

Critical and Creative Thinking (CCT) Practice

Unit 1: We'd like to play please!



Source: <https://www.scoopwhoop.com/funny-comics-about-life-in-india/>

Question 1:-

Pick the option that lists the most appropriate match of column A with column B.

Column A: Dialogue	Column B: Place
I) You're not allowed to play on the grass...	A) local bazaar
II) I, don't want you denting my car	B) mall corridor
	C) vehicle showroom
	D) park
	E) residential parking

- a) 1-B; II-D
- b) 1-C; II-A
- c) 1-A; II-B
- d) 1-D; II-E

Question 2 :-

In the end, the situation is for the children because.....

- a) ironical; their situation is radically different from what appears to be.
- b) satirical; they get criticised and ridiculed .
- c) comical; they react in a funny and humourous way to what is spoken to them.
- d) inspirational; they feel motivated to go out and play.

Question 3:-

The dialogue— “Excuse me ... you can’t play here” – is intended to

- a) permit.
- b) prohibit.
- c) prepare.
- d) protect.

Question 4:-

What could be the most likely response to the mother’s complaint, at the end?

- a) You’ve bitten off more than you can chew, mom.
- b) C’mom...you’re comparing apples to oranges.
- c) Aww, mom...you’re adding insult to injury!
- d) Sure mom! It’s a piece of cake.

Unit 2: A Blog post[About Me](#)[My Travels](#)[My Book](#)[Media & Awards](#)[Work With Me](#)

Guest post by Parita Bhansali

Published on August 26, 2020

Sustainable fashion India: An introduction

What does fashion, the clothes we buy and the brands we support with our money have to do with any of this?

Turns out, the fashion industry is responsible for 10% of the world’s annual carbon emissions – 5 times that of flying! It’s also one of the most polluting, water-intensive and waste-generating industries.

That’s exactly why I decided to write this post to sustainable fashion India. This is how we can reduce our individual impact on the planet, one piece of clothing at a time.

What is slow, sustainable fashion anyway,

As the names suggest, fast and slow fashion refer to the pace at which you change / update your wardrobe.

Do you impulsively buy new clothes that are environmentally harmful, water intensive, exploit humans, abuse animals and have a small shelf life? Or do you consciously invest in clothing brands that are mindful of the resources they use, refrain from using animal products, pay fair wages and last a lifetime?

Broadly speaking, sustainable fashion refers to clothes and products that:

- Are made from eco-friendly or recycled fabrics.
- Use organic (chemical-free, pesticide-free) materials and dyes.
- Employ fair trade practices – no forced labour, no child labour, reasonable working hours and fair pay.
- Refrain from using materials, inks and other ingredients derived from animals, and say no to animal testing.

What’s wrong with fast fashion?

Fast fashion uses up excessive natural resources

- Every year, the fashion industry uses 93 billion cubic meters of water – enough to meet the water consumption needs of 5 million people!
- 150 million trees are cut and turned into fabric every year, through land clearing and plant pulps.
- Every year, disposed off clothes result in half a million tons of plastic microfibers in the ocean – the equivalent of 50 billion plastic bottles. These microfibers are spreading through the food chain and are probably in our bodies now.

With the rise of online shopping, more fast fashion brands setting up shop in India and the constant pressure to keep up with fashion trends, India is already on its way to embracing fast fashion – at great cost to the environment.

Slow fashion in India can reduce our individual carbon footprint

Only 15% of our clothes are recycled or donated. Even those gradually land up in landfills where they slowly release methane, a potent greenhouse gas that contributes significantly to climate change. That’s a strong reason to embrace sustainable fashion in India.

Given the obvious urgency to switch to more eco-friendly, ethical and conscious fashion, here are some ways I’ve learnt to embrace sustainable fashion in India:

Embrace slow fashion in India

- Instead of impulsively buying something new, choose to invest in clothing that has creatively been upcycled.
- Buy from zero waste brands that use every bit of scrap fabric and plastic to create something new, sending nothing to the bin.
- Attend a Clothes Exchange Program in your city.
- Let your friends visit your wardrobe. Asking your friends to mix and match your clothes can give you a new pair from a different point of view!
- Donate clothes in good condition to old age homes, orphanages and anyone who needs them.

Sourced from: <https://the-shooting-star.com/sustainable-fashion-india-guide/>

Question 5:-

Choose the option that DOES NOT state the writer’s purpose for this blog post.

- Makes you think whether the clothes wear of your choice is sustainable.
- Presents facts before you to urge you to make informed clothes wear choices.
- Interacts with you as an aware citizen, sharing advice for environ-friendly clothing.
- Argues with you about your choices of clothing, and insist on sustainable options.

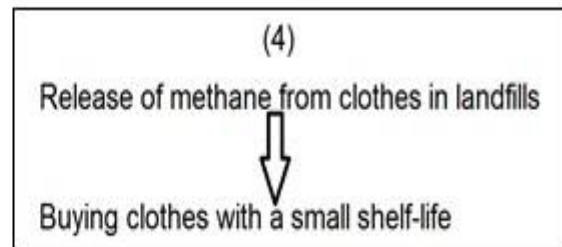
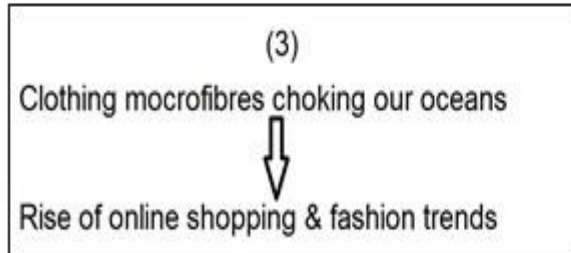
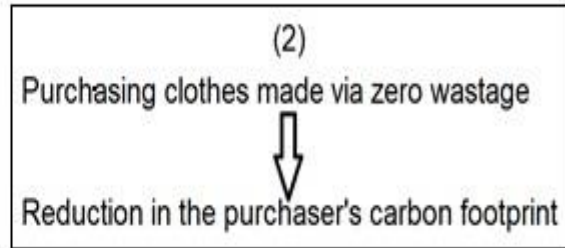
Question 6:-

The text is a post by a guest. Which of the following piece are you more likely to find written by the blogger in her blogs?

- Quick tips to cracking entrance exams
- The miracle beaches of Puducherry
- The tech-mantra for the new mobile in the market
- Diet and fitness go hand-in-hand

Question 7:-

Choose the option that displays a **CAUSE–EFFECT** relationship, based on the information in the text.



- a) Option 1
- b) Option 2
- c) Option 3
- d) Option 4

Question 8:-

Pick the option that tabulates 1-4 under the headings (i)-(ii).

(i) eco-friendly fashion	(ii) ethical fashion
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- 1) Donating the beautiful sweaters, I outgrew, to a local charity.
 - 2) Getting a skirt made from grandmother's silk sarees.
 - 3) Buying jackets coloured in vegetable dyes instead of those from animals.
 - 4) Using dad's torn jeans to make patches for my carry-bag.
 - 5) Purchasing jewellery from an outlet that gives 10% of earnings to its artisans in addition to the wages.
- a) (i) 3, 4 & 5; (ii) 1 & 2
 - b) (i) 4 & 5; (ii) 1, 2 & 3
 - c) (i) 1, 2 & 5; (ii) 3 & 4
 - d) (i) 1, 2 & 4; (ii) 3 & 5

Question 9:-

Choose the option that brings out the meaning of *embrace*, as used in the given textual sentence.

*That's a strong reason to **embrace** sustainable fashion in India.*

- a) Artists in India are embracing new technology alongside traditional methods.
- b) His new job embraces a number of activities—composing, playing, and acting.
- c) The shawl manufacturer embraced the designer warmly for the creative design.
- d) Grandmother frequently embraces us irrespective of our fashion choices.

Question 10:-

Choose the option that lists the most appropriate logo for a garment company committed to slow fashion practices.



(1)



(2)



(3)



(4)

- a) Option 1
- b) Option 2
- c) Option 3
- d) Option 4

Unit 3: CONSTRUCTING A BYPASS

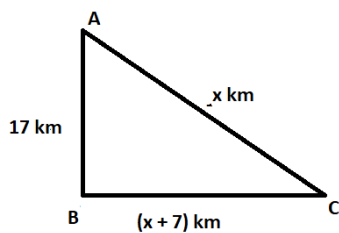
While travelling from Alwah to Barogh, one crosses the busy hamlet of Chagotkar. The road from Alwah to Chagotkar, is exactly perpendicular to the road going from Chagotkar to Barogh. The distance covered by the road between Chagotkar and Barogh is 7 kilometers more than the distance of the road connecting Alwah and Chagotkar.

Ayushi is an engineer looking after the project of building a direct bypass road that would connect Alwah and Barogh and has proposed to construct a 17 km direct bypass road between the two cities.

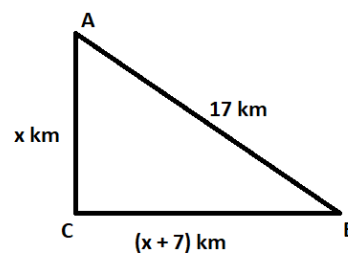
Question 11:-

Ayushi wants to represent the above situation mathematically where A represents Alwah, B represents Barogh and Chagotkar is represented by C. Choose the correct figure out of the options given below-

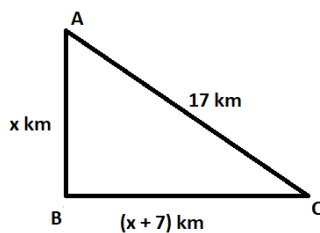
(a)



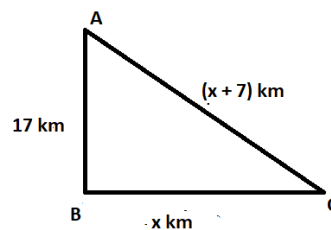
(b)



(c)



(d)



Question 12:-

The equation which represents the above situation algebraically is-

- a) $x^2 + 7x - 120 = 0$
- b) $x^2 + 5x - 120 = 0$
- c) $8x^2 + 7x - 120 = 0$
- d) $x^2 + 2x - 120 = 0$

Question 13:-

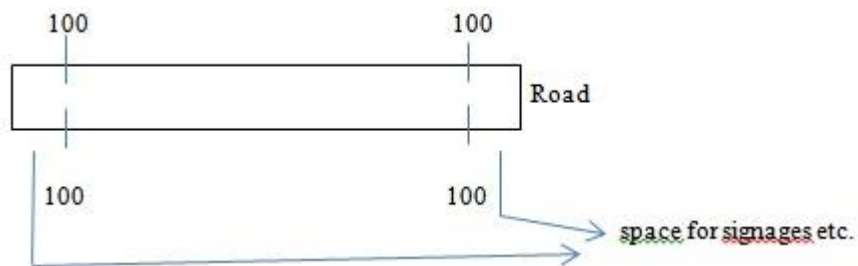
After the construction of the bypass road the distance saved in reaching Barogh from Alwah will be-

- a) 10 km
- b) 2 km
- c) 6 km
- d) 16 km

Question 14:-

Ayushi noticed that for the construction of the highway a lot of trees need to be cut. So, she decided to compensate the tree loss by afforestation.

Ayushi chose to plant an equal number of Mango, Jamun and Peepal trees along both sides of the bypass road. 100m of space would also be left on both sides of road at Alwah and Barogh for toll plaza, signages and billboards at each ends (as shown below). Assuming that if every tree is planted at a distance of 10 m, the number of trees of each kind will be-



- a) 1210
- b) 1200
- c) 1120
- d) 1110

Question 15:-

The cost of a sapling of Mango, Jamun and Peepal is Rs 25, Rs 15 and Rs 10 each. The labour cost for planting each sapling is Rs 0.70. The total amount that Ayushi has to get sanctioned for plantation is -

- a) Rs. 55382
- b) Rs. 58352
- c) Rs. 50382
- d) Rs. 59362

Unit 4 - Half Life of Radioisotopes

Radioisotopes, are special chemical elements that are produced through the natural decay of atoms. Exposure to radiation generally is considered harmful to the human body, but radioisotopes are highly valuable in medicine, particularly in the diagnosis and treatment of disease. Half-life is the time required for a quantity to reduce to half of its initial value. This term is commonly used to describe radioactive decay of atoms. Few Radioisotopes have short half-lives and decay before their emitted radioactivity can cause damage to the patient's body. For example, if the half-life of a 50.0 gram sample is 3 years, then in 3 years only 25 grams would remain. During the next 3 years, 12.5 grams would remain and so on.

Question 16:-

Fluorine-18 is a radioactive isotope of fluorine that is used in medical imaging scans. It has a half-life of approximately 110 minutes. If a patient has a medical imaging scan using an injection of fluorine-18 at 9 am, at what time will there be less than 25% of the radioactive isotope in her body?

- a) 10 am
- b) 12 pm
- c) 1 pm
- d) 11 am

Question 17:-

A radioactive substance Technetium-99 is also used by physicians to examine blood flow to specific organs and assess organ function or bone growth. It has a very short half-life of about 6 hours. The fraction of this material that would remain after 30 hours will be-

- a) $\frac{1}{32}$
- b) $\frac{1}{5}$
- c) $\frac{1}{2}$
- d) $\frac{4}{5}$

Unit 5 - Which Air Conditioner?

Rashmi plans to buy a window air conditioner. She visits a website that compares various products and rates them. The ratings are given on the following features-

AC MODEL	Energy Rating (E)	Noise Level (N)	Design Features (B)	Services and Installation (S)
Alpha	2	2	2	2
Vidyut	3	1	3	2
Samurai	3	1	2	3
Zenith	1	3	3	3
Versa	3	2	3	2

The ratings can be interpreted as follows

3 points = Excellent

2 points = Good

1 Point = Average

Question 18:-

If the website gives ACs points following the weighted sum of $(3 \times E) + N + B + S$, then the total score for Samurai, Vidyut and Versa models will be-

- a) Samurai = 15, Vidyut = 16, Versa = 12
- b) Samurai = 15, Vidyut = 16, Versa = 15
- c) Samurai = 12, Vidyut = 15, Versa = 12
- d) Samurai = 15, Vidyut = 15, Versa = 16

Question 19:-

For Rashmi good service and cost are also important factors. She would not like to spend more than Rs 24000 for purchasing the AC. Given that the comparative rates of the models are:

AC MODEL	Cost	Special Offers (if any)
Alpha	Rs 22785	Additional Rs 3500 as Annual maintenance charges
Vidyut	Rs 24425	5% discount
Samurai	Rs. 23590	Rs 500 extra for installation
Zenith	Rs.24725	5% discount
Versa	Rs. 29900	No installation charges

Choose the AC model which Rashmi will prefer to purchase in this case?

- a. Samurai
- b. Vidyut
- c. Zenith
- d. Versa

Question 20:-

Fahein is interested in purchasing an AC too. He will give three times more points to energy efficiency and two points more to noise levels than services and installation. Whereas, design features don't matter to him. In this case he devises a way to compare the 5 models. Which one is the correct formula given his preferences?

- a) $(3 \times E) + 2N + S$
- b) $(2 \times E) + 3N + S$
- c) $(3 \times E) + N + S$
- d) $(3 \times E) + 2N + 2S$

Unit 6: Mixtures

A mixture is different from a pure substance because it comprises two or more elements or compounds mixed together. Air, smog and cement are all examples of mixtures. The components of a mixture have their own physical properties.

Question 21:

The carbon pencil (commonly called lead pencil) is actually made of a mixture of graphite and clay. In a particular batch of pencils, the percentage of graphite was increased.

A number of complaints were received from the users saying that the pencil was sliding on paper and therefore it had become difficult to write. What is the probable reason for this?

- graphite has a high melting point.
- graphite is a form of carbon.
- graphite is a lubricant.
- graphite is a non-metal.

Question 22:

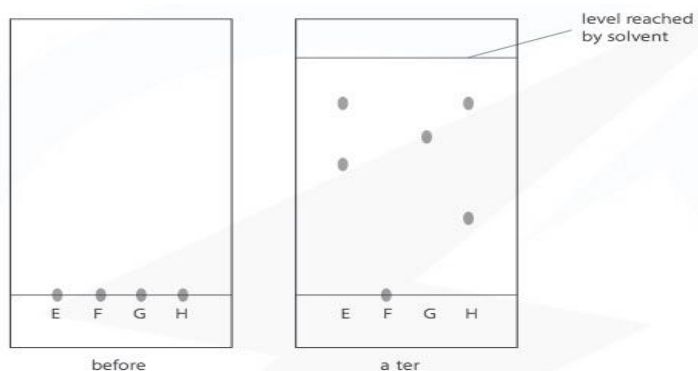
Which method of separation can be used to separate pure water from a mixture containing salt, sand and water?

- Simple distillation
- Crystallization
- Fractional distillation
- Filtration

Question 23:

Depending on the properties of the components, there can be different ways to separate a mixture. The technique of chromatography is used to separate mixtures that have different solubility.

A student uses chromatography to examine a set of four dyes used as food colours. The images below show the beginning and the end of the experiment.



Which one of the dyes E, G and H is **not** a mixture?

- E
- G
- H
- Cannot be determined through the above experiment

Question 24:

In the above experiment, which of the following can be concluded with certainty?

- i. Dye F is insoluble in the solvent used in the experiment
 - ii. One dye in food colour E and H is common
 - iii. Dye G is insoluble in the solvent used in the experiment
- a. i and ii
 - b. ii and iii
 - c. i and iii
 - d. i, ii and iii

Unit 6: Disease and lifestyle

When asked *how cancer forms*, renowned doctor and author Atul Gawande says — *we all grow cancer cells every day. Fortunately our bodies are designed to not let them metastasize, then a mutant gets through, and our body is under attack.*

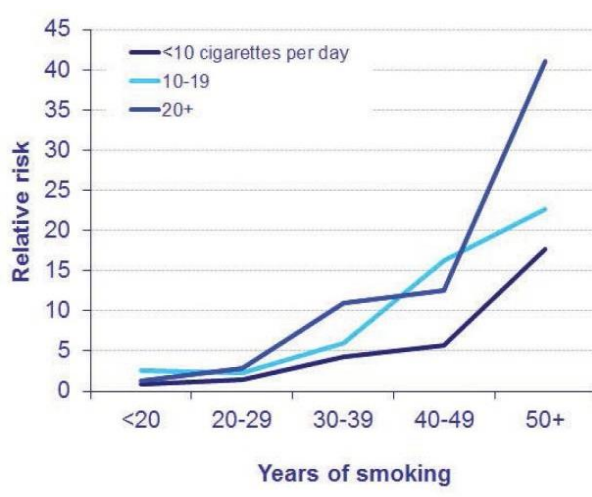
Question 25

Which one best explains how cigarettes cause lung cancers?

- a. Smoking cigarettes transfers virus to the lungs that cause cancer
- b. Cigarette smoking deposits tar in lungs which decreases lung capacity and therefore cancer
- c. Cigarette smoke contains carbon monoxide that accumulates in lungs to causes cancer
- d. Cigarette smoke causes cells to mutate which increases their risk of becoming cancerous

Question 26

The graph shows the relative risk of lung cancer and the intensity of smoking in men.



Which one of the following statements is supported by the data in the graph?

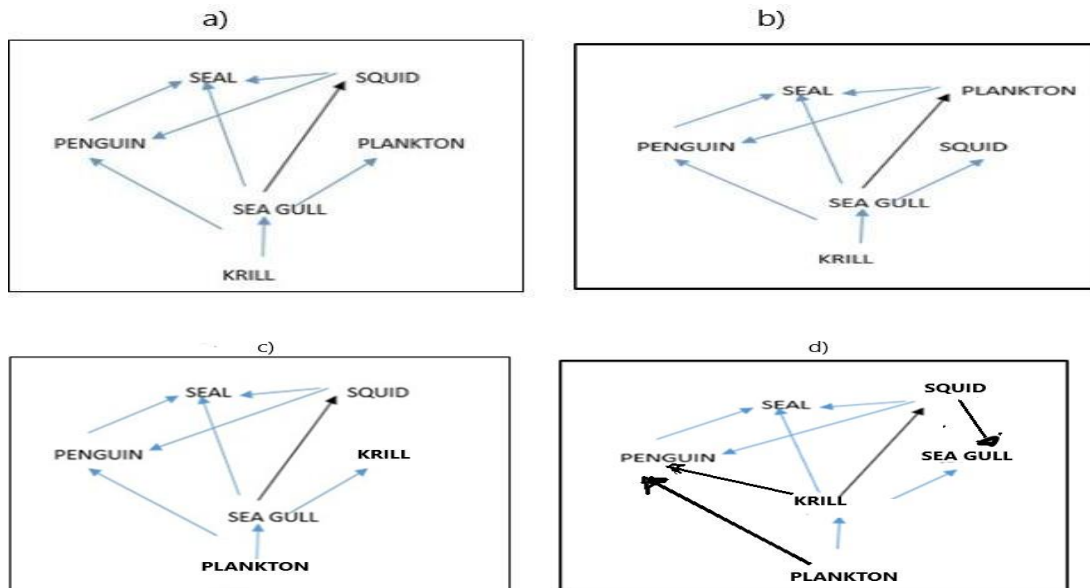
- a. The number of cigarettes smoked per day increases with age
- b. The risk of lung cancer increases with age in men.
- c. Smoking less than 10 cigarettes per day poses almost no risk of cancer
- d. The risk of lung cancer increases with the years of smoking

Question 27

The following table shows the food source of various organisms in a hypothetical aquatic ecosystem.

ORGANISM	FOOD SOURCE					
	Krill	Plankton	Penguin	Seal	Squid	Sea Gull
Seal	✓		✓		✓	✓
Plankton						
Penguin	✓	✓			✓	
Krill		✓				
Sea Gull	✓				✓	
Squid	✓					

Which of the following food webs best represents the movement of matter and energy among the organisms of this food web?



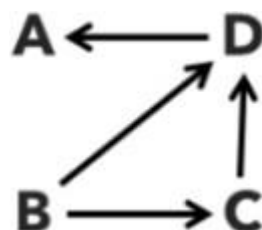
Question 28

Which of the following organisms gets energy both from producers and consumers?

- a. Penguin
- b. Seagull
- c. Krill
- d. Squid

Question 29

The given diagram shows a food web involving the organisms of the above aquatic ecosystem.



Which one of the following correctly represents A, B, C and D from the above community?

S.no	A	B	C	D
a)	Herbivore-Krill	Carnivore-Seal	Producer-plankton	Omnivore-penguin
b)	Carnivore-Seal	Producer - plankton	Herbivore-Krill	Omnivore-penguin
c)	Herbivore-Krill	Producer- plankton	Carnivore-Seal	Omnivore-penguin
d)	Producer-plankton	Herbivore-Krill	Omnivore-penguin	Carnivore-Seal

Question 30

Sewage from the nearby town was dumped into the sea. Which among the given conditions would happen in the above ecosystem after mixing of sewage into the water?

- i) Biochemical oxygen demand (BOD) of receiving water body increases.
 - ii) Dissolved oxygen of receiving water body increases.
 - iii) It will cause mortality among fish and other aquatic creatures
 - iv) It will lead to nutrient enrichment of receiving waterbody.
- a) i, iii, iv
 - b) i .ii ,iv
 - c) ii, iii
 - d) iii, i