Time: 2 Hour   Total Marks: 120
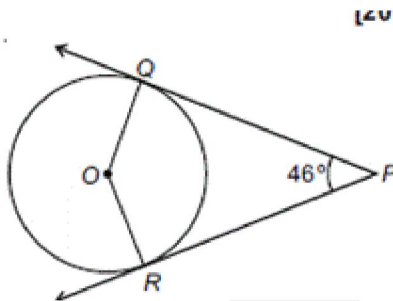
MATHEMATICS

1. If the common difference of an AP is 3, then $a_{20} - a_{15}$ is

   (a) 5   (b) 3
   (c) 15   (d) 20

2. In figure, PQ and PR two tangents to a circle QPR with centre O. If QOR equals: = 46°, [2014

   (a) 67°   (b) 134°
   (c) 44°   (d) 46⁰

3. A box contains 90 discs, numbered from 1 to 90. If one disc is drawn at random from the box, the probability that it bears a prime-number less than 23, is [2013]

   (a) $\dfrac{7}{90}$ (b) $\dfrac{10}{90}$

   (c) $\dfrac{4}{45}$ (d) $\dfrac{9}{89}$

4. The formula used to find the curved surface area of a cone of radius (r), height (h) and slant height (1) is

   (a) CSA = $\pi r l$ (b) CSA = $2\pi(r+1$

   (c) CSA = $2\pi(r+h)$ (d) CSA = $\dfrac{\pi r^2 h}{4}$

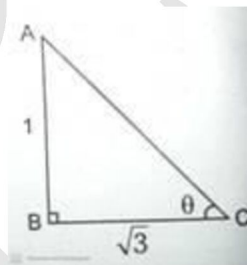5. Find the value of $\sin 30° + \cos 60°$

   (a) 2   (b) 4
   (c) 1   (d) 3

6. The distance between the point (4, 3) and the Origin is

   (a) 7 Units   (b) 25 Units
   (c) 5 Units   (d) 6 Units

7. In the figure, the angle of elevation ϕ is

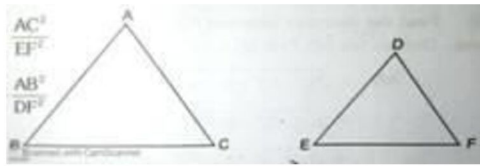
   (a) 30°   (b) 45°
   (c) 90°   (d) 60°

8. In this figure $\triangle$ABC ~ $\triangle$DEF. Then which one of the following ratios is correct?

s

(a) $\dfrac{\triangle ABC}{\triangle DEF} = \dfrac{AB^2}{EF^2}$

(b) $\dfrac{\triangle ABC}{\triangle DEF} = \dfrac{AC^2}{EF^2}$

(c) $\dfrac{\triangle ABC}{\triangle DEF} = \dfrac{BC^2}{EF^2}$

(d) $\dfrac{\triangle ABC}{\triangle DEF} = \dfrac{AB^2}{DF^2}$

9. The distance between origin and the point $P(x_1 y_1)$ is

(a) $\sqrt{x^2_1 + y^2_1}$

(b) $\sqrt{x^2_1 - y^2_1}$

(c) $\sqrt{x^2_1 / y^2_1}$

(d) $\sqrt{x^2_1 \div y^2_1}$

10. The value of a $\cos 48° - \sin 42°$ is

(a) 0

(b) $\dfrac{1}{4}$

(c) $\dfrac{1}{2}$

(d) 1

11. If the lines drawn to the linear equations of the type $a_1 x + b_1 y + c_1 = 0$ and $a_2 x + b_2 y + c_2 = 0$ are coincident on each other, correct relation among the following is

(a) $\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2} = \dfrac{c_1}{c_2}$

(b) $\dfrac{a_1}{a_2} \neq \dfrac{b_1}{b_2} \neq \dfrac{c_1}{c_2}$

(c) $\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2} \neq \dfrac{c_1}{c_2}$

(d) $\dfrac{a_1}{a_2} \neq \dfrac{b_1}{b_2} = \dfrac{c_1}{c_2}$

12. The empirical relationship between the three measures of central tendency is,

(a) 3 median = mode + 2 mean

(b) median = 4 mean

(c) 3 median = mode - 2 mean

(d) mean = 2 median +3 mode

13. **The pair of equations 2x+y=5,3x+2y=8 has**

(a) Unique solution (b) Two solutions

(c) No solutions (d) Infinitely many solutions

14.

In he adjoining figure if $°$,then < AOP is
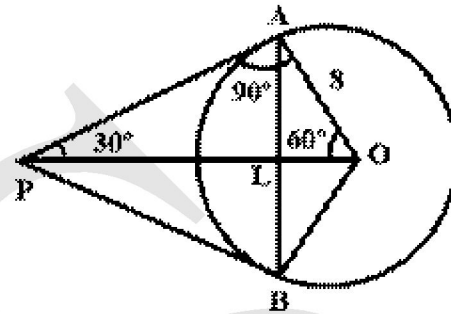
(a) 90° (b) 180°

(c) 60° (d) 30°

15. **The distance of the point p(3,4) from the x-axis is**

(a) 3 unit (b) 4 unit

(c) 7 unit (d) 1 unit

16. The maximum value of $\cos\theta$ could be

(a) 2/√3 (b) √3/2

(c) (1,2) (d) √2

17. The pair of linear equation $2x + 3y - 9 = 0$ and $4x + 6y - 18 = 0$ represents two lines which are …….

(a) Interesting lines (b) Parallel lines

(c) Perpendicular to each other (d) Coinciding lines

18. If one root of $px^2+qx+r=0$ is reciprocal of the other root then

(a) p=q (b) q= r

(c) p = r (d) p=q=r

19. A solid has been melted and recast in to a wire ,which of following remains the same

(a) length (b) Height

(c) radius (d) Volume

20. In an A.P. if $S_5=35$ and $S_4=22$, then the 5th term is

(a) 10 (b) 13

(c) 22 (d) 35

21. A person continuously place 3 marbles in first box, 5 in second box, 7 in third box etc. The number of marbles that he place in sixteenth box is
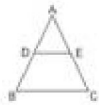
(a) 66   (b) 35
(c) 13   (d) 33

22. In an A.P. the correct relation is

(a) $T_{n-5} = T_{n-4} + d$

(b) $T_{n-5} = T_{n-4} + d$

(c) $T_{n-5} = T_{n} + d$

(d) $T_{n-5} = T_{n} - d$

23. In an A.P. $T_{n+5} = 35$ and $T_{n+1} = 23$, then common difference is

(a) 2   (b) 2n
(c) 3n   (d) 3

24. In the figure AB=12cms, AD=7cms,AC=18cms and DE ‖BC then the length of AE is

(a) 10.5cms   (b) 7.5cms
(c) 11.5cms   (d) 12.5cms

25. A vertical pole of 10m casts a shadow of 8m at certain time of the day. The length of shadow cast by a tower standing next to the pole of height 110m is

(a) 80m   (b) 18m
(c) 88m   (d) 100m

26. Which one of the following is correct?

(a) $AC^2 - AB^2 = BC^2$ (b) $AB^2 - BC^2 = AC^2$
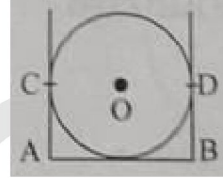
(c) $AC^2 + AB^2 = BC^2$ (d) AB+BC=AC

27. If x=a,y=b is the solution of the equations x-y = 2 and x + y=4, then the values of a and b are respectively.

(a) 3and 5   (b) 5and 3
(c) 3and 1   (d) -1 and -3

28. The number of solutions of the pair of linear equations x+2y-8=0 and 2x +4y=16 have

(a) 0   (b) 1
(c) Infinitely many   (d) None

29. In the figure AB, AC and BD are the tangents as shown in the figure, If AB= 'a' cms BD='b'cms then AC =

(a) 'a' cms   (b) 'b' cms
(c) (a-b) cms   (d) (a+b) cms

30. The co ordinates of a point on x- axis which lies on the perpendicular bisector of the line segment joining the points (7,6) and (-3,4) are

(a) (0, 2)   (b) (3, 0)
(c) (0, 3)   (d) (2, 0)

31. If $A = 2\pi r^2$, then the value of r is

(a) $\dfrac{\pm\sqrt{2\pi}}{A}$ (b) $\dfrac{\pm\sqrt{A}}{2\pi}$

(c) $\dfrac{\pm\sqrt{2A}}{\pi}$ (d) $\dfrac{\pm\sqrt{\pi}}{2A}$

32. In $S = \dfrac{1}{2} at^2$ if S= 72,a=4 then the value of 't' is

(a) 8   (b) 6
(c) 5   (d) 7

33. If the roots of the equation $12x^2 + mx + 5 = 0$ are in the ratio 3:2,m equals

(a) $\dfrac{1}{12}$ (b) $\dfrac{5}{12}$

(c) $5\sqrt{10}$ (d) $\dfrac{5}{12}\sqrt{10}$

34. $9\sec^2 A - 9\tan^2 A =$

(a) 1   (b) 9
(c) 8   (d) 0

35. The ratio of the length of a pole and its shadows is 1 : $\sqrt{3}$. The angle of elevation of of the sun is :

(a) 90^0 (b) 60^0

(c) 30^0 (d) 45^0

36. If the angle between two radii of a circle is 140^0, then the angle between the tangents at the ends of the radii is :

(a) 90^0 (b) 50^0

(c) 70^0 (d) 60^0

37. When the angle of elevation of sun is 300 the length of the shadow cast by 50 m high building is

(a) $50/\sqrt{3}\,m$ (b) $50\sqrt{3}\,m$

(c) $25\sqrt{3}\,m$ (d) $300\sqrt{3}\,m$

38. For the following distribution.

Marks less than	10	20	30	40	50	60
no. of sutdents	3	12	27	57	75	80

The modal class is :

(a) 10-20   (b) 20-30

(c) 30-40   (d) 50-60

39. The mean and median of a data are 14 and 15 respectively. The value of mode is

(a) 16   (b) 17

(c) 13   (d) 18

40. The ratio of volume of a cone and a cylinder of equal diameter and equal height is

(a) 3:1   (b) 1:3

(c) 1:2   (d) 2:1

SCIENCE

1. We need 20% aqueous solution of sodium hydroxide for the study of saponification reaction. When we open the lid of the bottle containing solidsodium hydroxide we observe it in which form?

(a) Colourless transparent beads   (b) Small white beads

(c) White pellets/flakes   (d) Fine white powder

2. Which of the following statements about the Modern Periodic Table is correct:

(a) It has 18 horizontal rows known as Periods.   (b) It has 7 vertical columns known as Periods.

(c) It has 18 vertical columns known as Groups.   (d) It has 7 horizontal rows known as Groups.

3. The number of pair(s) of sex chromosomes in a human diploid cell is

(a) one   (b) two

(c) three   (d) four.

4. At the time of interview, the heart beat often becomes faster due release of

(a) FSH   (b) LH

(c) Adrenaline   (d) Thyroxine.

5. The direction of the force on a current - carrying wire placed in a magnetic field depends on

(a) the direction of the current but not on the direction of the field   (b) the direction of the field but not on the direction of the current

(c) the direction of the current as well as the direction of the field   (d) neither the direction of the current nor the direction of the field.

6. The abbreviation IUCN stands for

(a) International Union for Conservation of Nitrogen.   (b) International Union for Conservation of Nature.

(c) International Union for Conservation of Nature and Natural Resources.   (d) International Union for Cryopreservation of Natural Resources,

7. We can see the sun before the actual sunrise by about :

(a) 5 minutes   (b) 2 minutes

(c) 2 hours   (d) 20 minutes

8. A student sitting on the last bench in the class cannot read the writing on the blackboard clearly but be can read the book lying on his desk clearly Which of the following statement in

about the student

(a) the near point of his eyes has receded away   (b) the near point of his eyes has come closer to him

(c) **The far point of his eyes has receded away**   (d) **The far point of his eyes has come closer to him**

9. The following gas is released when metals reacts with an acid

   (a) CO_2
   (b) H_2
   (c) CO
   (d) CH_4

10. A virtual image formed by a mirror

    (a) is always formed behind the mirror
    (b) is always formed in front of mirror.
    (c) may form behind the mirror
    (d) may form in front of the mirror.

11. Observe the following chemical equations andidentify the correct statement.

    (i) $CuSO_4 + Fe$ $FeSO4 + Cu$

    (ii) $2AgNO3 + Cu$ $Cu(NO3)2 + 2Ag$

    (a) (a) Copper is more reactive than Iron and Silver.
    (b) (b) Iron is less reactive than Copper and Silver.
    (c) (c) Copper is more reactive than Silver but less than Iron.
    (d) (d) Silver is more reactive than Copper and Iron.

12. **Which of the following is not a part of the female reproductive system in human beings**

    (a) **Ovary**
    (b) **Uterus**
    (c) **Vas deferens**
    (d) **Fallopian tube**

13. Urine produced in the human kidneys is temporarily stored in -

    (a) Ureters
    (b) Urethra
    (c) Urinary bladder
    (d) Glomerulus.

14. The two elements for which Mendeleev left blank places in his original periodic table were

    (a) Si, Ti
    (b) Ga, Ge
    (c) Al, Ga
    (d) As, Sb

15. A student obtained a sharp image of the grills of a window on a screen using a concave mirror. His teacher remarked that for getting better results a well lit distance object (preferably the Sun) should be focused on the screen. What should be done for this purpose?

    [2012, 2013

    (a) Move the screen and the mirror towards the object
    (b) Move the screen and the mirror away from the object
    (c) Move the screen slightly away from the mirror
    (d) Move the mirror slightly towards the screen

16. Which of the following parts of flower attract the insects for pollination?

    (a) Sepals and petals
    (b) Stamen and carpel
    (c) Only petals
    (d) Only sepals.

17. The pH of the gastric juices released during

    (a) a) less than 7
    (b) is b) more than 7
    (c) digestion c)equal to 7
    (d) d) equal to 0

18. The abbreviation IUCN stands for

    (a) International Union for Conservation of Nitrogen.
    (b) International Union for Conservation of Nature.
    (c) International Union for Conservation of Nature and Natural Resources.
    (d) International Union for Cryopreservation of Natural Resources,

19. Which of the following substance will not give carbon dioxide on treatment with dilute acid ?

    (a) a) Marble
    (b) b) Limestone
    (c) c) Baking soda
    (d) d) Lime

20. The free electrons of a metal are free to

    (a) move on the surface only
    (b) are free to escape through the surface
    (c) are free to fall into the nuclei
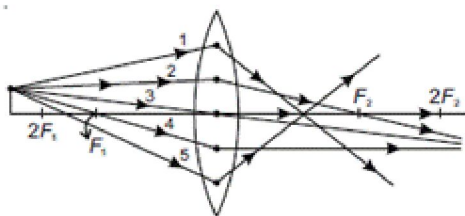   (d) are free to move anywhere in the metal

21. Which of the following characters can be acquired but not inherited?

   (a) body weight
   (b) body colour
   (c) eye colour
   (d) all of these.

22. Out of the five incident rays shown in the figure find the three rays which are obeying the laws of refraction and may be used for locating the position of the image formed by a convex lens:

   [2013, 2014]

   (a) 1, 2 and 3
   (b) 2, 3 and 4
   (c) 3, 4 and 5
   (d) 1, 2 and 4

23. Refraction of light in the eye occurs at

   (a) The lens only
   (b) The cornea only
   (c) Both the cornea and the lens
   (d) The pupil

24. Which of the following eco friendly?

   (a) Thermal power plant
   (b) Hydro power plant
   (c) Biogas plant
   (d) Nuclear power station

25. The PH value of mouth is

   (a) 5.0
   (b) 5.5
   (c) 5.3
   (d) 5.1

26. On moving from left to right in a period in the periodic table, the size of the atom.

   (a) Increases
   (b) Decreases
   (c) Does not change appreciably
   (d) First decreases and then increases.

27. A student requires hard water for an experiment in his laboratory which is not available in the neighbouring area. In the laboratory there are some salts, which when dissolved in distilled water can convert it into hard water. Select from the following groups of salts, a group, each salt of which when dissolved in distilled water will make it hard.

   (a) Sodium chloride, Potassium chloride
   (b) Sodium sulphate, Potassium sulphate
   (c) Sodium sulphate, Calcium sulphate
   (d) Calcium sulphate, Calcium chloride

28. A pure dominate pea plant producing round –yellow seeds is crossed with pure recessive pea plant producing wrinkled – green seeds. The number of plants bearing round – green seeds in the F_1 generation of mendel's experiment is

   (a) 0
   (b) 1
   (c) 3
   (d) 9

29. Food cans are coated with tin and not with zinc because

   (a) Zinc is costhier
   (b) Zinc has higher melting point than tin
   (c) Zinc is more reactive than tin
   (d) Zinc is less reactive than tin

30. Nutrients are translocated in plants through -

   (a) Xylem tracheids
   (b) Phloem sieve tubes
   (c) Xylem vessels
   (d) Phloem companion cells.

31. Butanone is a four carbon compound having the functional group

   (a) --COOH
   (b) --CHO
   (c) -CO-
   (d) -OH

32. Observe the following table

   Joule   i) potential difference

   Coulomb   ii) work done

   Volt   iii) electric charge

   The correct arrangement is

   (a) a-iii, b-I, c-ii
   (b) a-ii, b-iii,, c-i
   (c) a-I, b-ii, c-iii
   (d) a-iii, b-ii, c-i

33. A heat producing device should be used in an electric. This device should have

   (a) High resistance and low melting point
   (b) low resistance and high melting point
   (c) High resistance and high melting point
   (d) Low resistance and low melting point

34. Part of the flower that develops into fruit and part of the seed that develop into root respectively are

   (a) Ovary and plumule   **(b) Plumule and radicle**
   (c) Ovary and radicle   **(d) Ovary and ovule**

35. In emergency situation, blood pressure is controlled by

   (a) Adrenaline   (b) Prolactin
   (c) Thyroxine   (d) Gonadotrophins.

36. Which of the following statements is incorrect regarding magnetic field lines?.

   (a) The direction of magnetic field at a point is taken to be the direction in which the north pole magnetic compass needle points
   (b) Magnetic field lines are closed curves.
   (c) If magnetic field lines are parallel and equidistant, they represent zero field strength.
   (d) Relative strength of magnetic field is shown by the degree of closeness of the field lines.

37. The group of organisms that reproduce through fission only is

   (a) Amoeba, Hydra, spyrogyra
   (b) Leishmania, Ameoba, yeast
   (c) Ameoba, Plasmodiu, Planaria
   (d) Plasmodium, Ameoba, leishmania

38. Which of the following is not a plant harmone

   (a) Auxin   (b) Gibberins
   (c) Thyroxin   (d) Cytokinins

39. Which one of the following is renewable resource?

   (a) Wildlife   (b) Coal
   (c) Natural gas   (d) Petroleum.

40. The direction of the force on a current - carrying wire placed in a magnetic field depend

   (a) the direction of the current but not on the direction of the field
   (b) the direction of the field but not on the direction of the current
   (c) the direction of the current as well as the direction of the field
   (d) neither the direction of the current nor the direction of the field.

SOCIAL STUDIES

1. The act that became the cause for JallianWallahBhagh massacre

   (a) Factory act   (b) Rowlat act
   (c) Press act   (d) Arms act

2. Jawahar Lal Nehru outlined Indian foreign policy on

   (a) September 7 , 1946   (b) September 7, 1948
   (c) December 25, 1946   (d) December 25,1948

3. The soil known as deposited soil is

   (a) Black   (b) Red
   (c) Alluvial   (d) Laterite

4. Protection of children from Sexual Offences Act is brought into effect on

   (a) June 19, 2012   (b) July 19, 2016
   (c) July 31, 1948   (d) June 19, 2016

5. India belongs to

   (a) Underdeveloped country   (b) Developed country
   (c) Developing country   (d) Backward country

6. An example for direct tax is.

   (a) /value added tax   (b) Central exercise duty
   (c) Stamp duty   (d) Service tax

7. The Indian textiles could not be sold in England due to

   (a) Heavy tariffs   (b) Lack of transportation
   (c) Heavy export   (d) Poor quality

8. The upper Krishna project is constructed across the river

   (a) kaveri   (b) Krishna
   (c) kosi   (d) Mahanadi

9. **India and china signed Panchaheela principles in**

   (a) 1962   **(b) 1971**
   (c) 1948   **(d) 1954**

10. The highest peak in the eastern ghats is

   (a) Anamudi   (b) K²
   (c) Guru shikhar   (d) Armakonda

11. The article gave permission to the establishment of minority educational institution .

   (a) Article 21A   (b) Article17
   (c) Article29   (d) Article30

12. The correct group of countries who led cold war is

   (a) USA - China   (b) China soviet Russia
   (c) USA - Japan   (d) USA - Soviet Russia

13. Scrub forests and grassland are found in annual rainfall is .

(a) 10-50cm   (b) 100-200cm
(c) 60-100cm   (d) 200-250cm

14. The Siwalik hills of Himalayas are also known as _____

(a) Lesser Himalayas   (b) Himadri
(c) Himachal   (d) Outer Himalaya

15. The word wagh means

(a) Lion   (b) Tiger
(c) Brave   (d) Courage

16. The famous declaration 'back to Vedas ' is given by

(a) Dayananda saraswathi   (b) Raja ram mohan roy
(c) M. G.Ranade   (d) Athmarama panduranga

17. The director of Balaji Tele films

(a) Azim Premji   (b) Ekta kapoor
(c) Narayan Murthy   (d) Naresh Goyal

18. Red soil is covered in an area of

(a) 5.2 lakh   (b) 5.46 lakh
(c) 15 lakh   (d) 2.85 lakh

19. Bhakra-Nangal project constructed across the river

(a) sutluj   (b) krishna
(c) kaveri   (d) Kosi

20. The largest producer of rice in India is

(a) Andhra Pradesh   (b) Punjab
(c) West Bengal   (d) Karnataka

21. The sikh people sighned a humiliating Lahore agreement in_____

(a) 1818   (b) 1846
(c) 1848   (d) 1857

22. The following government given 50% reservation in local body elections to women

(a) Andhra pradesh   (b) Orissa
(c) Sikkim   (d) Karnataka

23. Fazal Ali Commission was formed

(a) For the linguistic formation of states   (b) In order to integrate the province into Indian union.
(c) To mediate the Jammu Kashmir issue with Pakistan   (d) To sort out the integral differences between the states

24. India gets annual rainfall in summer is

(a) 10%   (b) 2%
(c) 75%   (d) 13%

25. Maratha paper was published by _____.

(a) Jawaharlal Nehrru   (b) Rasbihari Bose
(c) Balagangadhar Tilak   (d) V.D.Savarkar

26. The Legislation comprising of four rights such as Citizen safety, Information, Appeal and remedy was adopted by.

(a) UK President   (b) Indian President
(c) US President   (d) Indian Prime Minister

27. The women and child development department started to provide

(a) Shelter   (b) Health
(c) Education   (d) Food

28. Quantitative Credit control Measure the following is the

(a) Change in lending margins   (b) Bank rate policy
(c) Moral suassion   (d) Direct action

29. A person has bought a car of worth Rs.15 lakhs is now facing some problems in it, but the car company is not responding to him. To which agency can the person complain?

(a) District Consumer Forum   (b) The State Consumer Commission
(c) The National Consumer Commission   (d) Inter-State Consumer Forum

30. India and china established the BRICS in

(a) 2015   (b) 2016
(c) 1985   (d) 1963

31. According to karl merx division of labour leads to

(a) Skilled workers   (b) Less skilled workers
(c) More skilled workers   (d) Only workers

32. Invisible hungers refer to

(a) nutrition   (b) malnutrition
(c) Hunger in rich people   (d) Balanced diet

33. The labour achieves social control through class, status and stratification is

   (a) Child Labour   **(b)** Economic Labour

   (c) Social Labour   **(d)** Division of Labour

34. In India _____ occur very after in hilly states.

35. A fuel substance of plant origin is _____

36. Bengaluru International Air port is called _____

37. The World Health Organist ion was founded in the year _____

38. Chipko movement took place in the year _____.

39. The first world war ended in _____.

40. The first modern paper mill set up in 19332 at _____