SOLUTION

Dated 28/March 2020

SHORT ANSWER TYPE QUESTIONS

Q1 Define the term solution. How many types of solutions are formed? Write briefly about each kind of solution with an example.

Q2. Suppose a solid solution is formed between two substances, one whose particles are very large and the other particles are very small. What type of solid solution is this likely to be?.

Q3. Define the following terms :-
a) mole fraction (b) molarity (c) molality (d) Normality

Q4 Write the relationship between molality and Molarity

Q5 Why do gases nearly always tend to be less soluble in liquids as the temperature is raised.

Q6. Why does chemist prefer to refer concentration of solution in terms of molality.

Q7 Why is the vapour pressure of a solution of glucose in water lower than that of water

Q8. Differentiate between boiling point and normal boiling point.

Q9. Two liquids say X and Y boil at 380k and 400k respectively. Which of them is more volatile.

Q10 What helps in the existence of aquatic life.

Q11 What does it mean 5% Na_2CO_3 solution (w/w)

Q12 Give the points of difference between ideal and non ideal solution

Q13 Give the point of difference between Osmosis and Diffusion

Q14 How is it that alcohol and water miscible in all proportion

Q15 On what parameters does the solubility of a solute in a given solvent depend?.

Numerical

Q1 Calculate the mass percentage of benzene (C_6H_6) and Carbon tetrachloride (CCl_4) if 22g of benzene is dissolved in 122g of CCl_4. (C=12, H=1, Cl=35.5)

Q2 Calculate the mole fraction of benzene in solution containing 30% by mass of it in Carbon tetrachloride.

Q3. Calculate the molarity of each of the following solutions:-

(a) 30g of $Co(NO_3)_2 \cdot 6H_2O$ in 4.3 Litre of solution

(b) 30ml of 0.5M H_2SO_4 diluted to 500ml

(Co=58.7, N=14, O=16, H=1)

Q4 Calculate the mass of Urea (NH_2CONH_2) required in making 2.5kg of 0.25molal aqueous solution

Q5 Calculate (a) molality (b) molarity and (c) mole fraction of KI if the density of 20% (mass/mass) aqueous KI is 1.202 $g\,mL^{-1}$ (K=39, I=127)

Q6 A solution is obtained by mixing 300g of 25% solution and 400g of 40% solution by mass

Q7 An antifreeze solution is prepared from 222.6g of ethylene glycol ($\begin{matrix}CH_2\text{-}OH\\CH_2\text{-}OH\end{matrix}$) and 200g of water. Calculate the molality of the solution. If the density of the solution is 1.072 $g\,mL^{-1}$, then what shall be the molarity of the solution

Matrices and Determinant

1. Let $A = \begin{pmatrix} 2 & -1 \\ 3 & 4 \end{pmatrix}$, $B = \begin{pmatrix} 5 & 2 \\ 7 & 4 \end{pmatrix}$, $C = \begin{pmatrix} 2 & 5 \\ 3 & 8 \end{pmatrix}$ find matrix D such that $CD - AB = O$

2. Write the number of all possible matrices of order 2×2 with each entry 1, 2 or 3.

3. If A is a square matrix such that $A^2 = I$ then find the simplified value of $(A-I)^3 + (A+I)^3 - 7A$.

4. $\begin{bmatrix} x-y & 2y \\ 2y+z & x+y \end{bmatrix} = \begin{bmatrix} 1 & 4 \\ 9 & 5 \end{bmatrix}$, Write the value of $x+y+z$.

5. Simplify
$$\cos\theta \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} + \sin\theta \begin{bmatrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{bmatrix}$$

6. $A = \begin{bmatrix} \cos\alpha & \sin\alpha \\ -\sin\alpha & \cos\alpha \end{bmatrix}$, find α satisfying $0 < \alpha < \frac{\pi}{4}$ when $A + A^T = \sqrt{2}\, I$ where A^T is transpose of A.

7. If a matrix has 12 elements, then write all possible order it can have.

8. find the value of x and y in each of the following if AB exists:
   (i) $A_{3\times x}$, B_{4xy} and $AB_{3\times 3}$
   (ii) $A_{x\times 2}$, $B_{y\times 4}$ and $AB_{3\times 4}$.

matrix:

Using elementary transformation, find the inverse of the matrix $A = \begin{bmatrix} 8 & 4 & 3 \\ 2 & 1 & 1 \\ 1 & 2 & 2 \end{bmatrix}$ and use it to solve the following system of lines equations:

$$8x + 4y + 3z = 19$$
$$2x + y + z = 5$$
$$x + 2y + 2z = 7$$

If $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$ then prove that

$$A^n = \begin{bmatrix} 3^{n-1} & 3^{n-1} & 3^{n-1} \\ 3^{n-1} & 3^{n-1} & 3^{n-1} \\ 3^{n-1} & 3^{n-1} & 3^{n-1} \end{bmatrix}$$ where $n \in N$.

14. If A is a square matrix and $|A| = 2$, then write the value of $|AA'|$, where A' is the transpose of matrix A.

15. ~~Is A~~ The value of the determine determinant of a matrix A of order 3×3 is 4. find the value of $|5A|$.

16. Using properties of determinants, prove that:

$$\begin{vmatrix} (a+1)(a+2) & a+2 & 1 \\ (a+2)(a+3) & a+3 & 1 \\ (a+3)(a+4) & a+4 & 1 \end{vmatrix} = -2.$$

17. Using properties of determinants, solve for x.

$$\begin{vmatrix} a+x & a-x & a-x \\ a-x & a+x & a-x \\ a-x & a-x & a+x \end{vmatrix} = 0$$

18. Using properties of determinants, prove the following:

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

19. Using properties of determinants, prove that

$$\begin{vmatrix} a+x & y & z \\ x & a+y & z \\ x & y & a+z \end{vmatrix} = a^2(a+x+y+z)$$

20. Using properties of determinant, prove that

$$\begin{vmatrix} x+1 & 2x & 2x \\ 2x & x+1 & 2x \\ 2x & 2x & x+1 \end{vmatrix} = (5x+1)(1-x)^2.$$

Important formula

1. If A and B are non-empty sets then the number of relation from A to B is 2^{mn}

	function	Domain	Range (principal value)
1	$y = \sin^{-1}x$	$[-1,1]$	$[-\frac{\pi}{2}, \frac{\pi}{2}]$
2	$y = \cos^{-1}x$	$[-1,1]$	$[0, \pi]$
3	$y = \tan^{-1}x$	R	$(-\frac{\pi}{2}, \frac{\pi}{2})$
4	$y = \operatorname{cosec}^{-1}x$	$R-(-1,1)$	$[-\frac{\pi}{2}, \frac{\pi}{2}] - \{0\}$
5	$y = \sec^{-1}x$	$R-(-1,1)$	$[0, \pi] - \{\frac{\pi}{2}\}$
6	$y = \cot^{-1}x$	R	$(0, \pi)$

7. $\sin^{-1}(\sin x) = x \quad x \in [\frac{-\pi}{2}, \frac{\pi}{2}]$
8. $\cos^{-1}(\cos x) = x \quad x \in [0, \pi]$
9. $\tan^{-1}(\tan x) = x \quad x \in (\frac{-\pi}{2}, \frac{\pi}{2})$

10. $\operatorname{cosec}^{-1}(\operatorname{cosec} x) = x \quad x \in [\frac{-\pi}{2}, \frac{\pi}{2}] - \{0\}$
11. $\sec^{-1}(\sec x) = x \quad x \in [0, \pi) - \{\frac{\pi}{2}\}$
12. $\cot^{-1}(\cot x) = x \quad x \in (0, \pi)$
13. $\sin(\sin^{-1}x) = x \quad x \in [-1,1]$
14. $\cos(\cos^{-1}x) = x \quad x \in [-1,1]$
15. $\tan(\tan^{-1}x) = x \quad x \in R$
16. $\sin^{-1}(\frac{1}{x}) = \operatorname{cosec}^{-1}x \quad x \geq 1$ or $x \leq -1$
17. $\cos^{-1}\frac{1}{x} = \sec^{-1}x \quad x \geq 1$ or $x \leq -1$
18. $\tan^{-1}(\frac{1}{x}) = \cot^{-1}(x) \quad x > 0$
19. $\cos^{-1}(-x) = \pi - \cos^{-1}x, \quad x \in [-1,1]$
20. $\sec^{-1}(-x) = \pi - \sec^{-1}x, \quad |x| \geq 1$
21. $\cot^{-1}(-x) = \pi - \cot^{-1}x \quad x \in R$
22. $\sin^{-1}x + \cos^{-1}x = \frac{\pi}{2}, \quad x \in [-1,1]$
23. $\tan^{-1}x + \cot^{-1}x = \frac{\pi}{2} \quad x \in R$
24. $\operatorname{cosec}^{-1}x + \sec^{-1}x = \frac{\pi}{2} \quad |x| \geq 1.$

25. $\tan^{-1}x + \tan^{-1}y = \tan^{-1}\left(\frac{x+y}{1-xy}\right)$ if $xy < 1$

26. $\tan^{-1}x - \tan^{-1}y = \tan^{-1}\left(\frac{x-y}{1+xy}\right)$ if $xy > -1$

27. $2\tan^{-1}x = \tan^{-1}\left(\frac{2x}{1-x^2}\right)$, if $|x| < 1$

28. $2\tan^{-1}x = \sin^{-1}\left(\frac{2x}{1+x^2}\right)$, $|x| < 1$

29. $2\tan^{-1}x = \cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$, $|x| > 0$

30. $2\tan^{-1}x = \tan^{-1}\left(\frac{2x}{1-x^2}\right)$, $|x| < 1$

31. $2\sin^{-1}x = \sin^{-1}\left[2x\sqrt{1-x^2}\right]$, $\frac{-1}{\sqrt{2}} \le x \le \frac{1}{\sqrt{2}}$

32. $2\cos^{-1}x = \cos^{-1}(2x^2-1)$, $\frac{1}{\sqrt{2}} \le x \le 1$

33. $3\sin^{-1}x = \sin^{-1}(3x - 4x^3)$, $x \in \left[\frac{-1}{2}, \frac{1}{2}\right]$

34. $3\cos^{-1}x = \cos^{-1}(4x^3 - 3x)$, $x \in \left[\frac{1}{2}, 1\right]$

35. $\sin^{-1}x + \sin^{-1}y = \sin^{-1}\left[x\sqrt{1-y^2} + y\sqrt{1-x^2}\right]$

36. $\sin^{-1}x + \sin^{-1}y = \sin^{-1}\left[x\sqrt{1-y^2} - y\sqrt{1-x^2}\right]$

37. $\cos^{-1}x + \cos^{-1}y = \cos^{-1}\left[xy - \sqrt{(1-x^2)(1-y^2)}\right]$

38. $\cos^{-1}x - \cos^{-1}y = \cos^{-1}\left[xy + \sqrt{(1-x^2)(1-y^2)}\right]$

39. $\sin^{-1}x = \cos^{-1}\sqrt{1-x^2} = \tan^{-1}\frac{x}{\sqrt{1-x^2}} = \operatorname{cosec}^{-1}\left(\frac{1}{x}\right)$

Differentiation

1. $\frac{d}{dx}(x^n) = nx^{n-1}$
2. $\frac{d}{dx}(\cos x) = -\sin x$
3. $\frac{d}{dx}(\cot x) = -\operatorname{cosec}^2 x$
4. $\frac{d}{dx}(\operatorname{cosec} x) = -\operatorname{cosec} x \cot x$
5. $\frac{d}{dx}(\sin x) = \cos x$
6. $\frac{d}{dx}(\tan x) = \sec^2 x$
7. $\frac{d}{dx}(\sec x) = \sec x \tan x$
8. $\frac{d}{dx}(e^x) = e^x$
9. $\frac{d}{dx}(a^x) = a^x (\log a)$
10. $\frac{d}{dx}(\log x) = \frac{1}{x}$
11. $\frac{d}{dx}(\log_a x) = \frac{1}{x \log a}$

$\frac{d}{dx}(u+v) = \left(\frac{du}{dx} + \frac{dv}{dx}\right)$

$\frac{d}{dx}(u-v) = \left(\frac{du}{dx} - \frac{dv}{dx}\right)$

$\frac{d}{dx}(uv) = \left(u\frac{dv}{dx} + v\frac{du}{dx}\right)$

$\frac{d}{dx}\left(\frac{u}{v}\right) = \left(\frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}\right)$

$\frac{d}{dx}(\sin^{-1}x) = \frac{1}{\sqrt{1-x^2}}$

$\frac{d}{dx}(\cos^{-1}x) = \frac{-1}{\sqrt{1-x^2}}$

$\frac{d}{dx}(\tan^{-1}x) = \frac{1}{1+x^2}$

$\frac{d}{dx}(\cot^{-1}x) = \frac{-1}{1+x^2}$

$\frac{d}{dx}(\operatorname{cosec}^{-1}x) = \frac{-1}{|x|\sqrt{x^2-1}}$

$\frac{d}{dx}(\operatorname{cosec}^{-1}x)$

$\frac{d}{dx}(\sec^{-1}x) = \frac{1}{|x|\sqrt{x^2-1}}$

Some Useful Results for Differenciation by Trigonometrical Transformation

$1 - \cos x = 2\sin^2\frac{x}{2}$

$1 + \cos x = 2\cos^2\frac{x}{2}$

$\sin 3x = 3\sin x - 4\sin^3 x$

$\cos 3x = 4\cos^3 x - 3\cos x$

$\sin x = \frac{2\tan\left(\frac{x}{2}\right)}{1+\tan^2\left(\frac{x}{2}\right)}$

$\cos x = \frac{1-\tan^2\frac{x}{2}}{1+\tan^2\frac{x}{2}}$

$\tan^{-1}x - \tan^{-1}y = \tan^{-1}\left(\frac{x-y}{1+xy}\right)$

Definite Integral

Properties

(a) $\int_a^b f(x)\,dx = \int_a^b f(t)\,dt$ (b) $\int_a^b f(x)\,dx = -\int_b^a f(x)\,dx$

(c) $\int_a^b f(x)\,dx = \int_a^c f(x)\,dx + \int_c^b f(x)\,dx$, $a < c < b$.

(d) $\int_0^a f(x)\,dx = \int_0^a f(a-x)\,dx$ (e) $\int_a^b f(x)\,dx = \int_a^b f(a+b-x)\,dx$

(f) $\int_{-a}^{a} f(x)\,dx = \begin{cases} 2\int_0^a f(x)\,dx & \text{if } f(x) \text{ is even function i.e. } f(-x) = f(x) \\ 0 & \text{if } f(x) \text{ is odd function i.e. } f(-x) = -f(x) \end{cases}$

(g) $\int_{-a}^{a} f(x)\,dx = \int_0^a \{f(x) + f(-x)\}\,dx$

(h) $\int_0^{2a} f(x)\,dx = \begin{cases} 2\int_0^a f(x)\,dx & \text{if } f(2a-x) = f(x) \\ 0 & \text{if } f(2a-x) = -f(x) \end{cases}$

(i) $\int_0^{2a} f(x)\,dx = \int_0^{2a} \{f(x) + f(2a-x)\}\,dx$

1. $\int_0^{2\pi} \cos^5 x\,dx$ 2. $\int_{-\pi/2}^{\pi/2} \sin^5 x\,dx$ 3. $\int_2^8 |x-5|\,dx$

4. $\int_{\pi/3}^{\pi/2} \frac{3\sqrt{\sin x}}{\quad}\,dx$.

Some useful substitutions.

Suppose we are given $\sin^{-1} f(x)$, $\cos^{-1} f(x)$, $\tan^{-1} f(x)$ etc.

Rule 1 : If $f(x) = \sqrt{a^2 - x^2}$, put $x = a\sin\theta$ or $x = a\cos\theta$

Rule-2 : If $f(x) = \sqrt{a^2 + x^2}$ Put $x = a\tan\theta$ or $x = a\cot\theta$.

Rule-3 : If $f(x) = \sqrt{x^2 - a^2}$ put $x = a\sec\theta$ or $x = a\operatorname{cosec}\theta$.

Rule-4 : If $f(x) = \sqrt{a - x}$ Put $x = a\cos 2\theta$.

* Let $x = f(t)$ and $y = g(t)$ then

$$\frac{dy}{dx} = \frac{\left(\frac{dy}{dt}\right)}{\left(\frac{dx}{dt}\right)} = \frac{g'(t)}{f'(t)}, \text{ where } f'(t) \neq 0$$

Indefinite Integral

$$\int x^n dx = \frac{x^{n+1}}{n+1} + c, \text{ when } n \neq -1$$

$$\int \frac{dx}{x} = \log|x| + c, \text{ where } x \neq 0$$

$$\int e^x dx = e^x + c$$

$$\int a^x dx = \frac{a^x}{\log a} + c$$

$$\int \cos x\, dx = \sin x + c$$

$$\int \sin x\, dx = -\cos x + c.$$

$$\int \sec^2 x\, dx = \tan x + c$$

$$\int \operatorname{cosec}^2 x\, dx = -\cot x + c$$

$$\int \sec x \tan x\, dx = \sec x + c$$

$$\int \operatorname{cosec} x \cot x\, dx = -\operatorname{cosec} x + c$$

3. Explain the Salient features of Hugo de Varies theory of mutation. How is Darwin's theory of natural Selection different from it? explain.

4. (i) Differentiate between analogy and homology giving one example each of plant and animal respectively.

(ii) How are they Considered as an evidence in Support of evolution?

5. (i) How did Darwin explain adaptive radiation? Give another exhibiting adaptive radiation.

(ii) Name the Scientist who influenced Darwin

4. (i) Explain menstrual cycle in human females.
(ii) How can the scientific understanding of menstrual cycle of human females help us as a contraceptive measures.

5. (i) Arrange the following hormones in sequence of their secretion in pregnant women.
(ii) Mention their source and the function they perform.

6. (i) Where in the fallopian tube does fertilisation occur in humans? Describe the development of a fertilised ovum upto implantation.
(ii) How is polyspermy prevented in humans?

CHAPTER-05. Principles of Inheritance and Variation:

Q. 1. Using suitable example, explain the theory of incomplete dominance.
2. What is Codominance? explain it with the help of example.
3. Explain Phenyketonuria in brief. Quote out some major symptoms for this disorder.
4. Explain in brief about the Chromosomal Disorders.
5. Explain Pleiotrophy with the help example.
6. Describe the mechanism of pattern of inheritance of ABO blood group in humans.
7. Define the term epistatis? Give various types of epistatis
8. What is the inheritance pattern observed in the size of the starch grain and seed shaped of Pisum sativum? work out the monohybrid Cross showing the above traits. How does this pattern of inheritance deviate from that of mendelian law of dominance

Q1. 1. Explain various natural and artificial methods to avoid sperm fertilisating an ovum.

2. What is population explosion? what are the reasons behind it? How can we overcome from this problem?

3. Suggest and explain any three assisted reproductive technologies (ARTs) to an infertile couple.

4. ~~Amni~~ Amniocentesis for sex determination is banned in our. Is this ban necessary? Comment.

5. Write a short note on sexually transmitted disease. Explain in brief giving one example.

Some Suggestions for the Students.

→ Read lessons carefully and take out some important Points.
→ Make your note copy.
→ Solve all Questions of each lessons.
→ Also Solve Examples Problem.
→ Remember Chapter wise differentiate between.

Reproductive health means healthy reproductive Organs with normal ~~function~~ functions.

of

According to world health Organisation, Reproductive health is a state of Comllete physical, mental and social well being.

or

Reproductive health means a total well being in physical, emotional, behavioural and social aspects of reproduction.

Reproductive ~~Head~~ Health - Problems and Strategies.

- India was among the 1st Countries to initiate action and Plans to attain total reproductive health as social goal.
- In India family planning ~~was~~ were initiated in 1951.
- Improved programmes Covering wider reproduction releated areas are Currently in operation under the popular name Reproductive and child health Care programmes.

→ Sex Education was introduced in Schools to Provide right information about myths and misconceptions ab Sex related aspects.

→ Proper information about reproductive Organs, adolescence and related aspect Changes, Sex and hygienic sexual Practices, Sexually transmitted diseases (STD).

→ Fertile Couples and people of marriageable age group should know about available birth Control options. Care of pregnant mother, ~~post na~~ Antenatal Care of the mother and child, importance of breast feeding, equa importance of opportunities for the male and the female Child.

- it also ensure safe delivery of infant and postnatal Care.
- this programme arrange milk feeding programme.
→ this programme Educate the newly wedded Couples about the advantages of small family, spacing between successive birth and to have a pregnancy when the prebroductive system is fully mature physically as well as functionally.
- this programme also Organize immunization program

Universal immunization Programme

- In may, 1974 world health Organization launched a programme to immunize the children of entire world against six communicable diseases like diphtheria, Pertuppis, tetanus, Polio, tuberculosis and measles.
- The universal immunization programme of India was launched in 1985.

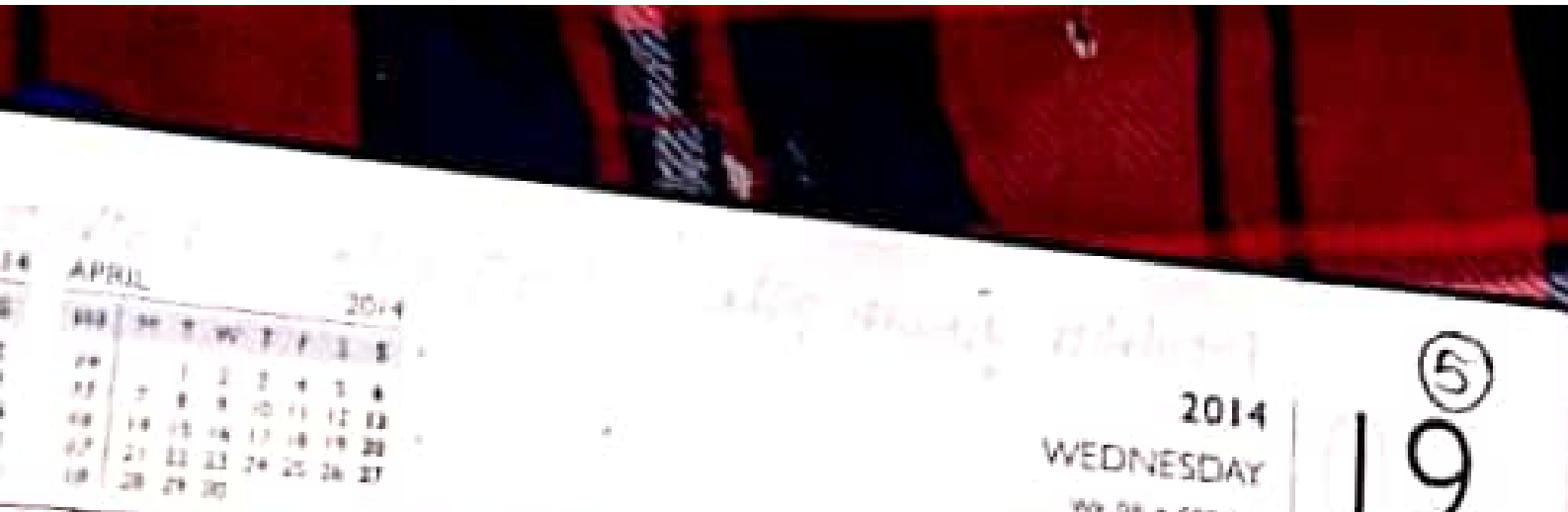
National immunization schedule in India:

18 | 2014 TUESDAY | FEBRUARY

Age	Vaccine
- 10 weeks	DPT 2nd dose, OPV 3rd dose, influenza type b vaccine.
- 14 weeks	DPT 3rd dose, OPV 4th dose
- 6-9 months	OPV vaccine 5th dose, Hepatitis B vaccine 3rd dose
- 9 months	Measles Measles Vaccine.
- 15-18 months	MMR (measles mumps Rubella), DPT 1st Booster dose, Oral Polio Vaccine 6th dose
- 1 Years	Chicken pox vaccine.
- 2nd Year	Hepatitis A vaccine (two doses 6 month apart), Typhoid Vaccine.
- 5 Years	DPT 2nd Booster, OPV 7th dose
- 10 Years	TT (Tetanus) Booster dose, Hepatitis B vaccine Booster dose
- 15-16 Years	TT (Tetanus) Booster dose.

POPULATION EXPLOSION

* The total number of individuals of a species present in a particular area at a given time is called population explosion.



APRIL 2014

2014
WEDNESDAY
FEBRUARY
19

tific study of human population is called
phy.

the persons who study demography are
mographers

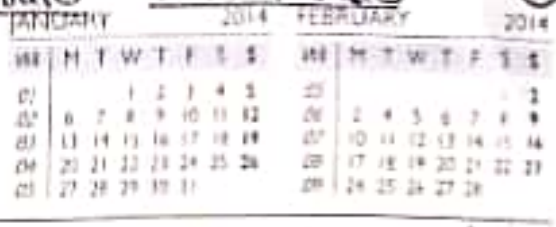
Demography deals demographic themes
demographic processes.

phic phenomena include population size,
n compositions, population distribution.

phic processes includes fertility, mortality,
, migration, social mobility

20 2014 THURSDAY Wk 08 • 051-314 20-02-2014 FEBRUARY

Population growth rate = Birth rate − death rate



A rapid or exponential increase in human population is known as population explosion.

Reasons of Population Explosion

(a) Reduced death rate particularly IMR and CMR.
(b) Early marriage.
(c) Desire of male child
(d) Religious orthodoxy against family planning.
(e) Increased agricultural production.
(f) Increased health facilities.
(g) Lack of social awareness.
(h) Better food storage and transportation facilities
(i) Advanced postnatal care.

2014 FRIDAY 21
Wk 08 • 052-313
FEBRUARY 21-02-2014

Consequences of Population explosion:

(a) Increase Poverty.
(b) Shortage of food.
(c) Unemployment and educational problem.
(d) Deforestration and Pollution.
(e) Shortage of essential goods resulting hike in their prices.
(f) Energy Crisis.
(g) Declined Growth rate.

Measures to Control human population:

- Reduction in birth ~~Control birth~~ rate is the only practicable and direct method to Control world's Population.

- it Can be done in following ways.

(a) People should be educated about the advantages of small family. various media may used for this purpose e.g. Posters showing a happy ~~family~~ Couple with two children with a slogan **Hum Do Humare Do.**

(b) By increasing the marriageable age population growth Can also be checked.
At present, the marriageable age is 18 years for females and 21 years for males.

(c) Small families Can be encouraged by giving incentives.

(d) There are many birth Control measures which Can Check birth Control.

MARCH 2014 | APRIL 2014

2014 MONDAY FEBRUARY 24 24-02-2014

(4) Natural or traditional methods :→

- Natural methods prevent fertilisation or meeting of male and female gametes.
- there is no needs of any devices, medicine or religious sanction to use these methods.
- these are of three types.

(a) Rhythm method or Periodic abstinence.

in this method the couples should avoid making sexual contact from day 10 to 17 of the menstrual cycle because ovulation can occur during this period.

(b) Withdrawal method or Coitus interruptus :-

In this method male withdraw his penis from vagina

25 | 2014 TUESDAY | FEBRUARY

25-02-2014

JANUARY 2014

WK	M	T	W	T	F	S	S
01			1	2	3	4	5
02	6	7	8	9	10	11	12
03	13	14	15	16	17	18	19
04	20	21	22	23	24	25	26
05	27	28	29	30	31		

FEBRUARY 2014

WK	M	T	W	T	F	S	S
05						1	2
06	3	4	5	6	7	8	9
07	10	11	12	13	14	15	16
08	17	18	19	20	21	22	23
09	24	25	26	27	28		

Barrier methods are available for both males and females.
Some Common barrier methods are as follows.

- Condom:
  Condom is thin rubber sheath which is rolled over erectile penis during sexual intercourse.

Condom Prevent Conception as well as and it also provides protection against sexually transmitted diseases

- Diaphragms, Cerrical Caps and vaults are the barriers made up of rubbers and used by females to Covers the cervix during sexual intercourse.
- these reusable.

- femidom is plastic pouch inserted into vagina
- femidom also provide protection from STDs.

2. SYPHILIS

- Syphilis is caused by a bacterium called Treponema pallidum.
- Syphilis can also transmitted to foetus through infected mother placenta.
- Its incubation period is about 3 weeks.
- Lesions in the mucus membrane of urinogental tract, Swelling of local lymph nodes, ulcers on genitalia etc are some common symptoms of Syphilis.
- Antibiotics Tetracycline and Penicillin are used in the treatment of Syphilis.

3. CHANCROID

- is caused by a bacterium called

27 | 2014 THURSDAY | WK 09 • 058-307 | FEBRUARY
27-02-2014

JANUARY 2014

WK	M	T	W	T	F	S	S
01			1	2	3	4	5
02	6	7	8	9	10	11	12
03	13	14	15	16	17	18	19
04	20	21	22	23	24	25	26
05	27	28	29	30	31		

FEBRUARY 2014

WK	M	T	W	T	F	S	S
05						1	2
06	3	4	5	6	7	8	9
07	10	11	12	13	14	15	16
08	17	18	19	20	21	22	23
09	24	25	26	27	28		

Hormone releasing IUDs

- Hormone releasing IUDs Contain Progesterone and levonorgestrel.
- these IUDs release small quantities of hormones which ~~suppress~~ make the endometrium unsuitable for implantation and the cervix hostile to the sperm.
eg: Progestasert, LNG-20

Oral Contraceptives or Oral Pills

→ Oral Contraceptives are Physiological Contraceptives which are taken orally in the form of ~~tablet~~ tablets so they are also known as Pills.

Oral pills are of two types

(a) Mini pills

minipills contain only progestin. they are taken daily without break.

(b) Combined pills -

Combined pills contains synthetic progesterone and estrogen.
eg - Mala D, Mala L

Mala D and Mala L are commonly used Combind pills which are taken daily without break.

Saheli is non steroidal oral pills which prevent implantation. saheli is taken once a week after initial intake of twice a week dose for 3 months.
Saheli is prepared by the scientists of Central Drug Research Institute, Lucknow.

Hormonal injections of Injectable Contraceptives

Injectable Contraceptives are progesterone derivative injection which are given once every three months. Hormal injections prevent ovulation

- Depot medroxyprogesterone acetate (DMPA)
- DMPA 150mg every three months.
  DMPA 300mg every six months.

01 | 2014 SATURDAY | WK 09 • Dec 305 | MARCH
01-03-2014

FEBRUARY 2014 | MARCH 2014

Norethisterone enanthate (NET-EN)

Norethisterone enanthate 2comy every two months.

Both of these injectable Contraceptives are Convenie and highly effective with noside effect.

Morning after pills or Emergency Contraceptiv

- Emergency Contraceptives are used in the case of unprotected Sex, Sexual ~~assult~~ assault, mixed pills ~~etc~~ etc.
- these Contraceptives are for emergency use only
- these Contraceptives either suppress ovulation or prevent fertilization and Implantation.

these pills can prevent a Pregnancy when take within 72 hours after unprotected sex.

eg Unwanted 72, i pills (mifepristone) etc.

Subcutaneous Implants

02 SUNDAY Implants are hormone Containing devices whic are implanted Subdermally.
- they Contain Synthetic progesterone.
- Implants are very safe, Convenient, effective and long lasting upto 5 years.

- Implants prevent ~~or~~ ovulation and sperm transport.

eg Nosplant, Implanon.

Permanent methods

- Permanent method includes sterilization by surgery. Surgical methods block gamete transport and prevent fertilisation.
- Reversibility of surgical method is very poor.

(a) Vasectomy – vasectomy is the surgical cutting of vas deferens.

(b) Tubectomy – Tubectomy is the surgical cutting of fallopian tube.

(c) Castration – Surgical removal of testes in male.

(d) Overictomy – Surgical removal of ovaries in female.

04 | 2014 TUESDAY | Wk 10 • 063-302 | 04-03-2014 | MARCH

FEBRUARY 2014

Wk	M	T	W	T	F	S	S
05						1	2
06	3	4	5	6	7	8	9
07	10	11	12	13	14	15	16
08	17	18	19	20	21	22	23
09	24	25	26	27	28		

MARCH 2014

Wk	M	T	W	T	F	S	S
09	31						2
10	3	4	5	6	7	8	9
11	10	11	12	13	14	15	16
12	17	18	19	20	21	22	23
13	24	25	26	27	28	29	30

SEXUALLY TRANSMITTED DISEASES

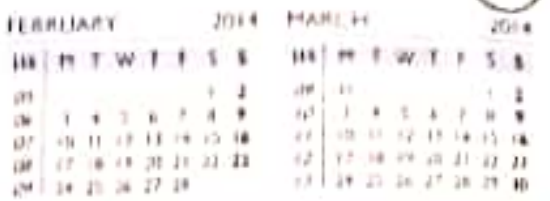
Diseases which can transmitted from an infected person to a healthy person through sexual contact are called sexually transmitted diseases or Veneral diseases or Reproductive tract infections.

STDs are usually caused by bacteria, viruses, Chlamydia, Protozoans, nematodes, fungi etc

Except AIDS, hepatitis B and Genital hertes, all other STDs are Completely curable if detected early and treated Properly.

Itching, fluid discharge, Swelling, slight pain etc in genital region are some early Symptoms of most of the STDs.

08 | 2014 SATURDAY | MARCH



→ Avoid Prostitution.
→ Disposable syringes and needles should be used for injections.
→ Avoid making sexual Contact with unknown person.
→ The common razor at the barber's shop should not be used.
→ Before receiving blood for transfusion, one should ensure that it has been screened for HIV.
— Homosexuality should also be avoided.

Certain Antiral Protein drugs like Zidovidine and didanosine are used to prolong the life AIDS patients.

9. Hepatitis B

Hepatitis B is caused by a DNA containing virus called Hepatitis B virus.
Its incubation period is about 30-90 days.

Fatigue, Jaundice, Persistent low grade fever, rash and Abdominal pain., loss of apetite (anorexia) Nausea, vomiting.

09 SUNDAY

Interferon is used in the treatment of Hepatitis B.
Hepatitis B vaccine is available on [redacted]

10. Amoebiasis:

Amobiasis is also sexually transmitted disease which is caused by Entamoeba histolytica.
Amoebiasis can transmite also transmite by consuming contaminated food and water.
Antibiotics terramycin, erythromycin, aureomycin are used in the treatment amoebiasis.

11. Giardiasis:

Giardiasis is caused by Giardia lamblia.
- It can spread by contaminated food and water.
- It can also transmit by sexual intercourse.
Epigastric pain, abdominal discomfort, diarrhoea, headache are symptoms Giardiasis.
Anticamoebic tablets are used in the treatment of Giardiasis.

13. Scabies

Scabies is caused by sarcoptes scabiei. itching and patches on the skin are some common symptoms of scabies
It can transmite through sexual contact with an infected person.

14. Pediculosis Pubis:

Pediculosis pubis is caused by Phthirus pubis (Pubic louse).
- Painful itching and red patches on the skin of pubic region.
- It can transmit through sexual contact, or by
- Antibiotic Clotrimazole, miconazole are used in the treatment of Shearing hair, clothes, etc.
- Medicated Shampoos are used in the treatment of Pediculosis pubis.

11 2014 TUESDAY MARCH

FEBRUARY 2014 MARCH 2014

INFERTILITY

Infertility

infertility is inability to Conceive pregnancy inspite of unprotected sex.

- infertility is not synonym of sterility. Sterility is the Complete inability to produce off-spring.

- Infertility is caused by various reasons which can be Catagorised under Physical, Congenital immunological or even psychological disorders.

- Specilized infertility clinics can help in the diagnosis and probes treatment of some of these disorders and enable these Couples to have Children.

- first test-tube baby was borne in England on July 25. 1978. whose name was Louise Joy Brown.
- first successful trial of this technique were carried out in India by Indira Hinduja (1986) at K.E.M. Hospital in Mumbai and Baidyanath Chakravarthy (in 1986) in Kolkata.

DETECTION OF FOETAL DISORDERS DURING EARLY PREGNANCY

- Some time abnormal during foetal development some disorders may occur which result in abnormal offspring.
- these foetal disorder can be detected by following techniques.

Amniocentesis

* Amniocentesis is a technique which is used for foetal sex determination and disorders.

- Amniocentesis is done after 14–15 weeks of gestation.
- this technique is based on the chromosomal pattern analysis in the amniotic fluid.

-the location of the foetus and placenta is determined by ultrasonography.
→ in this technique a small amount of amniotic fluid is drawn by passing a special surgical syringe into the abdominal wall and uterine wall into the amniotic sac containing amniotic fluid.
→ amniotic fluid contains cells from foetus skin and respiratory tract these cells are cultured and used are used to determine chromosomal abnormalities and metabolic disorders of the foetus.
→ unfortunately, this useful technique is being misused to kill the normal female foetuses. it has legally banned for the determination of sex to avoid female foeticide.

Chorionic Villus sampling

→ Chorionic villus sampling is a technique which is used to determine disorders in foetus.
→ in this technique the physician inserts a narrow, flexible tube through vagina and cervix into the uterus and withdraws a small amount of foetal tissue (chorionic villi) from the placenta.
→ these chorionic cells are are used for karyotyping alongwith some biochemical tests within a few hours.
→ this technique is done after 10-12 weeks of gestation
→ CVS procedure is invasive, it carries with it an increased risk to both foetus and mother.

Foetoscopy

-foetoscopy is a another technique in which a needle thin tube containing a viewing device is inserted into the uterus giving the physician a direct view of the foetus.

15 | 2014 SATURDAY | MARCH

15-03-2014

FEBRUARY 2014

WK	M	T	W	T	F	S	S
09						1	2
10	3	4	5	6	7	8	9
11	10	11	12	13	14	15	16
12	17	18	19	20	21	22	23
13	24	25	26	27	28		

MARCH 2014

WK	M	T	W	T	F	S	S
09	31					1	2
10	3	4	5	6	7	8	9
11	10	11	12	13	14	15	16
12	17	18	19	20	21	22	23
13	24	25	26	27	28	29	30

Non / Invasive techniques

Ultrasonography or Ultra sound imaging.

Ultrasound imaging is most widely used non-invasive technique which is used to determine foetal condition.

Some important Dates

→ 7th April 1948 Establishment of world health Organisation.
→ 11th July World Population Day.
→ 1 January 1994 – Government of india enforced the Prenatal Diagnostic techniques Act 1994
→ 1 December World AIDS DAY.

The End

16 SUNDAY

5. Genital Herpes:

Genital Herpes is a sexually transmitted viral disease caused by herpes simplex virus.

- Genital herpes is characterized by periodically recurring of watery blisters on the genitalia or buttocks, fever, vaginal and urethral discharge, swelling of lymph nodes, pain etc.

Acyclovir, Valacyclovir or Famciclovir are used in the treatment of genital herpes.

7. Genital wart:

Genita wart is sexually transmitted viral disease caused by human Papilloma Virus.

Human Papilloma virus produce wart over the skin, external genitalia and Perianal area.

Surgical removal of warts.

Podophyllum Preparation and Podofilox are used in the treatment of Genital wart.

22 | 2014 SATURDAY
W: 08 • 053-312
22-02-2014 | FEBRUARY

JANUARY 2014

WK	M	T	W	T	F	S	S
01			1	2	3	4	5
02	6	7	8	9	10	11	12
03	13	14	15	16	17	18	19
04	20	21	22	23	24	25	26
05	27	28	29	30	31		

FEBRUARY 20

WK	M	T	W	T	F	S
05						1
06	3	4	5	6	7	8
07	10	11	12	13	14	15
08	17	18	19	20	21	22
09	24	25	26	27	28	

Birth Control or Contraception

→ Birth Control or Contraception is the regulation of Conce by Preventive methods or devices to limit the number of offsprings.

→ Contraception is temporary or permanent measures which p Pregnancy or Conception.

– All those devices which are used to prevent pregnan or Conception are Called Contraceptives.

An ideal Contraceptive should:–
(a) User friendly.
(b) Effective with least or no side effect.
(c) Reversible.
(d) Completely effective against pregnancy.

Several methods of Contraception:–

A) TEMPORARY METHOD
B) PERMANENT METHOD
C) MTP

23 SUNDAY

A) TEMPORARY METHOD

– Temporary methods prevent pregnancy or Conception only f a limited period.
– their regular use is necessary for Continued avoida of pregnancy.

– temporary method are of following types

MARCH 2014 | APRIL 2014

2014 WEDNESDAY 26 FEBRUARY 26-02-2014

These Contraceptives are introduced in vagina before Sexual intercourse.

-These Contraceptives are used by anyone who is not allergic to these spermicides.

Intrauterine Contraceptive devices (IUCDx) or Intrauterine devices. (IUDs)

- IUDs are the devices made up of plastic or metals or combination of both which are inserted by Doctors in uterus through vagina to prevent Conception.

- IUDs are of three types:-

(a) Inert IUDs OR Non medicated IUDs →

Inert IUDs are made up of polyethylene impregnated with barrium sulphate or stainless steel.

eg- inert IUDs increases phagocytosis of sperm in the uterus.

eg Lippes loop

(b) Copper releasing IUDs :-

Copper releasing IUDs releas Cu ions which suppress sperm motility and fertiliz capacity of the sperm.

- these devices have to replaced after 3-5 years.

eg CuT, Cu 7, Multiload 375.