



BOARD OF INTERMEDIATE & SECONDARY EDUCATION
SHAHEED BENAZIRABAD, SINDH

SUPPLEMENT

Name of Examination: SSC / HSC Part I - II 20
Annual/Supplementary

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Serial No. 422976

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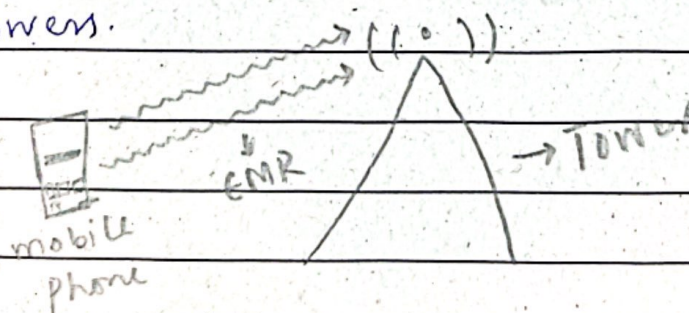
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Q No 2

(b)

A. Introduction: Mobile phones are small devices that do not need to be stationary to communicate. They use wireless communication systems. They have operating systems like that of computers, and possess user friendly interface.

B. Working of Mobile Phones: Mobile phones use battery as a source of energy, unlike computers that require to be stationary and connected while being used. They use wireless communication system with help of Radio and microwaves to connect with cellular towers.





Moreover, mobile phones have integrated chip system that reduces its size; thus easily mobile in usage.

C. Advantages of Mobile phone usage:

- 1) It is mobile; can be used anywhere. Easily transported.
- 2) It has revolutionized the communication system. Made it easy, quick and affordable.
- 3) It has created a global web of communication.
- 4) Along with Internet, Mobile phones have operating systems able to access browsing, social media, and AI applications.

D. Disadvantages of Mobile phone usage:

- (i) Mobile phone usage has isolated people and widened the gap between physical **social interaction**, digitalizing the communication. caused
- (ii) using mobile phones in silos has **↑ serious mental health problems**: Anxiety, Depression, and Brain fog.

E. Mobile phones have revolutionized the communication and information access:

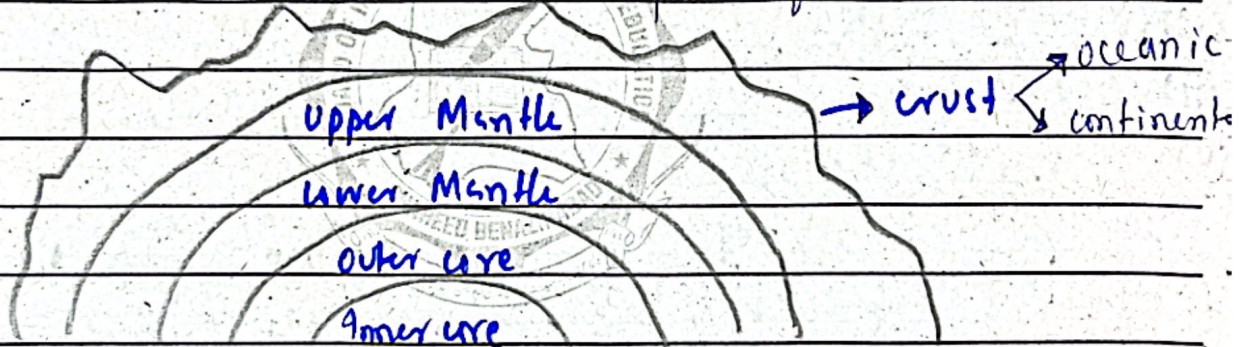
Today world has become global village due to integrated, quick, and affordable communication system via mobile phones. With Internet available on its operating system, Mobile phones are vital part of today information technology that has eased the data access.



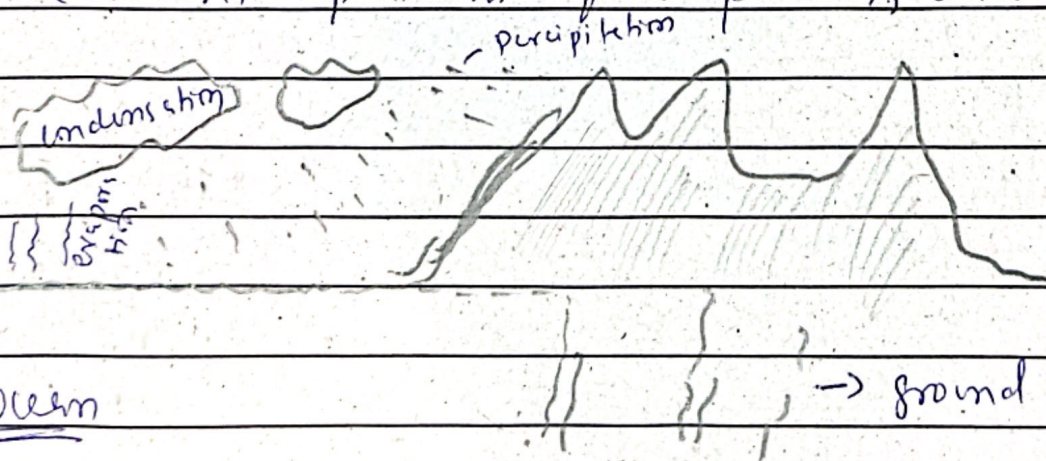
Q no. 2 (c)

A. Layers of Earth: Earth is divided into three layers — crust, mantle, core — that are further subdivided as under:

- (i) crust: the outermost layer
- (ii) upper mantle: along with crust it is solid part
- (iii) lower mantle: It is in molten form
- (iv) outer core: Carries convection current between lower mantle and core.
- (v) inner core: The hottest inner part of earth



B. Earth's water cycle: The water cycle carries recurrent patterns of evaporation, condensation, precipitation.



The water cycle supports life on Earth by ensuring that the complete Biosphere is provided with adequate water resources. For instance, deep down the earth's ground water, gets replenished with water initially coming from oceans, through evaporation and later condensation and eventually precipitation.

C. Human activities impacting Earth's Ecosystem:

- (i) land pollution degrades soil quality, which has an adverse effect on insects and microbes living inside.
- (ii) water pollution (oil spills) endangers the aquatic life.
- (iii) Deforestation destroys biodiversity of forests.
- (iv) climate change (due to human emissions of GHGs) is causing extinction of millions of species and endangering others including humans themselves.

D. Humans impacting Natural resources:

- (i) Natural resources are finite and thus their over use will cause their extinction too.
- (ii) Non-renewable energy sources like fossil fuels are natural resources that are unable to support man's energy demands forever and are destined to extinct.
- (iii) forests, oceans, glaciers, and ground water are all natural resources that are endangered due to overconsumption.



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Q No. (d):

A. Air pollution: when air is contaminated with harmful substances and gases, which is harmful to organic life and earth's atmosphere is called air pollution.

B. Main sources of Air pollution:

- (i) Carbon emissions from burning of fossil fuels
- (ii) CFCs from refrigerators.
- (iii) Smoke (combined with fog; creates smog)
- (iv) emissions from vehicles.
- (v) Industrial gases; methane from landfills.

C. Effects of Air pollution

- (i) acid rain
- (ii) climate change
- (iii) deterioration of infrastructure
- (iv) ozone depletion — when CFCs (air pollutants) reach ozone



D. Impacts of Air pollution on Human Health:

- (i) weakening of eye sight
- (ii) adverse effects on breathing and respiratory system
- (iii) It can cause deaths
- (iv) Dizziness and fever
- (v) Brain fog

E. Impacts of Air pollution on Environment:

- (i) climate change — as these air pollutants cause global warming
- (ii) Extreme weather patterns — meteorologic changes
- (iii) Harmful to infrastructure and ecosystem
- (iv) Destroys wildlife and biodiversity
- (v) Adverse effects on vegetation and plants

F. Primary and Secondary pollutants:

- (i) Primary pollutants: carbon emissions are a kind of primary pollutants. They are substances that directly contaminate the environment.
- (ii) Secondary pollutants: These substances are created after primary pollutants have gone through certain changes or chemical reactions; for instance, acid rain.

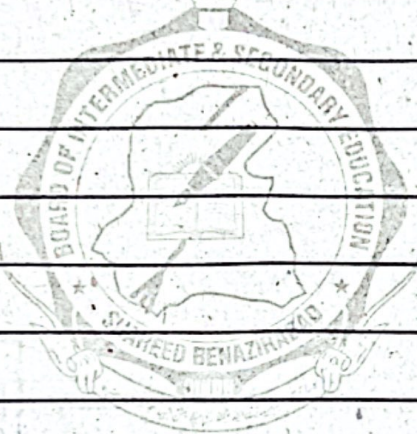
G. Reducing Air pollution through collective actions:

- (i) Reducing carbon ~~emissions~~ emissions through global initiatives
- (ii) Using ~~non~~ renewable energy sources.



H. Reducing Air pollution through individual action

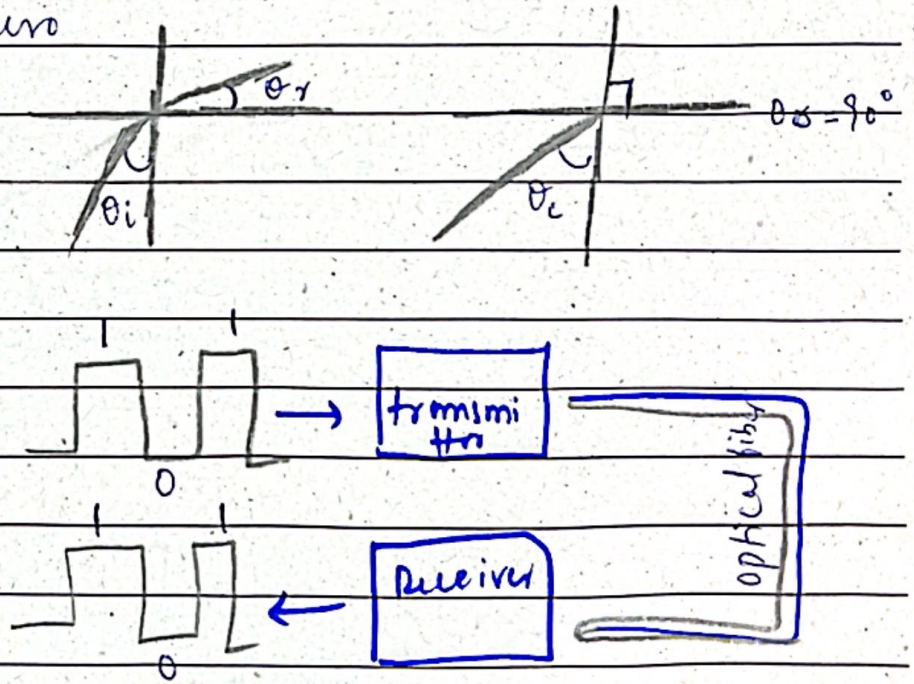
- (i) Using public transport to reduce vehicles' emissions.
- (ii) Using solar energy at personal level installed at homes.



Q No 4 (a) :

A. Fiber Optics : It is a modern transmission technology that uses light inside insulating glass to transmit information and data by using concept of total reflection.

B. Working of Fiber Optics : Fiber optics work on the principle of total reflection of light: where such angle of incidence is produced such that critical angle forms. At Macro level its working is based upon transmitter and receiver which divide the (1010) light intensities.



C. Fiber optic communication over copper wire communication:

- (i) Fiber optics transmit data through light making it faster than copper wire which uses electric signals.
- (ii) Fiber optics do not lose information or data as



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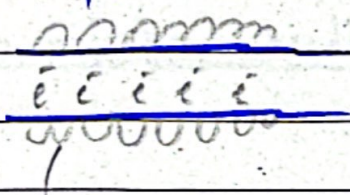


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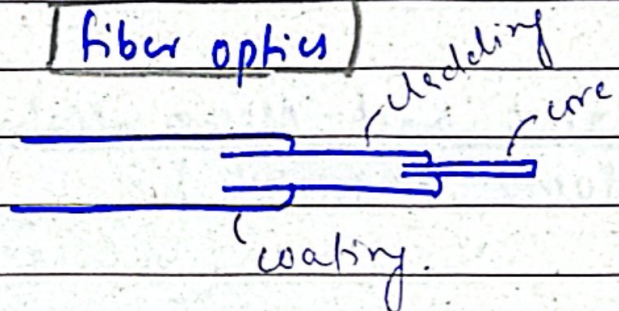
there are minimum losses compared to copper wire, which loses data due to magnetic field formed around its electric signals.

Copper wire

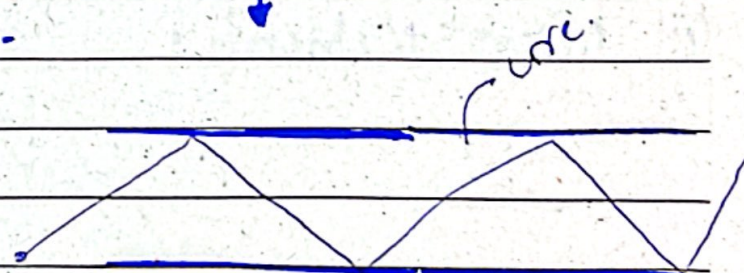
Fiber optics



magnetic field causing losses



D. High Speed data transmission by fiber optics:



Fiber optics enable high speed data transmission because it uses light to transmit data unlike copper wire. Light can move at speed of 3×10^8 m/s thus justifying the high speed data transmission.



Q No 4 (c)

4. Balanced diet: It is defined ~~as~~ as right amount of all nutrients to be intake, in order to ensure that no disease could spread due to deficiency of any nutrient.

B. It is essential for maintaining good health: The right amount of all nutrients is essential because deficiency in any nutrient could cause specific disease.

C. Macro and Micro Nutrients and their importance:

(i) Macro Nutrients:

- (a) Carbohydrates → Basic energy resource
- (b) Lipids → Solvent + energy source
- (c) Proteins → Building block

(ii) Micro Nutrients:

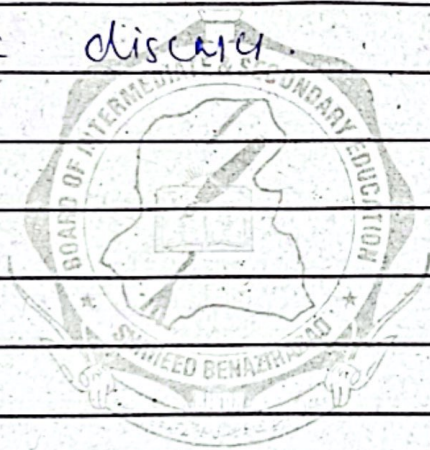
- (a) Vitamins
 - (b) Minerals
 - (c) Fibre
- } helps in metabolism

Macro Nutrients are those which are required in a large quantity compared to Micro nutrients which are not required as much, although importance as their deficiency could cause chronic diseases



D. Balanced diet can help prevent chronic diseases:

With right amount of nutrients intaked, a human body can function properly; if not, deficiency in any one nutrient could cause chronic disease. For example deficiency in vitamin D could cause brittle and weak bones. Therefore, Balanced diet, filling all need of Macro and Micro nutrients would prevent chronic diseases.



Q No 4 (d)

A. Water pollution when water is polluted and contaminated with harmful substances called pollutants, which have adverse effect on aquatic life is called water pollution.

B. Sources of water pollution:

- (i) oil spills from ships and tankers
- (ii) Ship accidents that cause containers to fall into oceans.
- (iii) Industrial waste dumped into water bodies.
- (iv) domestic and municipal waste also dumped into lakes, rivers and sea.

C. Impacts of water pollution on Human health:

- (i) Drinking contaminated water could cause deaths.
- (ii) Impure water could have adverse effects on digestive system and metabolism at large.
- (iii) It can cause throat or mouth cancer.

D. Impacts of water pollution on Environment:

- (i) Destruction of aquatic life and their ecosystem.



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(ii) Oceans as major carbon sinks are compromised, causing increased global warming.

(iii) Fisheries industry gets hit due to increasing poverty in coastal areas, which is one of the causes of submarine pollution both land and air.

(iv) One of the recreational activity (visiting beaches) gets compromised due to contaminated sea water.

E. Preventing and controlling water pollution:

(i) Waste management system must be improved

(ii) Waste should be recycled instead of dumped into water bodies

(iii) Contaminated water bodies like lakes and rivers must be cleaned with collective actions.

(iv) At personal level, people should reuse and recycle.

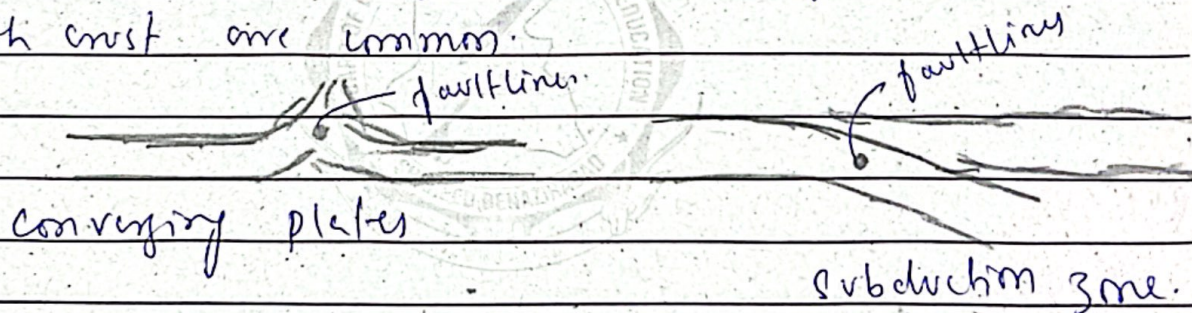


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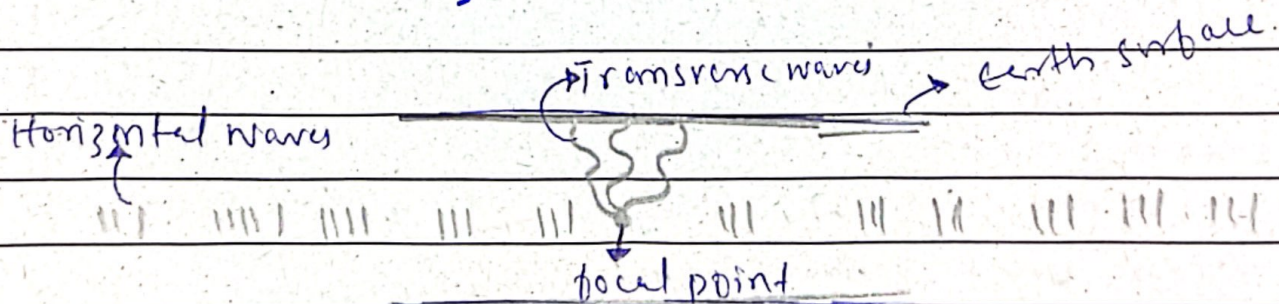
A. Earth quakes : Movement of crust due to tectonic plates movement is called Earthquake

B. Causes of Earth quake :

- (i) Tectonic plates movement cause vibrations.
- (ii) Nuclear explosion can also cause vibration in surface.
- (iii) Within Subduction zones and divergent zones of Earth crust are common.



C. Seismic waves : These waves originate from the focal point where the genesis of earthquake is. They are of different types like Transverse waves and Horizontal waves.





D. Measuring Scale : Earth quakes are measure using seismography ~~at~~ which is scaled from 1-10 called Richter Scale. It is a logarithmic scale.

E. Earthquake-resistant construction and preparedness

Earthquake-resistant construction is made by constructing deep and strong foundation thus making it safe from falling apart if of some specific magnitude earthquake hit the building.

Preparedness is one of the major component of disaster management system. It is a pre disaster procedure. It works on early warning systems. Thus the danger zones are eradicated so that minimum losses can be endured due to this natural disaster.



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Q NOS (a)

Data:

$$a+b+c = 187 \quad [a, b, c \rightarrow \text{prime numbers}]$$

Sol:

$$a \Rightarrow 59$$

$$b \Rightarrow 61 \quad \underline{\text{Ans}}$$

$$c \Rightarrow 67$$

$$59 + 61 + 67 = 187 \quad \underline{\text{Ans}}$$



Date:

Number = x

equation given = $x + 17 = \frac{60}{x}$

Sol:

$$x + 17 = \frac{60}{x}$$

$$x^2 + 17x - 60 = 0$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

21

$$\frac{-17 \pm \sqrt{17^2 - 4(17)(-60)}}{2(1)}$$

2(1)

$$\frac{-17 \pm \sqrt{529}}{2}$$

$$\frac{-17 \pm 23}{2}$$

$$\frac{-17 + 23}{2}$$

(as number is positive)

$$= \frac{6}{1} = 3 \quad \text{Ans}$$



(c)

Date

Total increase in decade = $262500 - 175000 = 87,500$

increase / decade $\Rightarrow \frac{87500}{10} = 8750$ per year

~~Profit~~ *Sol

avg increase per year = 8750

percent increase $\Rightarrow \frac{8750}{175000} \times 100 \% \Rightarrow 5\%$

Ans

(d)

Date :

$$\text{Cost price} = 375 \text{ per dozen} = \frac{375}{12} = 32.25 \text{ per egg}$$

$$\text{Selling price} = 33 \text{ per egg} =$$

Sol:

$$\text{Profit} = \text{selling price} - \text{cost price}$$

$$\text{Profit} = 33 - 32.25 = 0.75$$

$$\text{percentage profit} = \frac{0.75}{32.25} \times 100\% = 2.3\%$$

Ans



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Q No 6 (a)

Date

$$xy = 120$$

$$x^2 + y^2 = 289$$

$$x + y = ? = A$$

Sol

$$(x + y)^2 = x^2 + y^2 + 2xy$$

$$A^2 = 289 + 2(120)$$

$$A^2 = 289 + 240 = 529$$

$$\sqrt{A^2} = \sqrt{529}$$

$$A = 23$$

$$x + y = 23$$

Ans



(b)

DateKamran and Salmen current ages = K, S

$$\frac{K-6}{S-6} = \frac{6}{5}$$

$$\frac{K+4}{S+4} = \frac{11}{10}$$

$$S = ?$$

Sol :

$$\frac{K-6}{S-6} = \frac{6}{5}$$

$$6S - 36 = 5K - 30$$

$$6S - 5K = 6 \rightarrow (1)$$

$$\frac{K+4}{S+4} = \frac{11}{10}$$

$$10K + 40 = 11S + 44 \Rightarrow 10K - 11S = 4 \rightarrow (2)$$

START FORM HERE



$$10k - 11s = 4$$

$$10k = 4 + 11s$$

$$k = \frac{4 + 11s}{10} \rightarrow (3)$$

putting (3) in (1)

$$6s - \frac{4 + 11s}{2} = 6$$

$$6s - \frac{4 + 11s}{2} = 6$$

(multiplying both sides by 2)

$$12s - 4 - 11s = 12$$

$$s = 16$$

Ans.

(d)

Data

$$\text{profit} = 22.5\% \text{ of } \text{Cp}$$

$$\text{Sp} = 392$$

$$\text{Sp} = \text{Cp} + 22.5\% \text{ of } \text{Cp}$$

Sol :

$$392 = \text{Cp} + 22.5\% \text{ of } \text{Cp}$$

$$392 = \text{Cp} (1 + 22.5\%)$$

$$\text{Cp} = \frac{392}{1.225}$$

$$\text{Cp} = 320$$

$$\text{profit} = 22.5\% \text{ of } 320 = \boxed{72}$$

Ans



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(c)

Ques

$$a+b+c = 98 \rightarrow (3)$$

$$a/b = 2/3 \rightarrow (1)$$

$$b/c = 5/8 \rightarrow (2)$$

$$b = ?$$

Sol :

from (1) :

$$a = 2b/3$$

START FORM HERE



from (2) :

$$8b = 5c$$

$$c = \frac{8b}{5}$$

Putting a, c in (3)

$$a + b + c = 98$$

$$\frac{2b}{3} + b + \frac{8b}{5} = 98$$

$$\frac{10b + 15b + 24b}{15} = 98$$

$$\frac{49b}{15} = 98$$

$$49b = 1470$$

$$b = 1470 / 49$$

$$b = 30$$

Ans