

Dos and Don'ts for General Science & Ability Paper

Hi there, you've done well. Know that acquiring knowledge is one thing and reproducing it in paper according to what's asked is another. There are a few things I would like to highlight.

1. A 5 marks part requires at least 2 and at max 3 sides of a paper. Know that there can be two or three parts of a question and their marks are divided accordingly. So, address all of them in a just manner.

2. Focus on time management. You get 35 minutes to solve one question and about 8 minutes per 5 mark part. Manage your time accordingly.

3. You need to understand that your paper is supposed to look more scientific than theoretical. So, add flowcharts and diagrams where required.

4. Your handwriting and neatness can be really impactful. Avoid cutting and overwriting.

5. Focus on your spellings and your grammar. Here, in GSA there's no deduction in marks but your expression will definitely create an impact.

6. In ability portion, give explanation for analytical ability question in words. You need to understand that a 5 mark part requires all steps written and explained.

Good luck for CSS 2025. You're gonna rock in sha Allah. :)

and production of energy in the body. Hence, double circulation is an important part of circulatory system of human body.

ADAPTATION OF HEART TO KEEP THE BLOOD FLOW IN DOUBLE CIRCULATION:

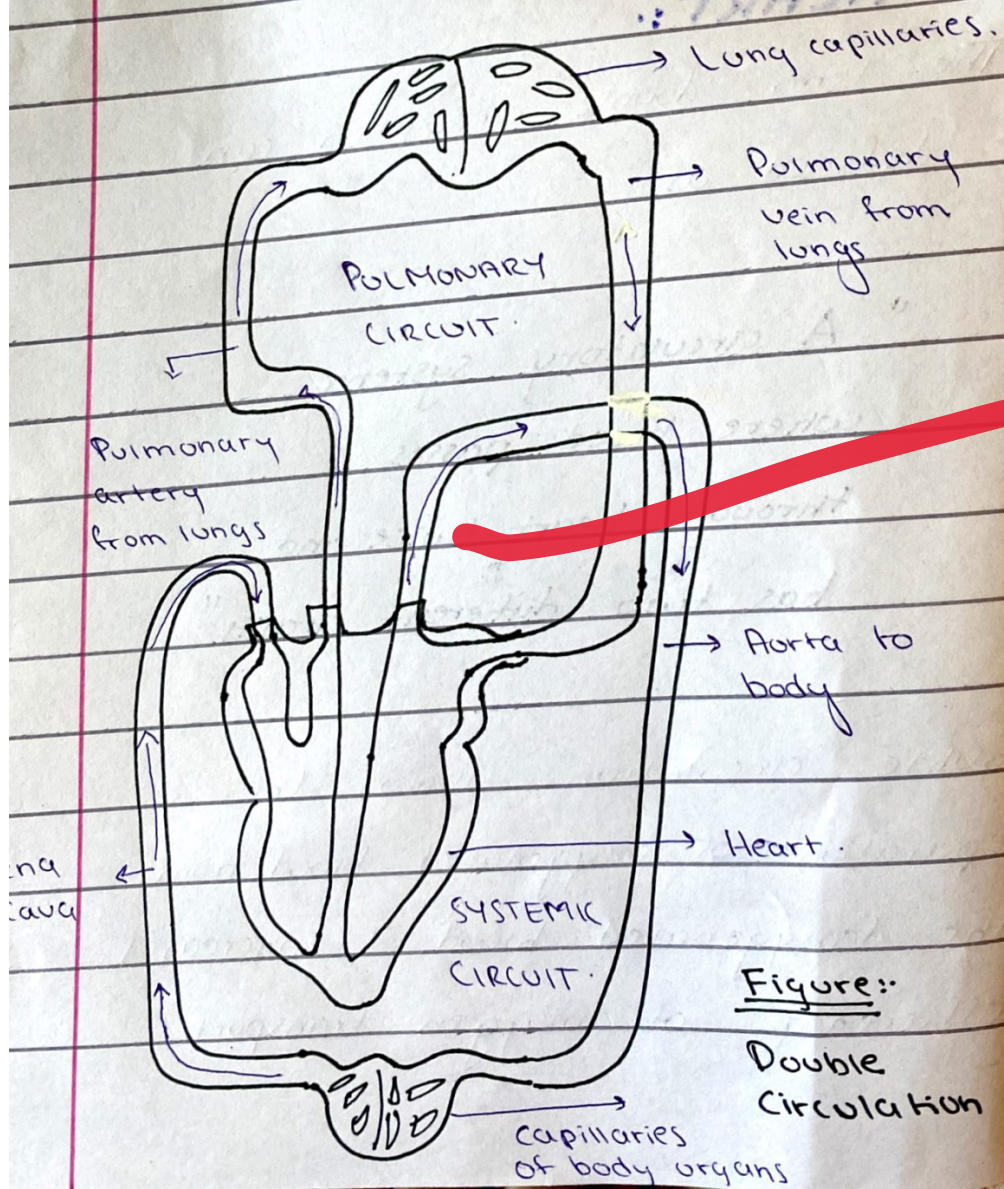


Figure:

Double Circulation

Heart is adapted to double circulation in the following way:

① SYSTEMIC CIRCULATION:

Systemic circulation carries oxygenated blood from left ventricle to the tissue capillaries in the following way:

- (i) Oxygen rich blood is transferred to the aorta for circulating into various parts of body from left ventricle.
- (ii) Veins and venules carry carbon-dioxide rich deoxygenated blood.
- (iii) Deoxygenated blood is pumped back into superior vena cava and then to right atrium.
- (iv) From right atrium blood enters right ventricle for pulmonary or circulation.

② PULMONARY CIRCULATION:

The blood circulation starts from right atrium to the

left ventricle ~~the~~ atrium in the following way:-

- (i) Pulmonary artery collects the blood from right ventricle and carries to lung for oxygenation.
- (ii) After oxygenation blood is pumped back to the left atrium through pulmonary vein which is carried
- (iii) ~~From~~ From right atrium left atrium blood is carried to left ventricle and into aorta for systemic circulation of oxygenated blood.

Hence, while keeping oxygenated and deoxygenated blood separate, blood passes twice through heart in one cycle with right half involvement in pulmonary circulation and left half involvement in systemic circulation, heart is adapted to double circulation.

Part (b):

LIVER AS A CHIEF CHEMIST:

Liver as part of Gastro-intestinal tract (GIT) is a chief chemist due to production of multiple and metabolites in the following way:

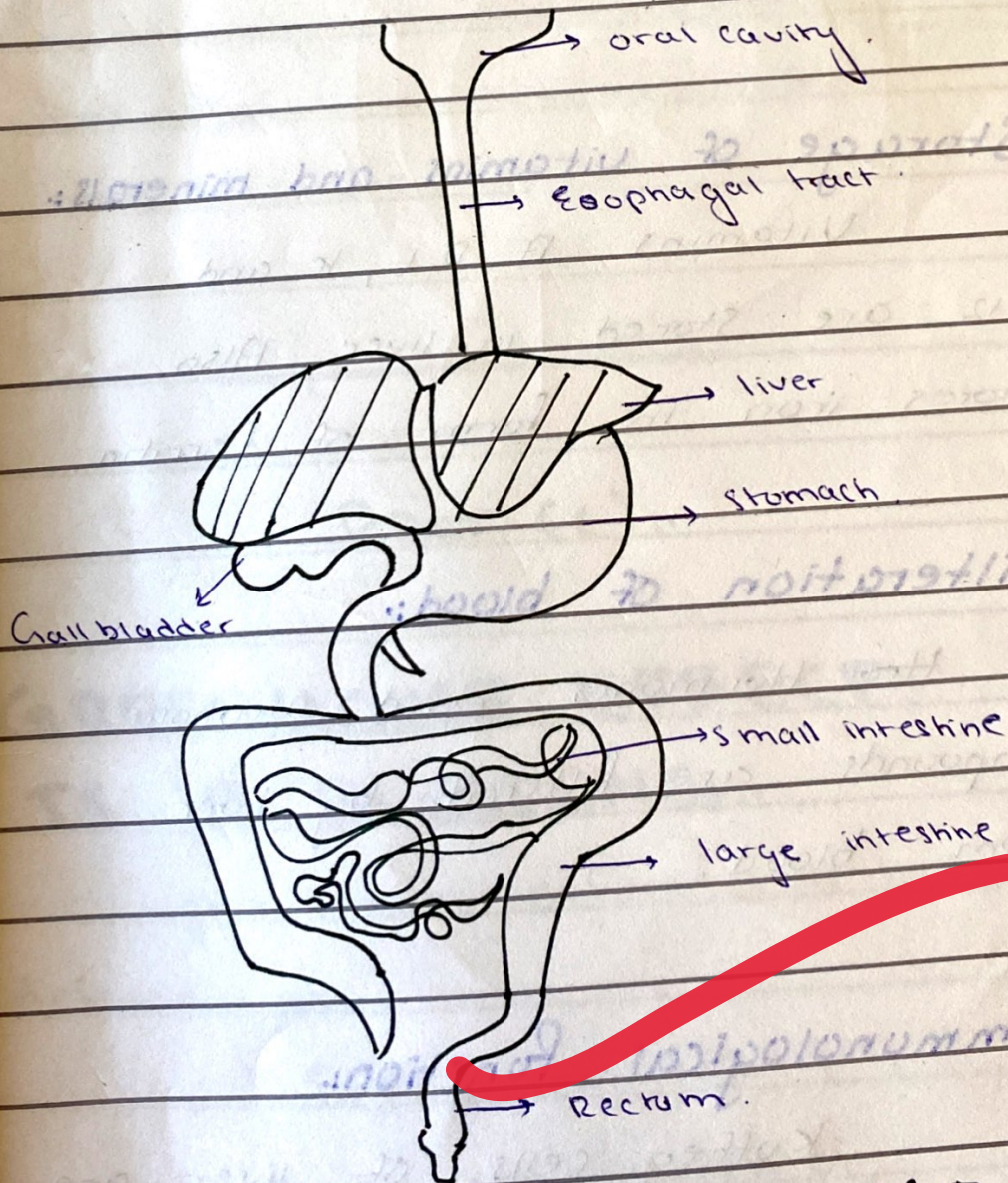


Figure: Liver as part of GIT

(i) Production of bile:

Liver produces bile which helps in digestion of fats, vitamins and cholesterol.

(ii) Carbohydrate metabolism:

Carbohydrates stored in liver as glycogen are broken down into glucose and released into blood to maintain glucose level.

(iii) Storage of vitamins and minerals:

Vitamins A, D, E, K and B₁₂ are stored in liver. Also stores iron in form of ferritin.

(iv) Filteration of blood:

H₂O, Hormones and Alcoholic compounds are filtered by liver from blood.

(v) Immunological function:

Kuffer cells of liver are

involved in immune activity.

(vi) **Albumin production:**

Produces albumin that transports fatty acids and steroids to maintain pressure and prevent leakage of blood vessels

(vii) **Angiotensinogen Synthesis:**

Hormone responsible for narrowing of blood vessels resulting in increase of blood pressure.

PART (C):

GREENHOUSE EFFECT IS A BLESSING:

Green-house effect can be defined as

"Entrapment of longer wavelength of

infrared radiations by
the CO_2 molecules
present in the Earth's
atmosphere."

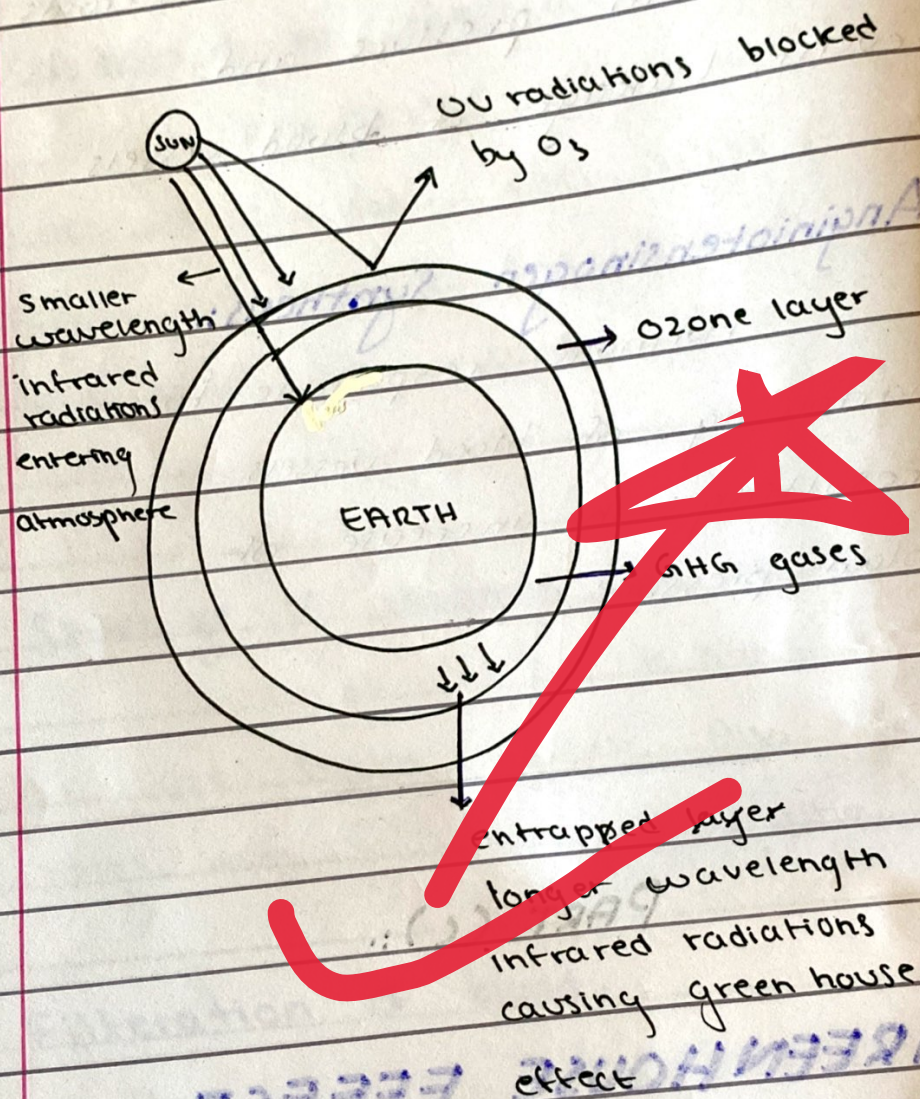


Figure: Representing
the greenhouse effect

Greenhouse effect " is
a blessing in the following

way: (vi)

(i) Maintenance of habitable temperature:

Through entrapment of gases within a limit, it increases the Earth's temperature from -20°C to 15°C that is conducive for living. (v)

(ii) Reduction in amount of heat that escapes earth:

Tropospheric Ozone (O_3) absorbs infrared radiations and helps to reduce the amount of radiation that escapes into space.

(iii) Milder climate in frozen region:

Through increase of temperature, greenhouse effect makes milder climate for habitation in Siberia, Antarctica and Arctic.

(iv) Growth of plants in frozen regions:

Helps in growth of plants in Antarctica and Arctic.

(v) Cooling of stratosphere:

Cooling of stratosphere as thermal infrared absorbed at low altitude.

ENHANCED GREENHOUSE EFFECT AND ITS RELATION WITH GLOBAL WARMING:

Enhanced effect of greenhouse gas due to anthropogenic activity results in phenomenon of global warming in the following way:

(i) Increasing temperature of Earth's atmosphere:

CO_2 as a part of Green House Gas (GHG) has the highest

Radiative Force: (b) that is the measurement of heat capture by gases as proposed by International Panel on Climate Change (IPCC). Increased amount of CO_2 ~~with~~ results in global warming.

(ii) Long term presence of GHG ~~prol~~ enhances global warming.

CH_4 , a greenhouse gas takes air converts into CO_2 in the atmosphere. 40% CO_2 will remain in atmosphere for 100 years.

(iii) Acidification of ocean

leading Global warming:

Increased absorption of CO_2 by water resource leads to ~~sea~~ changes in pattern of precipitation resulting in global

warming.

PART (d):

(a) WORKING OF GLOBAL POSITIONING SYSTEM:

System GPS can be defined as,

"Radio navigation system on land, sea and air to determine exact location, time and velocity irrespective of weather conditions."

(i) Components of GPS System:

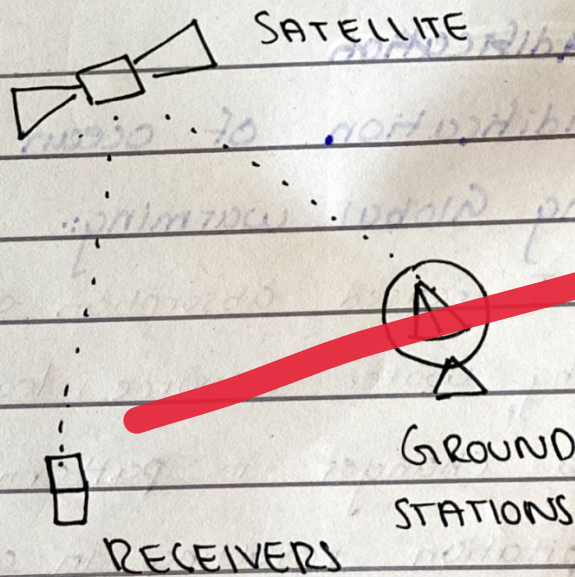


Figure :: GPS Signalling
Communication

Satellites send out the signals which are received by the receivers and calculate distance from satellite. The ground station uses radar to make sure satellite works.

(ii) Application of GPS:

GPS applications include the following:

- Location - determining position.
- Navigation - getting from one location to another.
- Tracking - monitoring object or persons.
- Mapping - creating maps.
- Timing - measuring of precise time.

(b) WORKING OF MOBILE PHONE:

(i) The phenomenon involved:

The working of mobile phone depends on conduction of radio waves using electric signals.

ii) Communication of radio signals:

Radiowaves travels through air to cell tower. Tower sends your voice to the person who is calling. The process is reversed when the other so the receiver can hear the voice.

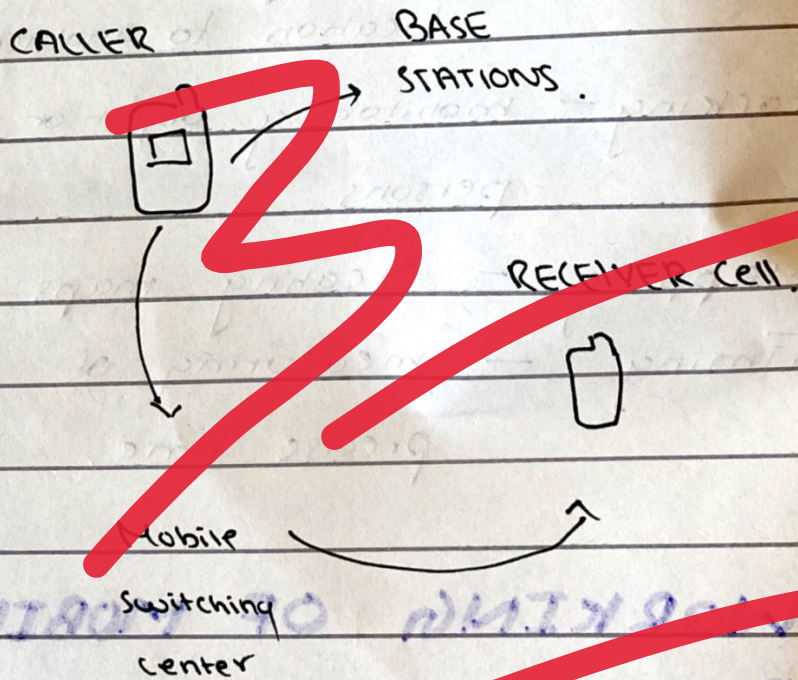


Figure: Mobile Networking

QUESTION NO: 05

PART (A):

RADIO ACTIVITY :

"Radioactivity is the phenomenon exhibited by an atom's nuclei due to nuclear instability, by which nucleus of an unstable atom loses energy by emitting radiations."

DIFFERENCE BETWEEN ARTIFICIAL AND NATURAL RADIOACTIVITY:

Natural radioactivity	Artificial radioactivity
(i) Process that	can be made

Natural Radioactivity

Artificial radio-activity

takes place naturally

Induced phenomena

(ii) Occurs

Spontaneously:

Occurs in

presence of

external

influence.

(iii)

Unstable

Stable

initial material

initial

material.

(iv)

Cannot be

Controlled

Process

can be

Controlled.

(v)

Isotopes of

Uranium,

thorium.



PART (B):

THE DISEASE OF POLIO:

Polymelitis can be defined as,

"Inability to move
or, walk or muscle
weakening due to
the affect of
polio virus on the
central nervous

System."

(i) Symptoms of polio:

- (a) Headache, fever, vomiting
- (b) Abnormal reflexes
- (c) Back pain
- (d) Muscle pain

(ii) Cause of polio:

Due to the virus spreading

through following ways:

- (a) Feco-oral route
- (b) Water body contamination
- (c) Saliva contaminated

(iii) Prevention of polio:

Prevention of polio involves

- (a) Vaccination
- (b) Water resource prevention from contamination
- (c) Hygiene care

(iv) Vaccination of polio disease.

Two types of polio vaccination

- (a) Inactivated polio virus (IPV) by injection
- (b) Weakened Polio Virus (OPV) by mouth

PART (C):

STEPS IN SOLID WASTE MANAGEMENT:

"Solid waste management is proper collection, segregation and disposal of solid waste"

(i) Collection of solid waste, and Segregation:

Prop First step is the collection of solid waste from multiple positions and segregation of hazardous, non-hazardous and reusable.

(ii) Re Recycling of solid waste:

Reusable solid waste is recycled.

(iii) Incineration of the solid waste.

Hazardous solid waste such as of hospital is burned in incinerator.

(iv) Land disposal of solid waste.

Solid waste is also dumped in land known as land disposal through careful selection of resource away from water body source.

PROBLEMS WITH SOLID WASTE MANAGEMENT

Following are the problems with solid waste management:

(i) Problem in selection of land for land disposal to avoid contamination of water resource.

(ii) Non-availability of equipment of incineration.

Add flowcharts and diagrams

(iii) Wrong segregation of solid waste material can also occur.

(iv) Recycling process technique is technique sensitive.

PART (D):

THE TERM POPULATION PLANNING:

Explain properly

"Population planning means to control the growing number of population through ^{ing} control and preventive measures."

BENEFITS OF POPULATION PLANNING:

(i) Prevention of depletion of

- (ii) resources
- (ii) Control of Socio-economic crisis such as poverty
- (iii) Decreasing infant mortality rate
- (iv) Prevent the To provide proper nutritional resources to limited number of population

SECTION - II

QUESTION NO. 06

PART (A):

Enrollment in 2023 = 850 pupils

Enrollment in 2024 = 1120 pupils

$$\% \text{ increase} = \frac{(1120 - 850)}{850} \times 100$$

$$= \frac{270}{850} \times 100$$

$$= 31.76\%$$

Hence, percentage increase in enrollment is 31.76%.

PART (B):

Man is 5 times old as his son

Two years ago sum of age was = 114.

Present age of son = x

Present age of man = y

Given $y = 5x$

Two years ago,

$$(x-2)^2 + (y-2)^2 = 114$$

$$x^2 - 4x + 4 + y^2 - 4y + 4 = 114$$

$$x^2 + y^2 - 4(x+y) + 8 = 114$$

$$x^2 + 25x^2 - 4x - 20x + 8 = 114$$

$$26x^2 - 24x = 108$$

using factorisation value of
 x is 2.5.

Son's present age = 2 and a half years

Man's present age = 12 and half years

PART (D)

Suppose total distance = $2x$ km.

First Distance time taken = $t_1 = \frac{x}{40}$

Second Distance time taken = $t_2 = \frac{x}{60}$

Average velocity = $v = \frac{\text{total distance}}{\text{total time}}$

$$= \frac{2x}{\frac{x}{40} + \frac{x}{60}} = \frac{2x \times 40 \times 60}{40 + 60}$$

$$= 48 \text{ km/h.}$$

Hence, average velocity is

48 km/hr.

QUESTION NO:07

PART(A):

Let no = x

According to problem

$$x/6 = x - 50.$$

$$x = 6(x - 50)$$

$$x = 6x - 300.$$

$$6x - x = 300$$

$$5x = 300.$$

$$x = \frac{300}{5}$$

$$= 60$$

No. is 60.

PART (B)

Tower height = 15 m

Distance from base = 20 m

Pythagorean theorem:

$$\text{Aerial distance} = \sqrt{\text{Height}^2 + \text{Base}^2}$$

$$= \sqrt{15^2 + 20^2}$$

$$= \sqrt{225 + 400}$$

$$= \sqrt{625}$$

$$= 25 \text{ m}$$

Therefore, the distance is 25 m.

PART (B):

Tower height = 15 m
Distance from base = 20 m

Pythagorean theorem:

$$\begin{aligned} \text{Actual distance} &= \sqrt{\text{Height}^2 + \text{Base}^2} \\ &= \sqrt{15^2 + 20^2} \\ &= \sqrt{225 + 400} \\ &= \sqrt{625} \\ &= 25 \text{ m} \end{aligned}$$

Therefore, the distance is 25 m.

PART (D):

Total Tariff = 30000.

Odd dates = 5th, 7th so on
= 10000.

Even dates = 6th, 8th ...
= 20000

Avg money for 2 days = 15000

No. of days of stay = $\frac{30000}{15000}$
= 20.