



IIT ASHRAM

JEE MAIN || JEE ADVANCED || MEDICAL || FOUNDATION

KHOJ-2019 ANSWER KEY WITH SOLUTION CLASS - 8

PART - I		PART - II		PART - III			
Q. No.	Answer	Q. No.	Answer	Q. No.	Answers	Q. No.	Answers
1	C	1	A	1	C	31	A
2	D	2	C	2	B	32	A
3	D	3	B	3	D	33	C
4	B	4	C	4	A	34	C
5	A	5	B	5	D		
6	C	6	D	6	D		
7	A	7	B	7	B		
8	B	8	C	8	C		
9	A	9	A	9	D		PART - IV
10	D	10	A	10	C	1	D
11	B	11	C	11	A	2	A
12	B	12	B	12	D	3	D
13	D	13	B	13	D	4	B
14	C	14	A	14	A	5	A
15	A	15	D	15	D	6	B
16	A	16	D	16	C	7	D
17	B	17	B	17	B	8	C
18	B	18	C	18	D	9	D
19	D	19	A	19	C	10	C
20	B	20	C	20	A	11	A
		21	A	21	C	12	D
		22	D	22	C	13	C
		23	B	23	B	14	A
		24	B	24	B	15	C
		25	D	25	B	16	B
		26	B	26	C		
		27	D	27	A		
		28	B	28	C		
		29	A	29	D		
		30	C	30	A		

PART - I

1.
Sol. (c)
169, 144, 120, 100, 81
13², 12², 11², 10², 9²
wrong term = 120

2.
Sol. (d)
AZBYCX, DWEVFU, GTHSIR, JQKPLO, M N N M O L

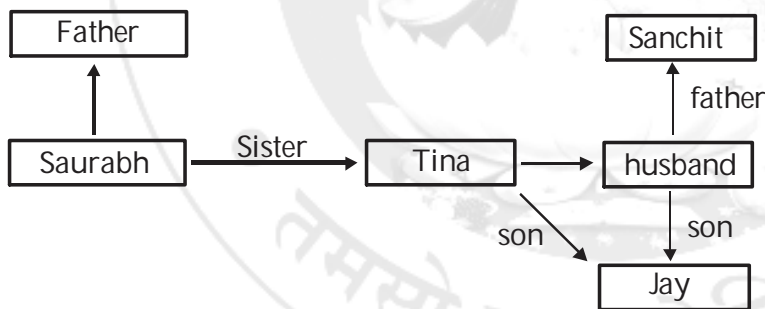
3.
Sol. (d)

B	E	G	K		P	S	V	Y
↑	↑	↑	↑	→	↑	↑	↑	↑
A	D	F	J		O	R	U	X

4.
Sol. (b)
(1, 4), (2, 3), (5, 6) are belongs from same group

5.
Sol. (a)
By observation

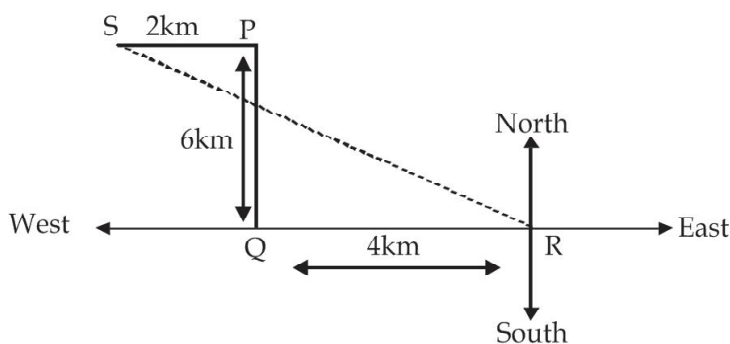
6.
Sol. (c)



∴ Tina is Jay's mother

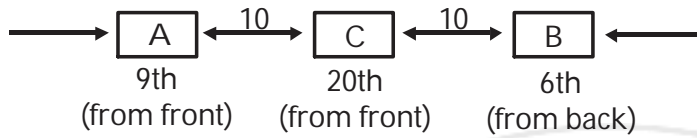
7.
Sol. (a)
By observation

8. (b)



9. (a)
By observation

10.
Sol. (d)



Total number of students = $9 + 10 + 1 + 10 + 6 = 36$ students

11.
Sol. (b)

$8 + 5,$	$9 + 6,$	$4 + 3$
6425	8136	1609

12.
Sol. (b)
By Observation

13.
Sol. (d) '1' represent doctors who are not married.

14. (c)
By observation

15.
Sol. (a)

Between 8 am and 9 am the hands of clock will be together at $43\frac{7}{11}$ min past 8 am and between 2pm and 3 pm the hands of clock were exactly opposite at $43\frac{7}{11}$ min past 2 pm difference = 6 hours

16. (a) Ashok > Vijay > Shashi > Mohan
∴ Ashok is tallest

17. (b)

$$\begin{array}{ccccccc}
 & x^2-1 & & x^2-1 & & x^2-1 & \\
 8 & \xrightarrow{17} & 33 & \xrightarrow{67} & 133 & \xrightarrow{267} & 533 \text{ ?} \\
 x^2+1 & & x^2+1 & & x^2+1 & & x^2+1 \\
 533 \times 2 + 1 = 1067
 \end{array}$$

Solution of 18 – 20

	Teacher	Lawyer	Contractor	Doctor	Engineer
A	✓	×	×	×	×
B	×	×	×	×	✓
C	×	×	×	✓	×
D	×	✓	×	×	×
E	×	×	✓	×	×

	India	America	Russia	England	Pakistan
A	✓teacher	×	×	×	×
B	×	×	×	×	×
C	×	×	×	✓Doctor	×
D	×	×	×	×	×
E	×	✓contractor	×	×	×

18. (b) C lives in England
 19. (d) Cannot determined
 20. (b) E is contractor

PART - II

1. (a)

$\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{154+\sqrt{225}}}}}$ by solving square roots starting from $\sqrt{225}$ successively gives 4.

2. (c)

$$\left[\frac{(x^3 + y^3)}{(x^2 + y^2 + xy)} \div \frac{(x^2 + y^2 - xy)}{(x^3 - y^3)} \right] \times \frac{xy}{(x^2 - y^2)}$$

$$\Rightarrow \left[\frac{(x+y)(x^2 + y^2 - xy)}{(x^2 + y^2 + xy)} \times \frac{(x-y)(x^2 + y^2 + xy)}{(x^2 + y^2 - xy)} \right] \times \frac{xy}{(x^2 - y^2)}$$

$$\Rightarrow [(x+y)(x-y)] \times \frac{xy}{(x^2 - y^2)}$$

$$\Rightarrow (x^2 - y^2) \times \frac{xy}{(x^2 - y^2)} = xy \quad \text{Ans.}$$

3. (b)

$$3^{-m} \times 3^{-m} = 3^{-2}$$

equating powers

$$-2m = -2$$

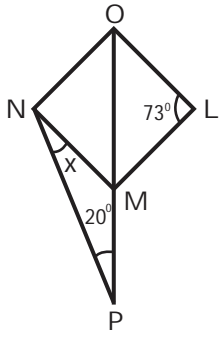
$$\boxed{m=1}$$

$$\therefore \frac{1}{24} \left\{ 3^2 + 3^{-2 \times \frac{1}{2}} \right\}$$

$$\Rightarrow \frac{1}{24} \{9+3\}$$

$$\Rightarrow \frac{1}{2} \quad \text{Ans.}$$

4. (c)



$$\therefore \angle L = \angle N = 73^\circ$$

$$\therefore \angle NOM = 53.5^\circ$$

In $\triangle NMP$

by exterior angle prop.

$$\angle NOM + \angle MNO = \angle NMP$$

$$53.5^\circ + 73^\circ = 126.5^\circ$$

 \therefore By angle sum property of $\triangle MNP$

$$x + 126.5 + 20 = 180$$

$$x = 33.5^\circ \quad \text{Ans.}$$

5. (b)

Let present age of Manish is 'x' years

Acc. to Ques.

$$125\%(x - 10) = \frac{250\%}{3}(x + 10)$$

$$\frac{125}{100}(x - 10) = \frac{250}{300}(x + 10)$$

$$3(x - 10) = 2(x + 10)$$

$$3x - 30 = 2x + 20$$

$$\boxed{x = 50} \quad \text{Ans.}$$

6. (d)

$$\therefore \angle PAB = \frac{1}{2} \{ \angle C + \angle D \}$$

$$\therefore \angle PAB = \frac{1}{2} \{ 60^\circ + 100^\circ \}$$

$$\boxed{\angle PAB = 80^\circ}$$

7. (b)

Speed of a man = 5 km/hr

Let speed of a train is x km/hr

So, Acc. to Ques.

$$S = \frac{D}{T}$$

$$(x + 5) = \frac{100 \times 3600}{6 \times 1600}$$

$$x + 5 = 60$$

$$x = 55 \text{ km/hr}$$

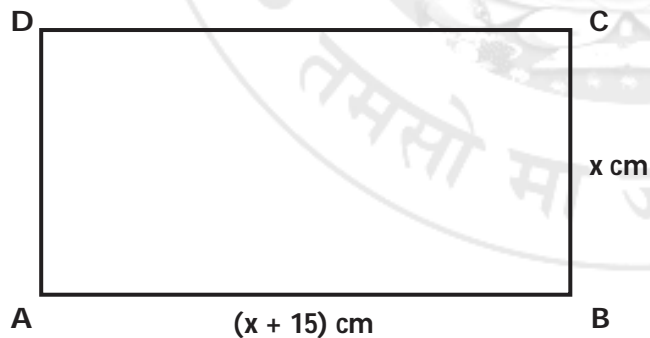
8. (c)

 $\therefore \angle AEB = 180 - x^\circ$ and $\angle BAC = c^\circ$ then $\angle GBC = (c + 180 - x)^\circ$
In $\triangle GBC$

$$a^\circ + b^\circ + c^\circ + 180 - x = 180$$

$$x = a^\circ + b^\circ + c^\circ$$

9. (a)

Let the width be x cm then length = $(x + 15)$ cm.

Perimeter = 150 cm

$$2(x + 15 + x) = 150$$

$$2x + 15 = 75$$

$$2x = 60$$

$$x = 30$$

 \therefore Length = 45 cm, breadth = 30 cm

10. (a)

Let the C.P of the two toys be x and y respectively.

$$\therefore SP = C.P \frac{(100+P)}{100} \quad \text{and} \quad S.P = \frac{C.P(100-L)}{100}$$

$$504 = x \times \frac{112}{100}$$

$$504 = y \times \frac{96}{100}$$

$$\frac{504}{28} \times 25 = x$$

$$\frac{504}{28} \times 25 = y$$

$$x = ₹ 450$$

$$y = ₹ 525$$

$$\begin{aligned} \text{Total C.P} &= 450 + 525 \\ &= ₹ 975 \end{aligned}$$

$$\text{Profit} = S.P. - C.P$$

$$1008 - 975 = ₹ 33$$

$$\text{Profit \%} = \frac{33}{975} \times 100 = 3\frac{5}{13}\%$$

11. (c)

$$1 + \frac{x}{144} = \frac{169}{144}$$

$$\frac{x}{144} = \frac{169}{144} - 1$$

$$\frac{x}{144} = \frac{25}{144}$$

$$\boxed{x=25}$$

12. (b)

$$\frac{5}{6} - \frac{1}{4} + \frac{1}{8}$$

$$\frac{5}{6} - \frac{1}{8}$$

$$\frac{40-6}{48} = \frac{34}{48} = \frac{17}{24}$$

13. (b)

$$\text{If } y = \frac{-9}{-6 + \frac{-9}{-6 + \frac{-9}{-6 + \dots \infty}}}$$

$$\text{i.e. } y = \frac{-9}{(-6 + y)}$$

$$y(y - 6) = -9$$

$$y^2 - 6y + 9 = 0$$

$$(y - 3)^2 = 0$$

$$(y - 3)(y - 3) = 0$$

$$\therefore y = 3$$

14. (a)

Quantity of Alcohol and water is $4x$ and $3x$ respectively.

$$\therefore \frac{4x}{3x+5} = \frac{4}{5}$$

$$20x = 12x + 20$$

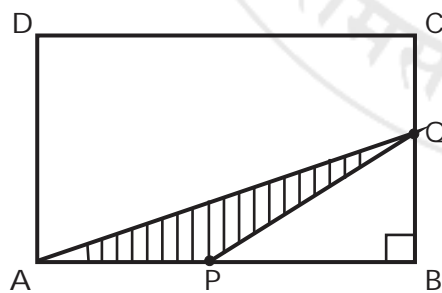
$$8x = 20$$

$$x = \frac{20}{8}$$

$$\boxed{x = 2.5}$$

$$\therefore \text{Alcohol} = 4x = 10 \text{ litre}$$

15. (d)



$$\text{ar}(\triangle APQ) = 1 \text{ cm}^2$$

Let side $AB = x$ cm and $BC = y$ cm

$$\text{ar}(\triangle BPQ) = \frac{1}{2} \times \frac{y}{2} \times \frac{x}{2} = \frac{xy}{8}$$

$$\boxed{1 = \frac{xy}{8}} \quad (1)$$

$$\therefore \text{ar}(\triangle APQ) = \text{ar}(\triangle BPQ)$$

$$\text{and } \ar(\Delta ABC) = \ar(\Delta ABQ)$$

$$= 2 \times \frac{1}{2} \times y \times \frac{x}{2}$$

$$\ar(\Delta ABC) = \frac{xy}{2}$$

and

$$\ar(\square ABCD) = 2 \ar(\Delta ABC) \quad \{\text{By symmetry}\}$$

$$= 2 \times \frac{xy}{2}$$

$$\ar(ABCD) = xy$$

So By eqⁿ (1)

$$\ar(ABCD) = 8 \text{ cm}^2$$

16. (d)

$$\frac{1}{\sqrt{9}-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-\sqrt{4}} =$$

By rationalising the individual term we get,

$$\sqrt{9} + \sqrt{8} - (\sqrt{8} + \sqrt{7}) + \sqrt{7} + \sqrt{6} - (\sqrt{6} + \sqrt{5}) + (\sqrt{5} + \sqrt{4})$$

$$\sqrt{9} + \sqrt{8} - \sqrt{8} - \sqrt{7} + \sqrt{7} + \sqrt{6} - \sqrt{6} - \sqrt{5} + \sqrt{5} + \sqrt{4}$$

$$\sqrt{9} + \sqrt{4} = 3 + 2 = 5$$

17. (b)

In ΔABC

$$AB = \sqrt{AC^2 - BC^2} = \sqrt{20^2 - 12^2}$$

$$\sqrt{400 - 144} = \sqrt{256} = 16$$

$$\text{Ar}(\Delta ABC) = \frac{1}{2} \times 12 \times 16 = 96 \text{ sq. unit}$$

$$\text{Ar}(\Delta ACD) = \frac{\sqrt{3}}{4} \times \text{side}^2 = \frac{\sqrt{3}}{4} \times 20^2 = \frac{1.73 \times 20 \times 20}{4}$$

$$= 173 \text{ sq. unit}$$

$$\therefore \text{Ar}(\square ABCD) = \text{Ar}(\Delta ABC) + \text{Ar}(\Delta ACD)$$

$$= 96 + 173 = 269 \text{ sq. unit}$$

18. (c)

Let the C.P. of x article is m

and the C.P. of y article is n

$$\therefore \boxed{\text{C.P. of x article} = \text{S.P. of y article}}$$

$$\text{i.e. } \boxed{m = \frac{4n}{3}}$$

$$\text{S.P. of x article} = m \times \frac{125}{100}$$

$$\text{C.P. of y article} = 75\% \text{ S.P. of y article}$$

$$n \times \frac{75}{100} \times \text{S.P. of y article}$$

$$\frac{4n}{3} = \text{S.P. of y article}$$

$$\frac{5m}{4} = \text{S.P. of x article}$$

$$\text{Total C.P.} = (m + n)$$

$$\text{Total S.P.} = \left(\frac{4n}{3} + \frac{5m}{4} \right)$$

$$\text{Profit} = \text{S.P.} - \text{C.P.} = \frac{4n}{3} + \frac{5m}{4} - m - n$$

$$= \left(\frac{n}{3} + \frac{m}{4} \right)$$

Profit (%)

$$= \frac{\left(\frac{n}{3} + \frac{m}{4} \right)}{(m+n)} \times 100 = \frac{[4n + 3m]}{12(m+n)} \times 100$$

$$= P\% = 28\frac{4}{7}\% \quad \therefore \left\{ m = \frac{4n}{3} \right\}$$

19. (a)

$$T = 3 \text{ years} \quad A = \frac{343}{216} P$$

$$\therefore A = P \left(1 + \frac{R}{100}\right)^n$$

$$\frac{343}{216} P = P \left(1 + \frac{R}{100}\right)^3$$

$$\frac{7}{6} = 1 + \frac{R}{100}$$

$$\frac{1}{6} = \frac{R}{100}$$

$$\boxed{16\frac{2}{3}\% = R}$$

20.

Sol. (c)

In 18 days, both take the rest of 3 days each and the work, done is $\left(\frac{36-6}{29}\right)$ part of the work.

By 18th day $\frac{1}{29}$ part of the work is done more, So it implies that the work was completed on 17th day.

21. (a)

Let the usual speed is x km/hr

also time taken (T) is $\frac{d}{x}$ where 'd' is distance

$$\therefore 15 = \frac{5d}{4x} - \frac{d}{x}$$

$$15 = \frac{d}{4x}$$

$$\frac{d}{x} = 60 \text{ min}$$

$\therefore T = 60 \text{ min} = 1 \text{ hour.}$

22. (d)

Let Ajay has x chocolatesthen Vijay has $(25-x)$ chocolates

So Acc. to Ques,

$$\frac{(x-3)}{(28-x)} = \frac{2}{3}$$

$$3(x-3) = 2(28-x)$$

$$3x - 9 = 56 - 2x$$

$$5x = 65$$

$$\boxed{x=13}$$

\therefore Ajay has 13 and Vijay has 12 chocolates

23. (b)

\therefore AEGF and DEFG becomes parallelogram and $\angle DGC = 40^\circ$ {By angle sum prop. of Δ }

$$\angle DGF + \angle DGC = 180^\circ$$

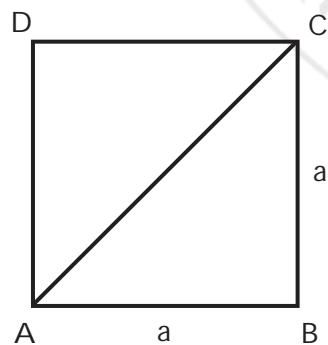
$$\angle DGF + 40 = 180^\circ$$

$$\angle DGF = 140^\circ$$

So, $\angle DEF = \angle DGF = 140$ {opp. angles of parallelogram}

So, $\angle AEF = 40^\circ$ {linear pair}

24. (b)



\therefore Diagonals of a square are equal, then $AC = 50$ cm and $BD = 50$ cm

So, by pythagores theorem,

$$\text{Side (a)} = 25\sqrt{2} \text{ cm}$$

$$\therefore \text{Area} = (25\sqrt{2})^2 = 1250 \text{ cm}^2$$

25. (d)

Let X works $3K$ per day and completes in $\frac{1}{3K}$ days

and Y works K per day and completes in $\frac{1}{K}$ days

\therefore Acc. to Ques.

$$\frac{1}{3K} = \frac{1}{K} - 40$$

$$40 = \frac{1}{K} - \frac{1}{3K}$$

$$40 = \frac{3K - K}{3K^2}$$

$$\boxed{K = \frac{1}{60}}$$

\therefore They together completes it in

$$\frac{1}{3K} + \frac{1}{K} = \frac{4}{3K} = \frac{4 \times 60}{3 \times 1} = 80 \text{ days}$$

26. (b)

$$\left(4^4\right)^{\frac{125}{1000}} + \left(5^4\right)^{\frac{25}{100}}$$

$$= 4^{4 \times \frac{1}{8}} + 5^{4 \times \frac{1}{4}}$$

$$= 4^{\frac{1}{2}} + 5 = 2 + 5 = 7$$

27. (d)

$$\left(\frac{a}{b}\right)^{99-97} \quad \{\because a^2 - b^2 = (a+b)(a-b)\}$$

$$\left(\frac{a}{b}\right)^2 = \frac{a^2}{b^2}$$

28. (b)

By long division process

29. (a)

By division algorithm

$$\text{Let } n = 3 \quad \text{So, } 3 = 2 \times 1 + 1$$

$$n^3 \text{ i.e } (3)^3 = 27 = 2 \times 13 + 1$$

PART - III

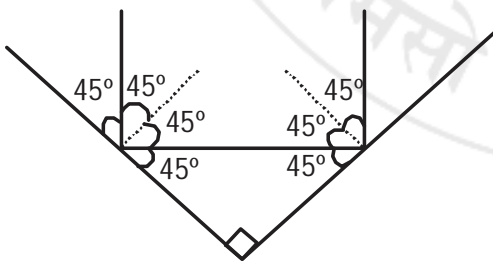
1. (c)
Gravitational force of sun on Earth provides centripetal force for revolution of Earth.
2. (b)
The friction force on horse due to ground is in forward direction which help the cart to move forward.
3. (d)

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$$

4. (a) Static friction > Sliding > Rolling friction
5. (d)
PV = constant (for constant temperature)

$$250 \times P_1 = 1000 \times P_2 \therefore \frac{P_2}{P_1} = \frac{1}{4} \text{ (or) } P_2 = \frac{1}{4} P_1$$

6. (d)
As it is rough surface, block experience gravitational & frictional force.
7. (b)
Salt solution is conductor of electricity
8. (c)
Lighting conductors are attached with earth and protects building.
9. (d)
Concave lens is diverging.
Convex lens is converging.
10. (c)



11. (a)
Electrolyte - The solution which can produce ions when supply current.
Cathode - Connected with - ve terminal of battery.
Electrolysis- Process of passing the current in solution.

12. (d)

$$m = 50 \text{ kg}$$

$$l = 0.2 \text{ m}$$

$$A = l^2 = 0.04 \text{ m}^2$$

$$P = \frac{F}{A} = \frac{50 \times 10}{\frac{4}{100}} = 25 \times 50 \times 10 = 12500 \text{ N/m}^2$$

13. (d)

As conductors can not be charged by friction.

14. (a)

Acceleration due to gravity will be same.

15. (d)

Ions will acts as charge carriers.

16. (c)

Friction force acting on rear wheel will be in forward direction which helps the cycle moving forward.

17. (b)

As mass increases acceleration decreases for constant force.

18.

Sol. (d)

Polycot is a mixture of polyester & cotton.

19.

Sol. (c)

Rayon have same appearance like silk.

20.

Sol. (a)

Mercury is liquid at room temperature.

21.

Sol. (c) Water is not combustibile substance.

22.

Sol. (c)

O^{2-} is formed due to gain of two electrons.

K^+ is formed due to loss of one electron.

23. (b)

Rutherford first established presence of nucleus.

24.

Sol. (b)

Citric acid is not mineral acid.

25.

Sol. (b)

Oxygen is used for combustion is true but reason is not current explanation.

26.

Sol. (c)

Neon and argon have 8 valence electrons.

27.

Sol. (a)



28.

Sol. (c)

Inner most zone is unburnt wax vapour.

29.

Sol. (d)

SO_2 is Acidic & SO_2 form H_2SO_3

30.

Sol. (a)

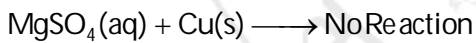
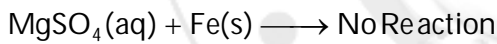
Water vapour converted to water it forms dew.

31. (a)

Sol. Carbon dioxide is a non metal oxide, it produces acid when dissolve in water.

32.

Sol. (a)



33.

Sol. (c)

$M > A > L > E$

34.

Sol. (c)

x - coke y - coal tar

PART - IV

1. (d)
They are insectivorous plant and they are green, contain & sac which have digestive enzymes and can suck the prey like vacuum.
2. (a)
Oesophagus found inbetween mouth and stomach and its is also a part of digestive system.
3. (d)
Insects have malphigian tabule for excretion of their waste products.
4. (b)
Mouth -- Gullet -- Stomach -- Small Intestine -- Large intestine
5. (a)
Animal cell require oxygen is release CO_2 during respiration while plant utilize CO_2 during photosynthesis, but in plants respiration also CO_2 is release.
6. (b)
The statement of Ritesh is Abhishek are incorrect futilise are not increasin in water holding capacity.
7. (d)
Green manure provide all types of nutritient but in small quantity.
8. (c)
Earthworm respire the air present in soil particle but after rain the soil get filled by water & air came outside. So the earthworm came outside to get the air.
9. (d)
All of the above are correct.
10. (c)
Rich organic soil contains lumus which looks black in colour.
11. (a)
Statement (2) is also a correct explanisation of statement (1)
12. (d)
The kitchen of the cell is called Plastids
13. (c)
Mangrove will grow in R type of soil because it have more water holding capacity.
14. (a)
The control unit of cell is Nucleus
15. (c)
Proteins after digestion are converted into Amino acids
16. (b)
Carbohydrates in the plants are stored in the form of Starch