

# 10th Science - Full Answer Key for March 2018 Exam

1 Buried the dead	8 non-aqueous solution
2 Rabies	9 Malic Acid
3 thyroid gland	10 chalcogen family
4 fertilization	11 ethyne
5 cat	12 Thin wire
6 Annelids	13 four times that of its
7 Cholera	14 original value Decreases
	15 magnetic field

## 16 Punnet square

$\sigma^7$	R	r
$\text{♀}$	R	r
R	RR Barking Trait	Rr Barking Trait
r	Rr Barking trait	rr Silent Trait

characteristics of puppies:-

- 3 puppies will bark
- 1 puppy will be silent

Phenotypic ratio = Barking trait : silent trait  
3 : 1

Genotypic ratio = RR : Rr : rr  
1 : 2 : 1

## 17 Charles Darwin

Principles:

- (1) Struggle for existence
- (2) Survival of the fittest

## 18. Monoclonal Antibodies:

These are antibodies produced from cloned cells by hybridoma technology

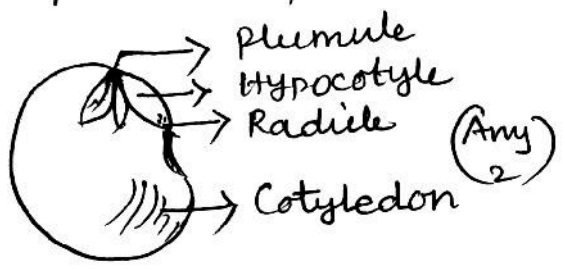
Use: In the treatment of cancer

19. (a) Both (A) and (B) are True  
and R explains A

20



21.



22. Unique characteristics of mammals

1. Epidermal Hair
2. Milk producing glands

23. (a) Nephrons

(b) Kidney, Ureter, Urinary bladder  
Urethra

24. 1. Mammals have heterodont dentition with different types of teeth that are highly specialised to match specific eating habits.

2. In elephants, the incisors are modified into tusks.

25. (a) Fermentation      (b) Yeast.

26. (1) Fish takes in water through its mouth and sends it through its gills, during this process the dissolved oxygen is absorbed by the blood vessels.

(2) The amount of dissolved oxygen in the air is low compared to the amount of oxygen in the water.

(3) As the fish breathes the dissolved oxygen in the water, it cannot survive for long when taken out of water

27. (a) A - xylem (B) - phloem  
 (b) 1. Root pressure 2. Transpiration pull
28. (a)  $\text{CO}_2$  (b) photosynthesis, Respiration, Combustion  
 Decomposition
29. Energy management is the process of monitoring  
 Controlling and Conserving energy in any  
 household or organisations.
30. (a) "Denmark" is called the Country of winds.  
 (b) Methane is the chief Component of natural  
 gas

31.

Sources	A	B	C
Renewable	Hydrogen	wind	solar Energy
Non-Renewable	Coal	Natural gas	petroleum

32. weight of the solute = 30 g  
 weight of the solvent = 70 g  
 weight in percentage =  $\frac{\text{weight of the solute}}{\text{weight of the solute} + \text{weight of the solvent}}$   
 $= \frac{30}{30+70} = \frac{30}{100} \times 100$

Concentration of the solution in terms of weight percent = 30%

33. (a) suspension  
 (b) opaque  
 (c) (1) Heterogeneous  
 (2) Does not scatter light

34.

Element	Atomic mass	Molecular Mass	Atomicity
Chloride			2
Ozone	16		
Sulphur		256	
Nitrogen		28	

$$\text{Atomicity} = \frac{\text{Molecular Mass}}{\text{Atomic Mass}}$$

35. Hydrochloric Acid, Because Inorganic acids are stronger than organic acids.

36. (a) Substances which are acidic in nature  
 (1) lemon juice  
 (2) Tomato juice  
 (3) coffee

$\text{pH} < 7$  are acidic

(b) Substances which are basic in nature

(1) House hold ammonia  
 $\text{pH} > 7$  are basic

37. (a) Bauxite -  $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$   
 (b) cuprite -  $\text{Cu}_2\text{O}$   
 (c) Haematite -  $\text{Fe}_2\text{O}_3$   
 (d) Copper pyrites -  $\text{CuFeS}_2$

38. Yes the reason satisfy the assertion.

[ Because Aluminium reduces  $\text{Fe}_2\text{O}_3$  to iron ]

39. (a) Ethanol (b) Ethanol  
 (c) Ethanoic Acid (d) Ethanoic Acid

40. 1. When the handle of the spanner is long, the force required to turn the body is less.  
 2. This turning effect of the body depends upon the perpendicular distance of the line of action of the

applied force from the axis of rotation

ie. Moment of force =  $F \times d$

Hence the spanner has a long handle

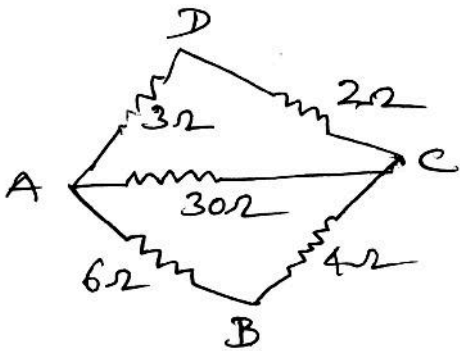
41. Radius of the asteroids B612 ( $R$ ) = 20 m  
 Mass of the asteroids B612 ( $M$ ) = 104 kg

$$G = 6.67 \times 10^{-11}$$

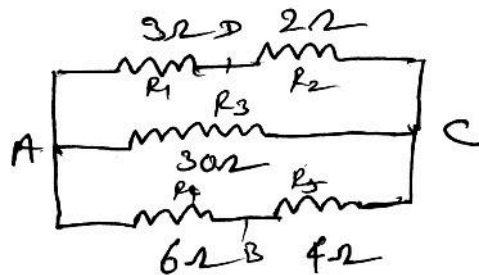
$$g = \frac{GM}{R^2} = \frac{6.67 \times 10^{-11} \times 104}{(20)^2}$$

$$g = 1.73 \times 10^{-11} \text{ ms}^{-2}$$

42.



This circuit can also be written as



$$R_1 + R_2 = 3 + 2 = 5 \Omega$$

$$R_4 + R_5 = 6 + 4 = 10 \Omega$$

$$R_3 = 30 \Omega$$

} are in parallel

$$\frac{1}{R_p} = \frac{1}{5} + \frac{1}{10} + \frac{1}{30}$$

$$\frac{1}{R_p} = \frac{6 + 3 + 2}{30} = \frac{11}{30}$$

$$R_p = 3 \Omega$$

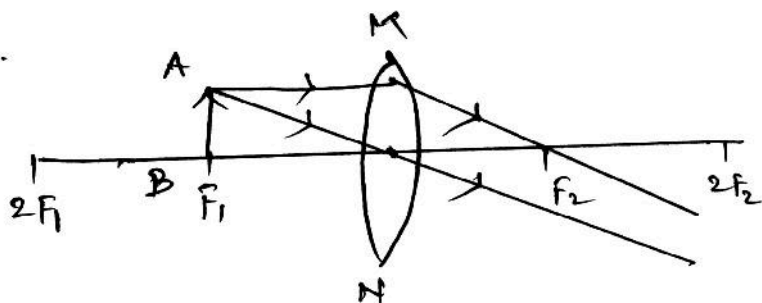
43

+ve electrode	lead acid accumulator	$PbO_2$
-ve electrode	zinc	Zn

44. (a) charge ( $Q$ ) =  $I \times t$   
 (b) work done ( $W$ ) =  $V \times Q$   
 (c) Heat energy ( $H$ ) =  $I^2 \times R \times t$   
 (d) Potential difference ( $V$ ) =  $R \times I$

45. (a) Electromagnet (b) Diapire

46.



47. Given  $c = 3 \times 10^8$  m/sec

$$\mu = 1.47$$

$$\mu = \frac{c}{v} \Rightarrow v = \frac{3 \times 10^8}{1.47}$$

$$v = 2.04 \times 10^8 \text{ m/sec}$$

### Section III Part 1

48. (a) 1. TB is transmitted through air  
 2. The bacteria spreads from the patient through the droplets of sputum expelled while eating, sneezing, talking, laughing and so on
- (b) (1) Persistent cough  
 (2) It produces loss of body weight  
 (3) The affected parts develop lesions in the form of small nodules called tubercles
- (c) Microbacterium tuberculosis
- (d) (1) Immunization with BCG vaccine  
 (2) Isolation of patients  
 (3) Incineration of the droplets, the sputum from the patients to prevent its occurrence in air

49.

PARTS	Sub divisions	Functions
1. Forebrain	(i) cerebrum	Intersensory associations, memory, Communication, consciousness, intelligence, imagination reasoning, hearing, speaking, seeing, tasting and smelling
	(ii) Thalamus	A major conducting centre for sensory and motor signalling
	(iii) Hypothalamus	controls body temperature, urge to eat drink, regulation of sexual behaviour and expresses emotional reactions
2. Midbrain	Corpora quadrigemina	controls and regulates visual reflexes and optical orientations
3. Hindbrain	i cerebellum	Regulates and coordinates the group movements of voluntary muscles as in walking or running
	ii. Pons	controls sleep and respiratory centres.
	iii. Medulla oblongata	Regulation of heart beat, blood vessel contraction, breathing

50.

## PART II

The sexual reproduction in flowering plant involves

1. Pollination
2. Fertilization

(a) Pollination: ① Transfer of pollen grains from anther to stigma of a flower is called pollination ② The pollen grains are transferred from wind, water, insects and animals ③ Pollination is of two types 1. self pollination 2. cross pollination.

④ self pollination: (Autogamy) :- The transfer of pollen grains from anther of a flower to the stigma of the same flower or another flower of the same plant is known as self pollination.

⑤ cross pollination: (Allogamy) :- The transfer of pollen grains of a flower to the stigma of another flower of different plant of the same species is called cross pollination.

### Advantages of self pollination:-

1. Bixexual flowers are self pollinated
2. No wastage of pollen grains
3. Flowers do not depend on agents of pollination

### Disadvantages of self pollination:-

1. Seeds are less in number
2. seeds produce weak plants
3. New varieties cannot be produced

### Advantages of cross pollination

1. New Varieties are produced
2. More viable seeds produce

51. No, this situation is not good for good health

1. Smoke is a mixture of various gases with dust and water vapour
2. The smoke from the vehicles and industries pollute atmosphere
3. Smoke reduces the visibility of the atmosphere and causes blurred vision.
4. It mixes with fog and forms chemical compounds
5. This causes pneumonia and intestinal diseases.
6. Hence, smoke is not good for health.

### PART III

52. (a) 7 g of nitrogen

$$\text{Number of moles} = \frac{7}{14} = \frac{1}{2} = 0.5 \text{ moles}$$

(b) 4.6 g of sodium

$$\text{Number of moles} = \frac{4.6}{23} = 0.2 \text{ moles}$$

(c) 40 g of calcium =  $\frac{40}{40} = 1 \text{ mole}$

(d) 14 g lithium =  $\frac{14}{7} = 2 \text{ moles}$

Number of moles =  $\frac{\text{Given mass}}{\text{Atomic mass}}$

(or)

=  $\frac{\text{Mass}}{\text{Molecular Mass}}$

53. 1. Organic Compound A - Ethyl alcohol (ethanol) -  $C_2H_5OH$  and B - Dimethyl ether ( $CH_3-O-CH_3$ ) are isomers with the molecular formula  $C_2H_6O$

2. Ethanol reacts with sodium metal to form sodium ethoxide and hydrogen gas



3. Ethanol reacts with ethanoic acid in the presence of Conc.  $H_2SO_4$  to form ethyl ethanoate and water with fruity flavour

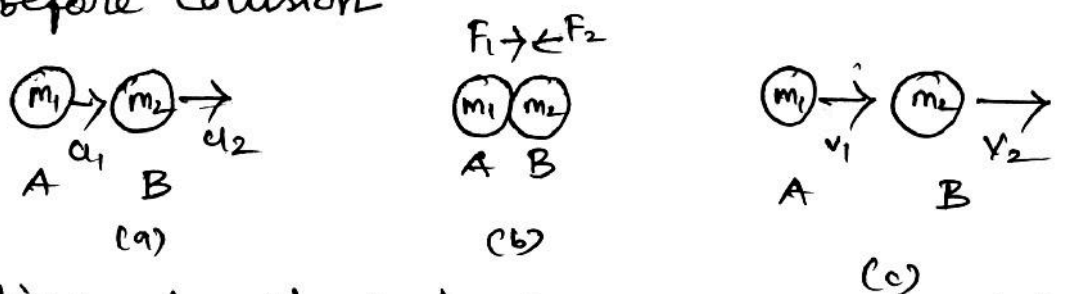


- A → Ethyl alcohol (ethanol) —  $C_2H_5OH$
- B → Dimethyl ether ( $CH_3-O-CH_3$ )
- C → Ethyl ethanoate ( $CH_3COOC_2H_5$ )

PART IV

54. LAW OF CONSERVATION OF MOMENTUM: "In the absence of external unbalanced force the total momentum of the system of objects remains unchanged"

- Proof: 1. Consider two objects A and B of masses  $m_1$  and  $m_2$ , travelling in the same direction along a straight line at different velocities  $u_1$  and  $u_2$ .
2. Let  $u_1 > u_2$  and two balls collide with each other at time 't'
3. The ball A exerts the force  $F_1$  on ball B, and the ball B exerts a force  $F_2$  on the ball A.
4. Let  $v_1$  and  $v_2$  be the velocities of two balls A and B after collision respectively in the same direction as before collision



According to Newton's Second Law of motion,

The force acting on B  $F_1 = \frac{m_2 (v_2 - u_2)}{t}$  — ①

The force acting on A  $F_2 = \frac{m_1 (v_1 - u_1)}{t}$  — ②

According to Newton's 3rd Law

$F_1 = -F_2$

$\frac{m_2 (v_2 - u_2)}{t} = \frac{m_1 (v_1 - u_1)}{t}$

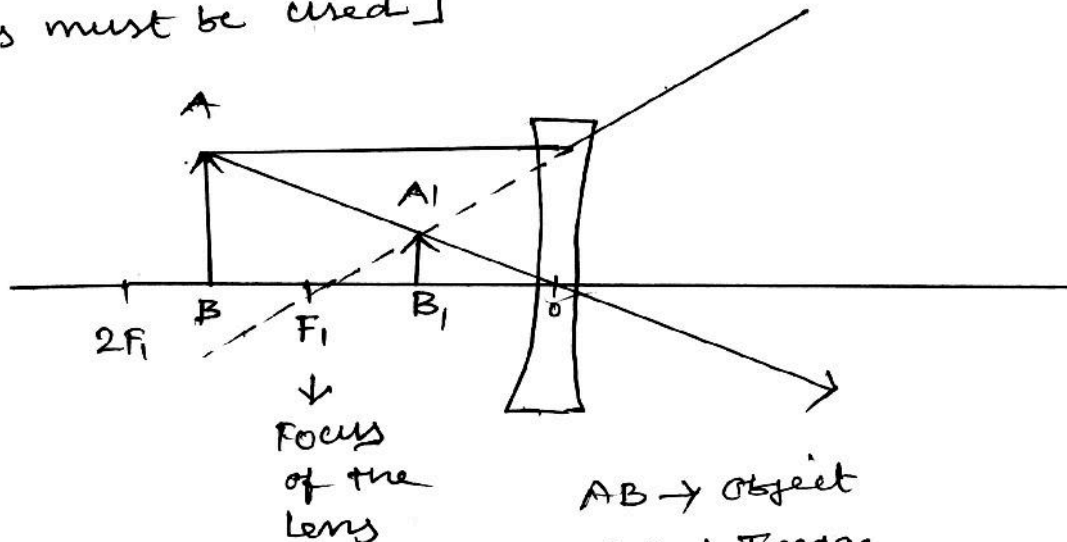
$m_2 v_2 - m_2 u_2 = m_1 v_1 - m_1 u_1$

$m_1 u_1 + m_2 u_2 = m_1 v_1 + m_2 v_2$

The total momentum before collision is equal to the total momentum after collision.

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- 55 (A) Examining the instruction, the image is erect and diminished [Note if the image is erect and large Convex lens must be used, but here it is diminished Image, erect and hence Concave lens must be used]



AB → Object

A<sub>1</sub>B<sub>1</sub> → Image

F<sub>1</sub> → Focus of the lens

- (B)
- (1) It produced extremely sharp images with almost no background light
  - (2) Hubble's ultra deep field images is the most detailed visible light image ever made of the universe's most distant object.
  - (3) Images produced by HST revealed galaxies that are billions of light years away.
  - (4) It revealed black holes are common to the centers of all galaxies.
  - (5) The astronomers used the telescope to observe distant supernovae → Any two points.

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Note: This is only expected answer key, However answer key published by our examination board is considered to be final.

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