and truth and duty are –
And is she only dust?

1. Form a character sketch of the poet's beloved from these lines.
2. Explain the last line.

Q6. Answer in about 4 to 5 sentences: 4

1. 'The Rime of the Ancient Mariner' is a tale of crime and punishment. Justify.
2. Explain what Sarojini Naidu means by saying, "I am tired of strife and song and festivals and fame."

Q7. Answer in about 7 to 8 sentences: 6

1. Does 'Refund' end with Wasserkopf continuing to be a victim of a flawed education system?
2. "The Romance of a Busy Broker' epitomizes O'Henry's style of writing that has made him so hugely popular." Do you agree?

Section C: Grammar**Q8. Use the appropriate form of the words given in the brackets and rewrite the sentences: 5**

1. _____ politicians are the need of the day. (vision)
7. He was _____ (universe) condemned for his act of _____ (betray).
8. They should have _____ that circumstances would become worse. (foresee)
9. The _____ (tyranny) king was hated by his subjects.
10. The government tried to _____ (peace) the angry protestors.
11. Everyone began to talk about his _____. (lunatic)
12. A patriot is very _____ (zeal) about his country's honour.
13. The new student was rewarded for his _____ (example) behaviour.
14. These rooms are very _____. (space)

Q9. Rewrite these sentences selecting the appropriate meaning of the idioms: 3

3. Sanjeev has the gift of the gab.
(be able to speak well, be able to tell fibs, be able to speak with gaps)
4. You can't expect good work from workers if they are compelled to work against the grain.
(hungry, contrary to inclination, to eat no grains)
5. The shop owner is in debt to the hilt.
(completely, partially, a lot)

Q10. Rewrite the following in indirect form of narration: 3

Intruder: You think you're smart, but I'm top of the class round here. I've got brains and use them. That's how I've got where I have.

Gerrard: And where precisely have you got? It didn't require a great brain to break into my little cottage.

Intruder: When you know why I've broken into your little cottage you'll be surprised, and it won't be a pleasant surprise.

Gerrard: With you figuring so largely in it, that is understandable.

Q11. Rewrite the given sentences as directed: 8

1. Show me that multiplication trick again. (Change Voice)
2. Multiply those numbers and please show the gentlemen your manner of doing it. (Use a Perfect Participle)
3. He was merely an ageing low-grade Technician who had long ago failed all tests to smoke out prodigies. (Remove 'merely')
4. His forehead corrugated as he made painstaking marks on the paper. (Replace the underlined word with its synonym)
5. He inspected the little man with the dome-head with only amiable curiosity. (Use 'but')

6. He displayed the test results. (Question tag)
7. There was an instant's silence. (Make Interrogative)
8. It's too complicated because you're not used to it. (Remove 'too')

Section D: Reading

Q12. Read the following poem and answer the questions given below:

5

There's a good time coming, boys,
 A good time coming;
 War in all men's eyes shall be
 A monster of iniquity.
 In the good time coming
 Nations shall not quarrel then,
 To prove which is the stronger
 Nor slaughter men for glory's sake.
 Wait a little longer.

Questions:

1. Describe the poet's outlook as it emerges from these lines.
2. How will war be looked upon in the future?
3. Explain: 'nor slaughter men for glory's sake'.
4. Why does the poet term the future as 'a good time coming'?
5. Identify and explain the figure/s of speech in the third line.

Q13. Read the following passage and answer the questions given below.

5

Why should I meet young students in particular? Seeking the answer I went back to my student days. From the island of Rameswaram, what a great journey it's been! Looking back, it all seems quite incredible.

What was it that made it possible? Hard work? Ambition? Many things come to my mind. I feel the most important thing was that I always assessed my worth by the value of my contribution. The fundamental thing is that you must know that you deserve the good things in life, the benefits that God bestows. Unless our students and young believe that they are worthy of being citizens of a developed India, how will they ever be responsible and enlightened citizens?

There is nothing mysterious about the abundance in developed nations. The historic fact is that the people of these nations – the G8 as they are called – believed over many generations that they must live a good life in a strong and prosperous nation. The reality became aligned with their aspirations.

I do not think that abundance and spirituality are mutually exclusive or that it's wrong to desire material things. For instance, while I personally cherish a life with minimum of possessions, I admire abundance, for it brings along with it security and confidence, and these eventually help preserve our freedom.....

All that we see in the world is an embodiment of energy. We are a part of the cosmic energy too, as Sri Aurobindo says. Therefore, when we begin to appreciate that spirit and matter are both part of existence, are in harmony with each other, we shall realize that it is wrong to feel that it is somehow shameful or non-spiritual to desire material things.

-----An excerpt from 'Ignited Minds'

Questions:

- a. Which journey is the author talking about?
- b. What are the various possible factors that contribute to progress in one's life?
- c. What is the secret behind the affluence of developed nations?
- d. Which common notion does the author challenge? What justification does he offer?

e. Give the – (i) antonym of ‘abundance’ (ii) synonym of ‘enlightened’

Q14. Make a précis of the above passage and also give a suitable title.

5

Section E: Writing

Q15. You are a member of your school’s environment club. On the occasion of ‘World Save Energy Day’, you and the other club members decide to create awareness about the urgent need to conserve electricity.

Write a report about your efforts in this direction for your school newsletter.

5

Q16: You are Ritwik/Raveena, staying at D-74 friends Colony, New Delhi. You came across the following advertisement in ‘The Times of India’:

7

Destination Moon! Destination Mars!

The Indian Space Odyssey is set to conquer many new frontiers.

Welcome aboard.

Begin a most exciting journey!

Join IIST.

Sign up for ISRO.

Write a letter of enquiry to the Director, Indian Institute of Space Science and Technology, Thiruvananthapuram, asking for details of the programmes offered, entrance examination to be held, duration, course fees and placement service provided.

Q17: Write an essay on any one of the following:

8

Role of environment in holistic growth

[Congenial environment -- unleashes full potential of child -- stress-free learning –maximum output – pupil happy and relaxed -- becomes life-long learner – healthy competition]

OR

Consumerist society: an evil necessity

[open economy – globalization & liberalization -- role of media –competition and display culture -- wants and needs fuel consumption -- production -- employment – drives economic progress]

COMPUTER-I**Q: Choose the correct alternative from the given alternatives:**

1. Which of the following is/are also called as Positional Number System(s)?
a) Binary b) Decimal c) Octal d) All of these
2. Which of the following system is used only to represent small numbers?
a) Binary b) Decimal c) Hexadecimal d) None of these
3. Who documented the modern binary number system?
a) Claude Shannon b) Shannon Fanon c) Gottfried Leibniz d) Claude Leibniz
4. What is the binary equivalent of $(47)_{10}$?
a) 0010 1111 b) 1111 0100 c) 0010 0111 d) 0100 0111
5. What is the binary equivalent of $(45)_8$?
a) 0100 0101 b) 0010 1101 c) 0010 0101 d) None of these
6. What is the binary equivalent of $(80A)_{16}$?
a) 1000 0000 1010 b) 0001 0000 1010 c) 0010 0000 0010 d) None of these
7. What is the decimal equivalent of $(55)_8$?
a) 44 b) 45 c) 43 d) None of these
8. What is the decimal equivalent of $(D9)_{16}$?
a) 218 b) 434 c) 201 d) None of these
9. What is the octal equivalent of $(99)_{10}$?
a) 143 b) 63 c) 131 d) None of these
10. What is the decimal equivalent of $(11010101.0101)_2$?
a) 213.3125 b) 213.875 c) 212.3125 d) 212.875
11. Which of the following is invalid binary arithmetic?
a) $1 + 1 = 11$ b) $1 \times 1 = 01$ c) $1 - 1 = 0$ d) None of these
12. For the binary 11000.1101, what is the first underlined digit called?
a) LSB b) MSB c) BSD d) UTF
13. What is the output of 110000-1111 ?
a) 0011 0000 b) 0011 1110 c) 0010 0001 d) None of these
14. The output of 10101×111 is _____.
a) 1001 0111 b) 1001 0001 c) 1001 0011 d) 1001 0101
15. The output of $1100101 \div 111$ is _____.
a) $110 \rightarrow Q, 10 \rightarrow R$ b) $111 \rightarrow Q, 10 \rightarrow R$ c) $110 \rightarrow Q, 11 \rightarrow R$ d) $111 \rightarrow Q, 11 \rightarrow R$
16. The circuit used for adding the binary digits is called _____ circuit.
a) Adder b) Biadder c) Bitadder d) Multiplexer
17. What is the 10's complement of $(-898)_{10}$?
a) 101 b) 102 c) 100 d) None of these

- 18. What is the 2's complement of $(-77)_{10}$?
 - a) 0011 0011 b) 1011 0011 c) 1011 0010 d) None of these
- 19. What is the 1's complement of $(67)_{10}$?
 - a) 0011 1101 b) 0011 1100 c) 1001 1100 d) None of these
- 20. Which of the following falls under Radix Complement form of Representation?
 - a) 10's Complement b) 9's Complement c) 7's Complement d) None of these
- 21. Which of the following is not a valid option for checking data in Data Validation?
 - a) Begins with b) Equal to c) Between d) Less than
- 22. Which of the following option allows specifying a search condition in Data Forms?
 - a) Query b) Find Next c) Condition d) None of these
- 23. Which of the following is used to represent 'not equal to' condition in Ms Excel?
 - a) <> b) != c) =! d) !
- 24. Which type of range is selected while creating a summary chart report?
 - a) Relative b) Absolute c) Mixed d) Any can be selected

	A	B	C	D	E	F	G
1	SR.NO	FIRSTNAME	MIDDLENAME	SURNAME	DOB	AGE	HOUSE
2	1	MAHARSHI	KANTILAL	VAIDYA	12/07/1988	17	
3	2	KIRIT	DEEPAK	PATEL	07/08/1989	16	
4	3	SUMIT	SAHIL	SHAH	14/09/1988	17	
5	4	SANJEEV	HITESH	KUMAR	27/08/1987	18	
6	5	KAILASH	JATIN	BHALE	01/05/1988	17	
7	6	LAKULISH	LALIT	CHAUHAN	30/06/1989	16	
8	7	PUNIT	PRAVIN	DESAI	23/12/1988	17	
9	8	ALLAN	JOES	MATHEWS	10/02/1989	17	
10	9	ANDREW	PETER	D'CRUZ	06/07/1988	17	
11	10	BRIJEN	AMAR	LAKHOTIA	22/09/1988	17	
Sheet1							

NAMES		PUNIT	
A	B	C	
1	SR.NO	FIRSTNAME	HOUSE
2	1	PUNIT	SANKALP
3	2	ALLAN	SAHYOG
4	3	SUMIT	SAHYOG
5	4	LAKULISH	SANNIDHYA
6	5	MUKUND	SADBHAVANA
7	6	BRIJEN	SANNIDHYA
8	7	LALIT	SANKALP
9	8	PIYUSH	SADBHAVANA
10	9	SAMARTH	SADBHAVANA
11	10	PARTH	SADBHAVANA
12	11	PRAVIN	SANNIDHYA
13	12	ANGAD	SANKALP
14	13	KIRIT	SAHYOG
15	14	SANJEEV	SAHYOG
16	15	ANDREW	SANKALP
17	16	VIJAY	SADBHAVANA
18	17	KAILASH	SANNIDHYA
19	18	JIJU	SAHYOG
20	19	MAHARSHI	SAHYOG
21	Sheet2		

Answer the following [Q-25 to Q-34] with reference to the above sheets:

- 25. Which function will be used to convert the entire data sheet into Title Case?
 - a) =upper() b) =lower() c) =title() d) None of these
- 26. Which function will be used to display the full name of the students in sheet1, ie. Maharshi K Vaidya?
 - a) Concatenate b) Left c) Mid d) Both (a) & (b)
- 27. What is the format of the DOB field?
 - a) dd/mm/yy b) dd/mmm/yy c) mm/dd/yy d) Custom

28. Which function is used to find the age of the students?
a) =edate(), now() b) =now(), yearfrac() c) =days360(), now() d) None of these
29. What is the range B2:C20 called in Sheet2?
a) student data b) House data c) Names d) Student-houses
30. Which function can be used to automatically populate the House field in Sheet1 from the data in Sheet2?
a) Vlookup() b) HLookup() c) Match() d) Index()
31. If the position of Lakulish has to found and displayed in B12 of sheet1, which of the following function would give the correct output?
a) =Match(B7, B2:B11) b) =Match(B7, B2:B11, 0)
c) =Match(B2:B11, B7, 1) d) =Match(B2:B11, B7, 0)
32. What does '1' indicate in the above used function?
a) Value is false b) Value is true c) Data is sorted d) Data is not sorted
33. What will be the output of =Large(E2:E11,2)?
a) 01/05/1988 b) 30/06/1989 c) 27/081987 d) #VALUE!
34. What will be the output of =Small(E2:E11, 3)?
a) 10/02/1989 b) #N/A c) #VALUE! d) None of these

Answer the following [Q-35 to Q-42] with reference to Visual Basic:

35. Which of the following is not a property of Label control?
a) Caption b) Alignment c) Locked d) Visible
36. Which of the following property of the textbox control allows to limit the amount of text entered at runtime?
a) Maxlength b) Textlength c) Field d) Length
37. Which of the following control links with the CPU's internal clock?
a) Picture box b) Timer c) Option button d) All of these
38. Which of the following is an explicit way of declaring a variable in Visual Basic?
a) a = 15 b) Dim a = 15 c) Dim a d) Dim a as Integer
39. Which of the following code changes the font color command button CMDCOLOR?
a) Style b) ForeColor c) Graphical d) None of these
40. When does the following error appear while execution of a program – Object required?
a) When a control used in the code does not exist on the form
b) When the control name and that used in the code do not match
c) When variables are not declared properly
d) Both (a) & (b)
41. Which function can be used to display the system date in title bar of the form?
a) now, format b) caption, format c) date d) Both (a) & (c)

42. Which of the following is the correct property to insert a picture in the Picture box control?

- a) Picture b) Image c) LoadPicture d) Graphic

Answer the following [Q-43to Q-50] with reference to HTML:

43. Which of the following gives text displayed as if typed on a typewriter?

- a) <type> b) <tt> c) <t> d) All of these

44. Which of the following property is used to change the thickness of the horizontal rule?

- a) width b) size c) height d) length

45. Which of the following is an invalid attribute of element?

- a) type b) size c) color d) None of these

46. Which of the following fall under 'type' attribute of element?

- a) square b) l c) disk d) spade

47. Which of the following attribute is used to resize an image inserted on the web-page?

- a) height, breadth b) length, breadth c) height, width d) length, width

48. Which of the following attribute of element allows creating a tooltip on the image inserted?

- a) src b) tooltip c) alt d) Both (b) & (c)

49. Which of the following element is used to create a hyperlink?

- a) anchor b) href c) name d) None of these

50. What is the following is not a valid alignment of <p> element?

- a) Middle b) Justify c) Left d) Right