ENGLISH LANGUAGE (10)

(a) Write a review of a film for a popular magazine. The film has aroused great interest. Base your review on the points given below :
Name of the film – plot – actors – cinematography – other technical aspects – description of scenes that you thought were particularly effective – unusual features – message of the film – final assessment.

(b) As the Head Girl/Head Boy of your school, you have been given the task of organising an interschool drama competition on the topic 'Gender Equality'. Write a proposal in about 150 words stating the steps you will take to conduct this event.

Solve the ISC English Language question paper of 2020.

ENGLISH LITERATURE (10)

1. Describe the tempest and the reaction of the people. (Act-1, Scene 1- The Tempest)
2. How was Antonio successful in usurping the Dukedom from his brother Prospero (The Tempest)
3. How was Ariel saved by Prospero? (The Tempest)
4. How is Ariel different from Caliban, though both serve Prospero? (The Tempest)
5. Describe Fritz with reference to the story Fritz.
6. Sir Alexander Heathcote was an exact man. Justify the statement with reference to the story The Chinese Statue.
7. How did the master shoe maker Gessler die? (Quality)
8. Whom do you sympathise with in the poem John Brown, John or his mother? Give reasons.

HINDI LANGUAGE (10)

निम्नलिखित विषय पर लगभग 400 शब्दों में एक प्रस्ताव लेख लिखिए :-

(1) "युवा वर्ग जहाँ उर्जा का स्रोत है, बुजुर्ग अनुभव का खजाना है"| समाज के निर्माण में युवा वर्ग और प्रोढ (बुजुर्ग) वर्ग दोनों का ही समान योगदान होता है"| आप इस कथन से कहाँ तक सहमत हैं?

HINDI LITERATURE (10)

सारा आकाश: (उपन्यास)

"सारा आकाश" उपन्यास में मुख्यत किन-किन समस्याओं को उजागर किया गया है | उपन्यास में वर्णित नारी पात्रों का संक्षिप्त परिचय दीजिये |

MATHEMATICS (10)
Binary Operations

1. A binary operation '*' defined on $Q - \{1\}$ is given by $a*b = a + b - ab$. Find the identity element. **[ANS: e = 0]**

2. A binary operation '*' defined on Q^+ the set of all positive rational is given by a*b = $\frac{ab}{2}$. Find the inverse of 3. **[ANS: 4/3]**

3. Let A = {1, 2, 3,4, 5}. Define an operation 'V' by aVb = max {a, b} Prepare its composition table.

4. Let A = R − {1}. Let * be defined on A as a*b = a+ b+ ab for all

a, b ∈ A. Solve the equation 2 * x * 5 = 4. **[ANS: x =$-\frac{13}{18}$]**

5. Let A = {1, 2, 3, 4, 5} and '*' be a binary operation on A defined by a * b = H · C · F of a and b ∀ a, b∈ A. Set the operation table for the operation '*' on A.

6. The operation '*' defined by a * b = b^a on set Z = {0, 1, 2,......} Prove that '*' is not a binary operation on Z.

7. A binary operation '*' defined on N, is given by a * b = H · C · F(a,b) ∀ a, b∈ N. Check the commutativity and Associativity.

8. A binary operation '*' defined on Z, the set of all integers is given by a * b = a+ b+ ab. Verify that * is commutative and associative on Z.

9. Consider the binary operation * and 'o' on R defined as a*b = | a − b | and a ∘ b = a for all a, b∈ R. Show that a * (b ∘ c)= (a *b) ∘ c for all a, b, c ∈ R.

10. Consider the binary operation * on R − {− 2} defined as a * b = a + b + $\frac{ab}{2}$ for all a, b∈ R − {− 2}. Find the value of x if 1 * (x * 2) = 8.**[ANS: x = $\frac{4}{3}$].**

11. A binary operation '*' defined on R − {0}, is given by a * b = $\frac{3ab}{2}$ Find x if (2 * x) * 3^{-1} = 4^{-1}**[ANS: x = 1/6]**

Functions

1. Let $A = R − \{2\}$ and $B = R − \{1\}$. If $f :A \to B$ is a function defined by $f(x) = \frac{x-1}{x-2}$, then show that f is one-one and onto function. Hence, find f^{-1}.

2. Consider $f :R_+ \to [− 5, \infty)$ given by $f(x) = 9x^2 + 6x − 5$, show that f is invertible with $f^{-1}(y) = \left(\frac{\sqrt{y+6}-1}{3}\right)$.

3. Show that the function $f :N \to N$ defined by $f(x) = 2x + 3$ is not surjective.

4. Show that the function $f :N \to N$ defined by $f(x) = x^2 + x + 5$ is injective.

5. Show that the function $f :Q − \{3\} \to Q$, where Q is the set of all rational numbers defined by $f(x) = \frac{2x+3}{x-3}$ is injective but not surjective.

6. A real function f is given by $f(x) = x^2 + 2x − 3$. Find $fof(x)$.

7. Consider $f : R_+ \to [-9, \infty]$ given by $f(x) = 5x^2 + 6x - 9$. prove that f is invertible with $f^{-1}(y) = \left(\frac{\sqrt{54+5y}\,-3}{5}\right)$.

8. Consider $f : R - \left\{-\frac{4}{3}\right\} \to R - \left\{\frac{4}{3}\right\}$ given by $f(x) = \frac{4x+3}{3x+4}$. Show that f is bijective. Find the inverse of f and hence find $f^{-1}(0)$ and x such that $f^{-1}(x) = 2$.

Relations

1. Give an example of a relation which is
(i) Reflexive, symmetric and transitive.
(ii) Reflexive, symmetric and not transitive.
(iii) Reflexive, not symmetric and not transitive.
(iv) Reflexive, not symmetric and transitive.

(v) Not reflexive, symmetric and transitive.

(vi) Not reflexive, symmetric and not transitive.

(vii) Not reflexive, not symmetric and transitive.

(viii) Not reflexive, not symmetric and not transitive.

2. Let R be a relation defined on the set N as $R = \{(x, y) : x + y = 10 \,; x, y \in N\}$. Determine whether R is reflexive, symmetric and transitive.

3. Prove that the relation R on Z, defined by $(a,\ b) \in R \Leftrightarrow a - b$ is divisible by 5, is an equivalence relation on Z.

4. Let Z be the set of integers. Show that the relation, $R = \{(a, b) : a + b \text{ is even}\}$, is an equivalence relation on Z.

5. Show that the relation R on R, defined as $R = \{(a, b) : a \geq b\}$, is reflexive and transitive but not symmetric.

Determinant

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

2. Prove that $\begin{vmatrix} 3x & -x+y & -x+z \\ x-y & 3y & z-y \\ x-z & y-z & 3z \end{vmatrix} = 3(x+y+z)(xy+yz+zx)$.

3. Prove that $\begin{vmatrix} x & x+y & x+2y \\ x+2y & x & x+y \\ x+y & x+2y & x \end{vmatrix} = 9y^2(x+y)$.

4. Prove the following using properties of determinants:

$$\begin{vmatrix} a+b+2c & a & b \\ c & b+c+2a & b \\ c & a & c+a+2b \end{vmatrix} = 2(a+b+c)^3$$

5. Using properties of determinants, prove the following:

$$\begin{vmatrix} x^2+1 & xy & xz \\ xy & y^2+1 & yz \\ xz & yz & z^2+1 \end{vmatrix} = 1+x^2+y^2+z^2.$$

6. Using properties of determinants, prove that

$$\begin{vmatrix} b+c & c+a & a+b \\ q+r & r+p & p+q \\ y+z & z+x & x+y \end{vmatrix} = 2\begin{vmatrix} a & b & c \\ p & q & r \\ x & y & z \end{vmatrix}$$

7. Using properties of determinants, prove the following: $\begin{vmatrix} a^2a^2-(b-c)^2 & bc \\ b^2 & b^2-(c-a)^2 & ca \\ c^2c^2-(a-b)^2 & ab \end{vmatrix} =$

$(a-b)(b-c)(c-a)(a+b+c)$

$(a^2+b^2+c^2)$

8. Using properties of determinants, prove that $\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} = 0$

9. If p, q, r are not in GP and $\begin{vmatrix} 1 & \frac{q}{p} & \alpha+\frac{q}{p} \\ 1 & \frac{r}{q} & \alpha+\frac{r}{q} \\ p\alpha+q & q\alpha+r & 0 \end{vmatrix} = 0$, show that $p\alpha^2 + 2q\alpha + r = 0.$

10. If x,y,z are different and $\begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0$, then show that $1 + xyz = 0.$

11. Using properties of determinants, prove that $\begin{vmatrix} (b+c)^2a^2 & bc \\ (c+a)^2 & b^2 & ca \\ (a+b)^2 & c^2 & ab \end{vmatrix} = (a-b)(b-$

$c)(c-a)(a+b+c)(a^2+b^2+c^2).$

12. Using properties of determinants, prove that $\begin{vmatrix} b+c & a & a \\ b & a+c & b \\ c & c & a+b \end{vmatrix} = 4abc.$

13. Using properties of determinants, show that ΔABC is an isosceles triangle if

$$\begin{vmatrix} 1 & 1 & 1 \\ 1+\cos A & 1+\cos B & 1+\cos C \\ \cos^2 A+\cos A & \cos^2 B+\cos B & \cos^2 C+\cos C \end{vmatrix} = 0$$

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

$(\gamma-\alpha)(\alpha+\beta+\gamma).$

15. Using properties of determinants prove that:

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

BIOLOGY (10)

Topic – 1. Project work – ISC Project of 20 marks.

2. Chapter – Human health and diseases.

Learn the chapter (revision)

CHEMISTRY (10)

Topic- Chemistry in Everyday Life (approx 15/16 pages)

Medicine, food, soaps and detergents.

Points to be included

1. Anti pyretics, Analgesics, tranquilizers, antiseptics disinfectants, antimicrobials antifertility drugs, antihistamine antibiotics, Antacids (Define, common example and use)

2. Artificial sweeting agents, preservatives and anti oxidants (example and use)

3. Soaps and detergents

   Cleaning action

   Classification

   Example/ structure

   (Content, diagrams, chart, pictures to be properly included)

PHYSICS (10)

1. Ray optics – Refraction on plane surface.
   a. Refractive index (μ) –Real depth

      Apparent depth

   b. Critical angle (C) : - Definition and derivation of $\mu = \dfrac{1}{Sin\,C}$

   c. Total internal reflection: Definition, condition and its application. (optical fibre)

2. Convex and Concave mirrors.

   a. Derivation of $f = \dfrac{R}{2}$, f = local length

      R= radius of curvature
   b. Derivation of Mirror formula

$$f = \frac{1}{v} + \frac{1}{u}$$

    c. Formation of images and uses

3. Convex and Concave lens
    a. <u>Derivation of lens formula</u>

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

    b. Formation images and uses.

4. Prism:
    a. <u>Derivation of prism formula</u>

$$\mu = \frac{\mathrm{Sin}\,\dfrac{A + \delta_m}{2}}{\mathrm{Sin}\,\dfrac{A}{2}}$$

    A = angle of prism,
    δ_m = Minimum angle of deviation

Numerical:
1. <u>Refraction on plane surface</u> ⟶ 20 sums
2. <u>Convex and Concave mirrors</u> ⟶ 20 sums
3. <u>Convex and Concave lens</u> ⟶ 20 sums
4. <u>Prism</u> ⟶ 20 sums

Total = 80 sums

PHYSICS PRACTICAL PROJECT
Topic – Electrostaties OR Electricity

ACCOUNTS (10)
To write the following topics on 'Project sheets'
  I. i. Definition and Meaning of Partnership
   ii. Characteristics of Partnership
  iii. Partnership Deed
   iv. Importance of Indian Partnership Act, 1932
   v. Provisions of the Indian Partnership Act, 1932 that are applicable in the absence of Partnership Deed
   vi. Profit and Loss Appropriation A/C – Meaning
 vii. Two methods of showing Partners' Capital Accounts

  II. i. Tools for Analysis of Financial Statement
    ii. Meaning of Comparative Statements
   iii. Objectives of Comparative Statements
   iv. Limitations of Comparative Statements
   v. Comparative Balance Sheet

    vi. Comparative Statement of Profit & Loss

    vii. Common- Size statement of Profit & Loss

    viii. Common-Size Balance Sheet

COMMERCE PROJECT   (10)

1. Prepare s SWOT analysis of two companies dealing in the same line of products.
2. Compare marketing strategies adopted by two different companies of the same industry (FMCG)/ Telecommunication/ media, keeping in mind the following:

   Product Mix

   Price Mix

   Place Mix

   Promotion Mix

*Note: Kindly prepare the following projects in Commerce. Each project should be of minimum 20 pages.

BUSINESS STUDIES PROJECT   (10)

Kindly prepare the following projects. Each projects should be of minimum 20 pages.

Project 1 : Consider any two successful business leaders. Give a brief account of their leadership styles in the achievement of the organizational goals of their respective organization.

Project 2 : Make a comparative study of any two E-business in terms of their nature. Size, products and services offered, functioning and policies.

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