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Mumbai, Maharashtra

SSC BOARD SAMPLE PAPER

SUBJECT: SCIENCE-II **CLASS: X**
MAX. MARKS: 40 **Duration: 2 HRS.**

Q.1(A) **Choose and write correct option number as answer:** **5M**

i. In mitotic division, the nuclear membrane completely disappears in the ..... phase.

a) Telophase b) Prophase
c) Metaphase d) Anaphase

ii. Soy sauce is produced by fermentation of a mixture of wheat or rice and soybean with the help of .....

a) Aspergillus oryzae b) Actinomycetes spp
c) Streptococcus thermophiles d) Lactobacillus lactis

iii. Modern man differs from Australopithecus in which of the following aspects?

a) Presence of tail b) Use of hands for eating food
c) Increased brain size d) All of the above

iv. If oocyte is not fertilized within 24 hours, corpus luteum becomes inactive and transforms into ..... .

a) Endometrium b) Follicle
c) Corpus albicans d) None of these

v. In nuclear fission, neutron is bombarded on atom of

a) Uranium 236 b) Barium c) Krypton d) Uranium 235

Q.1(B) **Solve Answer the following :** **5M**

i. State true or false. Asexual reproduction is a faster process as compared to Sexual reproduction.

ii. Complete the analogy.
Nicotinamide : Vit B_3 :: Riboflavin : .....

iii. Find the odd one out.
Coccyx, Intestine, Wisdom teeth, Appendix

iv. What is pleuripotency?

v. Who am I?
I Have suckers. I am a blood sucking ectoparasite and my body is segmented

Q.2. A **Give scientific reasons (Attempt any 2)** **4M**

i. Cell division is one of the important properties of cells and organisms

ii. Birth defects are more common among children born to older women.

iii. The construction of turbine is different for different types of power plants.

Q.2. B **Answer the following (Attempt any 3)** **6M**

i Write a short note on Environmental conservation.

ii Distinguish between Flatworms and Roundworms.

iii. Effective disaster management makes us well prepared for future. Explain.

iv. Give three examples of physical problems arising due to excessive use of mobile phones.

v. How can the oil spills of rivers and oceans be cleaned?

Q.3. **Answer the following (Attempt any 5)** **15M**

i. Explain Darwin's theory and write the objections raised against Darwin's theory of natural selection?

ii. Explain glycosis in detail.

iii. In case of sexual reproduction, newborn shows similarities about characters. Explain this statement with suitable examples.

iv. Write a short note on electrical energy generation and environment.

v. Explain briefly how animals can be classified based on body symmetry.

vi. What type of changes occurs in a home having chronically ill old person? How will you help to maintain good atmosphere?

vii. Identify the type of disaster:

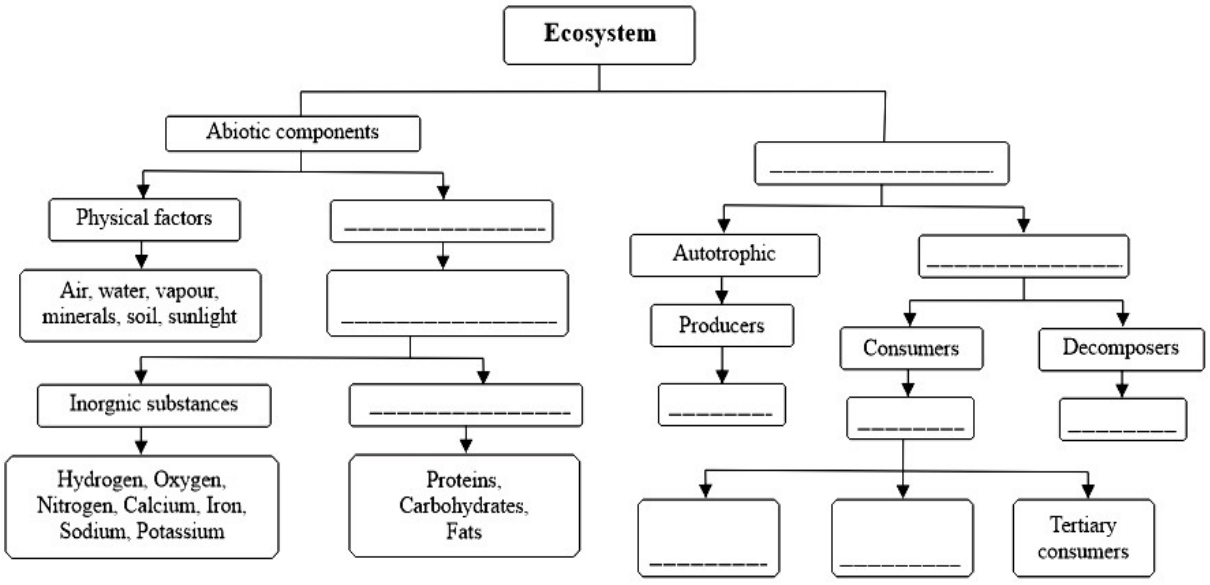
a. Terrorism b. Soil erosion c. Hepatitis

d. Forest fire e. Famine f. Theft

viii. Write a short note on medicinal plants

Q.4. **Attempt the following (Any ONE):** **5M**

i Fill up the blank boxes and display the completed chart in classroom.



ii The countries which do not have oil reservoirs in their land import oil from other countries.

But sometimes during transporting oil through sea routes, accidental oil spilling occurs. This oil spilled in the ocean may prove fatal and toxic to aquatic animals. Therefore, removal of this spilled oil is essential for protection of aquatic life. For removing this oil layer, certain microbes like Pseudomonas spp. and Alcanivorax borkumensis are used.

These microbes have the ability to destroy the pyridines and other toxic chemicals. The hydrocarbonoclastic bacteria (HCB) are able to decompose the hydrocarbons and bring about the reaction of carbon with oxygen resulting in formation of CO_2 and water.

Like oil spills cause damage to aquatic life, plastic forms the major part of the garbage on land. Plastics are difficult to degrade as they are made up of PET. By research, various species like Vibrio and Ideonella sakaiensis which can degrade PET have been identified. There are certain species of microbes which can decompose rubber from garbage.

Based on the given paragraph answer the following questions.

i. How are aquatic organisms affected by oil spills in oceans? **[1 Mark]**

ii. Which type of chemical compounds are degraded by microbes used for clearing oil spills? **[1 Mark]**

iii. Name any two species of microbes which can degrade rubber from garbage. **[1 Mark]**

iv. Why should there be a ban on plastic bags? **[2 Marks]**

Together, we will make a difference.....

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SSC BOARD SAMPLE PAPER

SUBJECT:MATHS-II (GEOMETRY) **CLASS: X**
MAX.MARKS: 40 **Duration: 2 HRS.**

Q.1 A **Four alternative answers are given for every sub question. Select the correct alternative and write the alphabet of that answer:** **4M**

i) Height and base of a right angled triangle are 24 cm and 18 cm, then length of its hypotenuse

a) 24 cm **b)** 30 cm **c)** 15 cm **d)** 18cm

ii) A circle touches all sides of a parallelogram. So the parallelogram must be a _____.

a) rectangle **b)** rhombus **c)** square **d)** trapezium

iii) A line makes an angle of 45^0 with the positive direction of X-axis, then the slope of the line is _.

a) 1 **b)** $\sqrt{3}$ **c)** $\frac{1}{\sqrt{3}}$ **d)** 2

iv) If the radius of the base of cone is 9 cm and its slant height is 41 cm, then its height is _____.

a) 15 cm **b)** 40 cm **c)** 18 cm **d)** 5 cm

Q.1 B **Solve the following questions.** **4M**

i. Ratio of areas of two triangles with equal heights is 2:3. If base of the smaller triangle is 6 cm then what is the corresponding base of the bigger triangle?

ii. In ΔPQR, $\angle Q = 90^0$ and $\angle R = 60^0$ if PR = $6\sqrt{3}$cm, then find PQ.

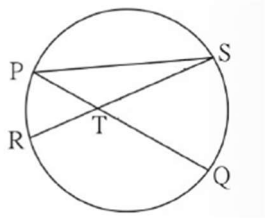
iii. In a cyclic quadrilateral ABCD, twice the measure of $\angle A$ is thrice the measure of $\angle C$. Find the measure of $\angle C$?

iv. Find the distance of point A(6, 8) from the origin.

Q.2 A **Complete the following activities. (Any two)** **4M**

i. In the given fig, chords PQ and RS intersect at T. Prove that

$\angle STQ = \frac{1}{2}[m(arcPR) + m(arcSQ)]$. Fill in the blanks to complete the proof.



$\angle STQ = \angle SPQ +$ [ ] ……exterior angle theorem of a triangle

$= \frac{1}{2} m(arcSQ) +$ [ ] …….. inscribed angle theorem

$= \frac{1}{2}$[[ ] + [ ]]

ii. If $\sec\theta = \frac{25}{7}$, find the value of $\tan\theta$. We have,

$1 + \tan^2\theta = \square$

$\therefore \quad 1 + \tan^2\theta = \left(\frac{25}{7}\right)^2$

$\therefore \quad \tan^2\theta = \square - 1$

$= \frac{625 - 49}{49}$

$= \square$

$\therefore \quad \tan\theta = \square$

iii. The radius and height of a cylindrical water reservoir is 2.8 m and 3.5 m respectively. How much maximum water can the tank hold? A person needs 70 litre of water per day. For how many persons is the water sufficient for a day? $\left(\pi = \frac{22}{7}\right)$

(r) = 2.8m, (h) = 3.5m, $\pi = \frac{22}{7}$

Capacity of the water reservoir = Volume of the cylindrical reservoir

$= \pi r^2 h$

$= \frac{22}{7} \times \square$

$= 86.24 m^3$

$= 86.24 \times \square \quad (\because \ 1m^3 = 1000 \text{ litre})$

= 86240.00 litre.

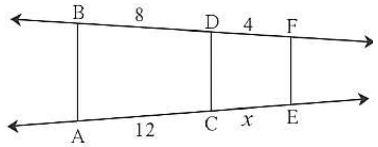
$\therefore$ The reservoir can hold 86240 litre of warter.

The daily requirement of water of a person is 70 litre.

$\therefore$ Water in the tank is sufficient for $\frac{\square}{70} = \square$ persons.

Q.2 B Solve the following questions. (Any four) **8M**

i. In fig given below, if AB || CD || FE then find x and AE.



ii. A rectangle has a length of 40 cm and diagonal 41 cm. Find its breadth and perimeter.

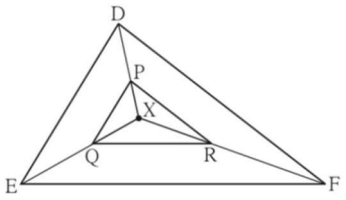
iii $\square MRPN$ is a cyclic, $\angle R = (5x - 13)^0$, $\angle N = (4x + 4)^0$. Find measures of $\angle R$ and $\angle N$.

iv. If point T divides the segment AB with A(-7,4) and B(-6,-5) in the ratio 7:2, find the co-ordinates of T.

v. From the top of a lighthouse, an observer looking at a ship makes angle of depression of 60°. If the height of the lighthouse is 90 metre, then find how far the ship is from the lighthouse.

Q.3 A **Complete the following activities (Any one)** **3M**

i In the figure given below, X is any point in the interior of triangle. Point X is joined to vertices of triangle. Seg PQ || seg DE, seg QR || seg EF. Fill in the blanks to prove that, seg PR || seg DF.



In ΔXDE, PQ || DE .....[ ]

$\therefore \quad \frac{XP}{[\ ]} = \frac{[\ ]}{QE}$ ……(I) (Basic proportionality theorem)

In $\Delta XEF, QR \parallel EF$ .....[ ]

$\therefore \quad \frac{[\ ]}{[\ ]} = \frac{[\ ]}{[\ ]}$ .....(II) [ ]

$\therefore \quad \frac{[\ ]}{[\ ]} = \frac{[\ ]}{[\ ]}$ …….. from (I) and (II)

$\therefore$ seg PR || seg DE ……(converse of basic proportionality theorem)

ii Find the distance between the points $P(-1,1)$ and $Q(5,-7)$. Suppose co-ordinates of point P are (x_1, y_1) and of point Q are (x_2, y_2).

$x_1 = -1, \quad y_1 = 1, \quad x_2 = 5, \quad y_2 = -7$

According to distance formula, $d(P, Q) = \sqrt{[\ ]^2 + (y_2 - y_1)^2}$

$= \sqrt{[5-(-1)]^2 + [\ ]^2}$

$= \sqrt{(6)^2 + [\ ]^2}$

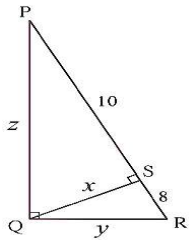
$= \sqrt{36 + [\ ]}$

$d(P,Q) = [\ ] = 10$

$\therefore$ Distance between point P and Q is [ ].

Q3.B **Solve the following questions (Any two)** **6M**

i. In ΔPQR, $\angle PQR = 90^0$, $\text{seg}\,QS \perp \text{seg}\,PR$ then find x, y, z.



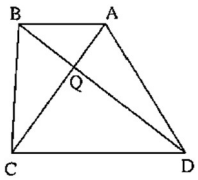
ii. Prove that : "A line perpendicular to a radius at its point on the circle is a tangent to the circle"

iii. Draw a circle with radius 3.4 cm. Draw a chord MN of length 5.7 cm in it. construct tangents at point M and N to the circle.

iv. The radii of two circular ends of frustum shape bucket are 14 cm and 7 cm. Height of the bucket is 30 cm. How many litres of water it can hold? (1 litre = 1000 cm^3)

Q.4 **Solve the following questions (Any two):** **8M**

i. Diagonals of a quadrilateral ABCD intersect in point Q. If 2QA = QC, 2QB = QD, then prove that DC = 2AB.



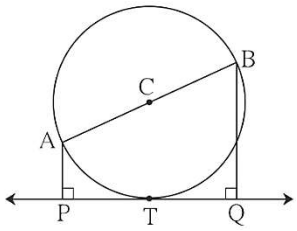
ii. $\Delta AMT \sim \Delta AHE$. In ΔAMT , AM = 6.3 cm, $\angle TAM = 50^o$, AT = 5.6 cm.

$\frac{AM}{AH} = \frac{7}{5}$. Construct ΔAHE .

iii. The radius of a circle with centre P is 10 cm. If chord AB of the circle substends a right angle at P, find areas of the minor segment and the major segment. (π = 3.14)

Q.5 **Solve the following questions. (Any one)** **3M**

i. In figure, seg AB is a diameter of a circle with centre C. Line PQ is a tangent, which touches the circle at point T.



$\text{seg}AP \perp \text{line}PQ$ and $\text{seg}BQ \perp \text{ling}PQ$.

Prove that, $\text{seg}CP \cong \text{seg}CQ$

ii. If $\cos\theta = \frac{\sqrt{3}}{2}$ then find the value of $\frac{1-\sec\theta}{1+\cos ec\theta}$.