ಕರ್ನಾಟಕ ಸರ್ಕಾರ

ಜಿಲ್ಲಾದಳಿತ, ಜಿಲ್ಲಾ ಪಂಚಾಯಿತಿ ಮತ್ತು
ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ಚಿಕ್ಕಬಳ್ಳಾಪುರ ಜಿಲ್ಲೆ – 562101

2020–21 ನೇ ಸಾಲಿನ ಶೈಕ್ಷಣಿಕ ವರ್ಷದಲ್ಲಿ ಜಿಲ್ಲೆಯ
ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ವಿದ್ಯಾರ್ಥಿಗಳ ಉತ್ತಮ ಫಲಿತಾಂಶ ಪ್ರಗತಿಗಾಗಿ
ನಿಧಾನಗತಿ ಕಲಿಕೆಯ ಶಾಲಾ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ

ಅಭ್ಯಾಸ ಕೈಪಿಡಿ

Subject :
Science
(English Medium)

ಸಹಕಾರ – ಸಮನ್ವಯ

ಜಿಲ್ಲಾ ಶೈಕ್ಷಣಿಕ ಸಲಹೆಗಾರರ ತಂಡ, ಜಿಲ್ಲಾ ಪ್ರೌಢಶಾಲಾ ಮುಖ್ಯ ಶಿಕ್ಷಕರ ವೃಂದ,
ಪ್ರೌಢಶಾಲಾ ಶಿಕ್ಷಕರ ವೃಂದ ಮತ್ತು ವಿಷಯ ಸಂಪನ್ಮೂಲ ಶಿಕ್ಷಕರ ವೃಂದ,
ಎ.ಸಿ.ಸಿ. ಟ್ರಸ್ಟ್, ಎ.ಸಿ.ಸಿ. ಲಿಮಿಟೆಡ್, ತೊಂಡೆಬಾವಿ ಸಿಮೆಂಟ್ ವರ್ಕ್ಸ್, ತೊಂಡೆಬಾವಿ.

ಮುನ್ನುಡಿ

ಆತ್ಮೀಯ ವಿದ್ಯಾರ್ಥಿಗಳೇ,

"ಒಳ್ಳೆಯ ಶಿಕ್ಷಣವು ಉತ್ತಮ ಭವಿಷ್ಯಕ್ಕೆ ಬುನಾದಿಯಾಗಿರುತ್ತದೆ" "A Good education is a foundation for a better future" ಎಂಬಂತೆ ತಮ್ಮ ಉಜ್ವಲ ಭವಿಷ್ಯವನ್ನು ರೂಪಿಸಿಕೊಳ್ಳಲು 10ನೇ ತರಗತಿಯು ಅತ್ಯಂತ ಪ್ರಮುಖ ಮೈಲಿಗಲ್ಲಾಗಿದೆ. ಆದ್ದರಿಂದ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆಯು ನಿಮ್ಮ ಜೀವನದ ಮುಖ್ಯ ಘಟ್ಟವಾಗಿದ್ದು, ಪ್ರಸ್ತುತ ಶೈಕ್ಷಣಿಕ ವರ್ಷದ (2020–21ರ) ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪಬ್ಲಿಕ್ ಪರೀಕ್ಷೆಯು 21, ಜೂನ್ ನಿಂದ ಪ್ರಾರಂಭವಾಗಲಿದೆ. ಕಳೆದ ಸಾಲಿನಲ್ಲಿ ಚಿಕ್ಕಬಳ್ಳಾಪುರ ಜಿಲ್ಲೆಯ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಫಲಿತಾಂಶವು ಶೇ. 92.37ರಷ್ಟನ್ನು ಹೊಂದಿ ಎ+ ಶ್ರೇಣಿಯೊಂದಿಗೆ ಅತ್ಯುತ್ತಮ ಸಾಧನೆಯಾಗಿದೆ. ಇದಕ್ಕೆ ಕಾರಣೀಭೂತರಾದ ಸಮಸ್ತರಿಗೂ ಜಿಲ್ಲಾದಳಿತ, ಜಿಲ್ಲಾ ಪಂಚಾಯತ್ ಮತ್ತು ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ ವತಿಯಿಂದ ತುಂಬು ಹೃದಯದ ಧನ್ಯವಾದಗಳನ್ನು ಅರ್ಪಿಸುತ್ತದೆ. ಪ್ರಸ್ತುತ ವರ್ಷದಲ್ಲಿಯೂ ಸಹ ಇದೇ ರೀತಿಯ ಅತ್ಯುತ್ತಮ ಫಲಿತಾಂಶವನ್ನು ಗಳಿಸುವುದು ನಿಮ್ಮೆಲ್ಲರ ಗುರಿಯಾಗಬೇಕಿದೆ.

ನಿಮಗೆ ಗುಣಾತ್ಮಕ ಶಿಕ್ಷಣವನ್ನು ಕಲಿಸಲು ನಿಮ್ಮ ಪೋಷಕರು, ಶಾಲೆ, ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ಜಿಲ್ಲಾದಳಿತ ಮತ್ತು ಜಿಲ್ಲಾ ಪಂಚಾಯತ್ ವಿಶೇಷ ಕಾಳಜಿಯೊಂದಿಗೆ ಹಲವಾರು ಶೈಕ್ಷಣಿಕ ಚಟುವಟಿಕೆಗಳನ್ನು ರೂಪಿಸಿದೆ. ಈಗಾಗಲೇ ನಿಮ್ಮ ಶಿಕ್ಷಕರು ನಿಗಧಿಪಡಿಸಿರುವ ಪಠ್ಯ ಬೋಧನೆಯನ್ನು ಪೂರ್ಣಗೊಳಿಸಿರುತ್ತಾರೆ ಮತ್ತು ನೀವು ಅದನ್ನು ಕಲಿತಿರುತ್ತೀರಿ. ಈಗ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆಗೆ 80 ದಿನಗಳು ಉಳಿದಿದ್ದು, ನೀವು ನಿರ್ದಿಷ್ಟ ಗುರಿಯೊಂದಿಗೆ ಅಭ್ಯಾಸ ಮಾಡಿ ಪರೀಕ್ಷೆಯನ್ನು ಬರೆಯಬೇಕಿದೆ. ಪರೀಕ್ಷೆಗೆ ಯೋಜಿತ ರೀತಿಯಲ್ಲಿ ಸನ್ನದ್ಧರಾಗಲು ಜಿಲ್ಲೆಯ ಸಂಪನ್ಮೂಲ ಶಿಕ್ಷಕರ ಸಹಾಯದೊಂದಿಗೆ ಆರು ವಿಷಯಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ **"ಅಭ್ಯಾಸ ಕೈಪಿಡಿ"**ಯನ್ನು ರಚಿಸಲಾಗಿದೆ. ಈ ಅಭ್ಯಾಸ ಕೈಪಿಡಿಯು ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ವಿನ್ಯಾಸ ಮತ್ತು ಬಹು ನಿರೀಕ್ಷಿತ ಪ್ರಶ್ನೋತ್ತರಗಳ ಆಧಾರದಂತೆ ರೂಪಿಸಲಾಗಿದೆ.

ನಿಗಧಿಪಡಿಸಿರುವ ಪಠ್ಯಕ್ರಮದಂತೆ ಪಾಠವಾರು ಒಂದು ಅಂಕ, ಎರಡೂ ಅಂಕ, ಮೂರು ಅಂಕ, ನಾಲ್ಕು ಅಂಕಗಳ ಪ್ರಶ್ನೋತ್ತರಗಳನ್ನು (ಪರೀಕ್ಷಾ ದೃಷ್ಟಿಯಿಂದ ಪ್ರಮುಖವಾದ) ನೀಡಲಾಗಿದೆ. ಪಾಠವಾರು ಪ್ರಶ್ನೋತ್ತರಗಳನ್ನು ಕಲಿಯಲು ಸಹಾಯಕಾರಿಯಾಗುವಂತೆ ರೂಪಿಸಿದೆ.

ಕಲಿತಿರುವ ಪಾಠಗಳನ್ನು ಅಭ್ಯಾಸ ಮಾಡಿದ ನಂತರ ಕಲಿಕೆಯನ್ನು ಖಾತ್ರಪಡಿಸಿಕೊಳ್ಳಲು ಘಟಕ ಪರೀಕ್ಷೆಗಳನ್ನು ನೀಡಲಾಗಿದೆ.

ಅಂದರೆ ಈ ಅಭ್ಯಾಸ ಕೈಪಿಡಿಗಳನ್ನು ಪರೀಕ್ಷಾ ದೃಷ್ಟಿಯಿಂದ ತಯಾರಿಸಿದ್ದು, ಪ್ರಶ್ನೆಪತ್ರಿಕೆ ವಿನ್ಯಾಸ ಮತ್ತು ಪಾಠವಾರು ಅಂಕಗಳ ಹಂಚಿಕೆಯಂತೆ ರಚಿಸಿರುವುದರಿಂದ ನೀವು ಯೋಜಿತ ರೀತಿಯಲ್ಲಿ ಪರೀಕ್ಷೆಯನ್ನು ಎದುರಿಸಲು ಅತ್ಯಂತ ಉಪಯುಕ್ತವಾಗಿದೆ.

ಈ ಅಭ್ಯಾಸ ಕೈಪಿಡಿಯನ್ನು ನಿರಂತರವಾಗಿ ಅಭ್ಯಾಸ ಮಾಡಿ ಪುನರಾವರ್ತನೆ ಮಾಡುವುದರಿಂದ ಪ್ರತಿಯೊಬ್ಬ ವಿದ್ಯಾರ್ಥಿಯೂ ಆತ್ಮವಿಶ್ವಾಸ ಹೊಂದಿ ನಿರ್ಭಯವಾಗಿ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ. ಪರೀಕ್ಷೆಯನ್ನು ಬರೆಯಲು ಸಶಕ್ತರಾಗುವುದು ಖಂಡಿತ ಎಂದು ಆಶಿಸಿದೆ.

ಈ ಅಭ್ಯಾಸ ಕೈಪಿಡಿ ಪ್ರಕಟಿಸಲು ಮುಖ್ಯ ಕಾರಣೀಭೂತರಾದ ಚಿಕ್ಕಬಳ್ಳಾಪುರ ಜಿಲ್ಲೆಯ ಮಾನ್ಯ ಜಿಲ್ಲಾ ಉಸ್ತುವರಿ ಸಚಿವರಿಗೆ, ಜಿಲ್ಲೆಯ ಎಲ್ಲಾ ಶಾಸಕರಿಗೆ ಮಾನ್ಯ ಜಿಲ್ಲಾ ಪಂಚಾಯತ್ ಅಧ್ಯಕ್ಷರು, ಉಪಾಧ್ಯಕ್ಷರು, ಸ್ಥಾಯಿ ಸಮಿತಿ ಅಧ್ಯಕ್ಷರು ಮತ್ತು ಎಲ್ಲಾ ಸದಸ್ಯರಿಗೆ ಹಾಗೂ ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು, ಮಾನ್ಯ ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಧಿಕಾರಿಗಳು, ಜಿಲ್ಲಾ ಪಂಚಾಯತ್ ಚಿಕ್ಕಬಳ್ಳಾಪುರ ಹಾಗೂ ಎ.ಸಿ.ಸಿ. ಕಂಪನಿ, ತೊಂಡೇಭಾವಿ, ಗೌರಿಬಿದನೂರು ತಾಲ್ಲೂಕು ರವರಿಗೂ ಗೌರವ ಪೂರ್ವಕ ವಂದನೆಗಳು. ನಿಧಾನ ಕಲಿಕೆಯ ವಿದ್ಯಾರ್ಥಿಗಳ ಏಳಿಗೆಗಾಗಿ ಮತ್ತು ಜಿಲ್ಲಾ ಗುಣಾತ್ಮಕ ಫಲಿತಾಂಶದ ಪ್ರಗತಿಗಾಗಿ ಅತ್ಯಂತ ಆಸಕ್ತಿಯಿಂದ ಈ ಅಭ್ಯಾಸ ಕೈಪಿಡಿಯನ್ನು ರಚಿಸಿದ ಜಿಲ್ಲೆಯ ಸಂಪನ್ಮೂಲ ಶಿಕ್ಷಕರ ತಂಡಕ್ಕೂ, ಮಕ್ಕಳ ಉತ್ತಮ ಕಲಿಕೆಗೆ ಸಹಾಯಕರಾಗಿರುವ ಜಿಲ್ಲೆಯ ಎಲ್ಲಾ ವಿಷಯ ಶಿಕ್ಷಕರಿಗೂ ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೂ ಜಿಲ್ಲೆಯ ಶೈಕ್ಷಮಿಕ ಸಲಹೆಗಾರರ ತಂಡವು ಧನ್ಯವಾದಗಳನ್ನು ಅರ್ಪಿಸುತ್ತದೆ.

<div align="right">

ಜಿಲ್ಲಾದಳಿತ, ಜಿಲ್ಲಾಪಂಚಾಯತ್
ಮತ್ತು ಸಾರ್ವಜನಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ
ಚಿಕ್ಕಬಳ್ಳಾಪುರ ಜಿಲ್ಲೆ.

</div>

ಸಹಕಾರ ಮತ್ತು ಮಾರ್ಗದರ್ಶಕರು

1) **ಶ್ರೀ ಕೆ.ಎಂ. ಜಯರಾಮರೆಡ್ಡಿ,** ಉಪನಿರ್ದೇಶಕರು, (ಆಡಳಿ) ಸಾ.ಶಿ.ಇ. ಚಿಕ್ಕಬಳ್ಳಾಪುರ

2) **ಶ್ರೀ ಎಸ್. ರಘುನಾಥರೆಡ್ಡಿ,** ಉಪನಿರ್ದೇಶಕರು, (ಅಭಿವೃದ್ಧಿ) ಸಾ.ಶಿ.ಇ. ಚಿಕ್ಕಬಳ್ಳಾಪುರ

3) **ಶ್ರೀ ಶಿವಲಿಂಗಯ್ಯ,,** ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು, ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ, ಚಿಕ್ಕಬಳ್ಳಾಪುರ

4) **ಶ್ರೀ ಟಿ.ಎಸ್. ಜಮೀರ್ ಪಾಷ,** ವಿಷಯ ಪರಿವೀಕ್ಷಕರು, ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ, ಚಿಕ್ಕಬಳ್ಳಾಪುರ

ಜಿಲ್ಲಾ ವಿಷಯವಾರು ಸಂಪನ್ಮೂಲ ಶಿಕ್ಷಕರ ಪಟ್ಟಿ

	ಶಿಕ್ಷಕರ ಹೆಸರು	ಶಾಲೆಯ ಹೆಸರು ಮತ್ತು ವಿಳಾಸ	ಮೊಬೈಲ್ ಸಂಖ್ಯೆ
1	ಬಾಲರಾಜು. ಎ	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಬಿ.ಬಿ. ರಸ್ತೆ, ಚಿಕ್ಕಬಳ್ಳಾಪುರ	9880952220
2	ಅನಿತ ಎ.ಆರ್.	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಪೆರೇಸಂದ್ರ, ಚಿಕ್ಕಬಳ್ಳಾಪುರ ತಾಲ್ಲೂಕು	8105107774
3	ನಳಿನಿ ಎಂ.ಆರ್.	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಪಲಿಚೆರ್ಲು, ಶಿಡ್ಲಘಟ್ಟ ತಾಲ್ಲೂಕು	9164675127
4	ಮಹಮ್ಮದ್ ಹಮೀದ್	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಪರಗೋಡು, ಬಾಗೇಪಲ್ಲಿ ತಾಲ್ಲೂಕು	9986002969
5	ಶ್ರೀನಿವಾಸ ಕೆ. ವಿ.	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಕಾನಗಮಾಕಲಪಲ್ಲಿ, ಬಾಗೇಪಲ್ಲಿ ತಾಲ್ಲೂಕು	9980630975
6	ಮೀರ. ಎಸ್	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಲಕ್ಷ್ಮೀದೇವನಕೋಟೆ, ಚಿಂತಾಮಣಿ ತಾಲ್ಲೂಕು	9972174909
7	ವೆಂಕಟೇಶ್.ವಿ	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಗೂಳೂರು, ಬಾಗೇಪಲ್ಲಿ ತಾಲ್ಲೂಕು	7899959696
8	ನವೀನ್ ಕುಮಾರ್. ಆರ್.ಯು.	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಅಲ್ಲೀಪುರ, ಗೌರಿಬಿದನೂರು ತಾಲ್ಲೂಕು	7760283155
9	ರಂಗಧಾಮಯ್ಯ ಆರ್.	ಆಚಾರ್ಯ ಪ್ರೌಢಶಾಲೆ, ಗೌರಿಬಿದನೂರು	9449467302
10	ಹರೀಶ್‌ರಾಜ್ ಅರಸ್	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಹಂಪಸಂದ್ರ, ಗುಡಿಬಂಡೆ ತಾಲ್ಲೂಕು	9742776229
11	ಎ.ಶ್ರೀನಿವಾಸ	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಸಾದಲಿ, ಶಿಡ್ಲಘಟ್ಟ ತಾಲ್ಲೂಕು	829681384
12	ಆಂಜಿನಪ್ಪ	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ವರ್ಲಕೊಂಡ, ಗುಡಿಬಂಡೆ ತಾಲ್ಲೂಕು	9731292259

CONTENTS

Chapter - 1

ACIDS, BASES and SALTS

I.

1) What are acids?
Acids are the substances which produce only H^+ ions in aqueous solution.
Example: HCl, H_2SO_4, HNO_3, CH_3COOH

2) What are Bases?
Substance which neutralizes acid and produce water and salt as a product are called Bases Which generates OH^- ions in water.
Example: $NaOH$, NH_4OH, $Ca(OH)_2$, $Mg(OH)_2$, KOH

3) What is acidic salt?
Substance formed when metallic ions displace hydrogen ion from acid are called acidic salt.

4) What is alkali?
Water soluble base which produces $OH^-_{(aq)}$ ions in water.

5) What is efflorescence?
The phenomenon in which a hydrated salt gradually loses the water of crystallization when exposed to air at room temperature is called efflorescence.

6) Explain pH value.
A scale for measuring hydrogen ion concentration is called pH scale. On the pH scale we can measure pH generally from 0 (very acidic) to 14(very alkaline). Higher the hydrogen ion concentration, lower the pH value. The pH of neutral solution is7. Value less than 7 on a pH scale represent the acidic solution. Value more than 7 on a pH scale represents basic solution it shows that OH^- ion concentration increasing.

7) Rain water conduct electricity but distilled water not. Why?
Salts dissolved in rain water so it conducts electricity.Distilled water is free from salts, so it does not conduct electricity.

8) What is olfactory indicators?
The smell of some substances will change in acidic and base medium. They are called Olfactory indicators.

9) What is neutralization reaction? Give example.
Acid and base react to give salt and water. The process is called neutralization reaction.
Acid + base $\rightarrow$ salt + water
$NaOH(aq) + HCl(aq) \rightarrow NaCl(aq) + H_2O$

10) Write the difference between strong acid and weak acid.

Acids which produce more H^+ ions are called strong acids and Acids which produce less H^+ ions are called weak acids.

II. **Answer the following :**

1. **Write the differences between acids and bases.**

acids	bases
• Sour in taste	• bitter in taste
• Converts blue litmus to red	• Converts red litmus to blue
• H^+ ions are common	• OH^- ions are common
• As concentration of acid increases, H^+ ions increases.	• As concentration of base increases, OH^- ions increases.
Eg : HCl, HNO_3, H_2SO_4	Eg : $NaOH$, $Ca(OH)_2$

2. **What is dilution?**

When the acid or base is mixed with water, the concentration of the ions in the unit size is decreases. This process is called dilution.

3. **Explain the imporazance of pH in daily life.**
 • Our body works in the pH range of 7.0 to 7.8.
 • Organisms can survive only a short range of pH changes.
 • When rain water pH is below 5.6 it is called acid rain.

4. **What are Antacids?**

People suffering from indigestion use bases. These are called Antacids. It neutralizes the excess acid in the stomach. Eg: Milk of magnesia (magnesium hydroxide)

5. **Describe the reaction of metal carbonates with acids.**

Metal carbonates react with acids to form metal salts, water and carbon dioxide.
$Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2$

6. **Which gas is released when the acid reacts with the metals? Write its equation.**

When the acid reacts with the metals, hydrogen gas is released and the metal salt is formed. $Zn + 2HCl \rightarrow ZnCl_2 + H_2$

7. **Mention the value of acid and base in measure of pH**

1 to 6.9 - acids,   7 - neutral, 7.1 - 14 base.

As the pH value decreases, the concentration of acids increases, and as the pH value increases, the concentrations of the bases increases.

**8.** **Explain hydronium ion (H_3O^+)**

Hydrogen ions are not solitary, but they exist in conjunction with water molecules. Therefore, hydrogen ions must always be expressed as H^+ (aq) or hydronium ion (H_3O^+).

9. Write some naturally occurring acids.

Natural source	acid	Natural source	acid
Vinegar	Acetic acid	Curd	Lactic acid
Orange	Citric acid	Lemon	Citric acid
Tamarind	Tartaric acid	Ant bite	Methonoic acid
Tomato	Oxalic acid	Nettle string	Methonoic acid

Diagrams :

10. **Draw the diagram of reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning.**
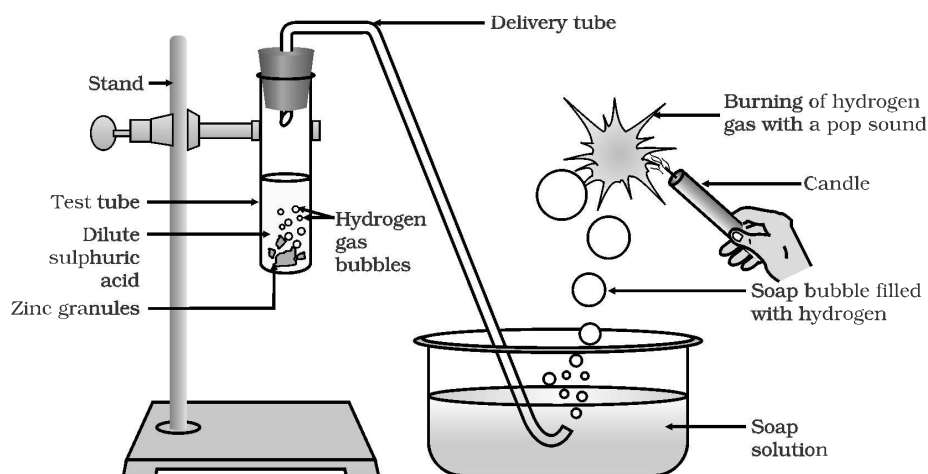
11. **Draw the diagram of Acid solution in water conduct electricity.**
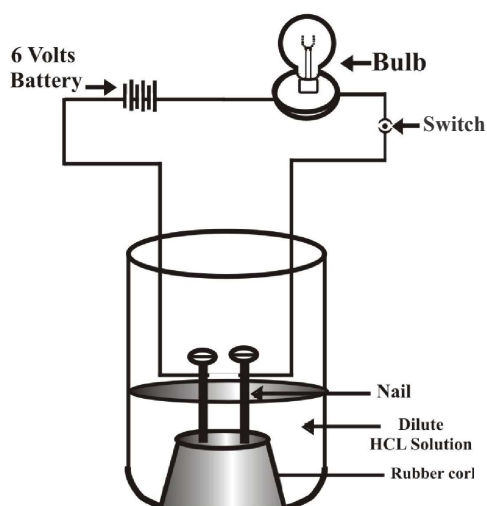
UNIT TEST

I. Answer the following by choosing correct option given below.   **1 X 3 = 3**

1. A gas evolved when dilute HCl reacts with sodium hydrogen carbonate is _____
      a) O_2 b) CO_2 c) NO_2 d)   CO

2. The range of pH for identification of a base is _____
      a)   7 - 14   b)   1 - 6   c)   7.1 - 14   d)   0 - 14

3. The pH of a sample of vegetable soup was found to be 3.5. This soup likely to taste _____
      a)   Sour   b)   Salt   c)   Sweet   d)   Bitter

II. Answer the following questions   **1 X 3 = 3**

4. Write a balanced chemical equation for the neutralization reaction.

5. Curd is not kept in copper and brass utensils, why?

6. What is the color of litmus in a solution of ammonium hydroxide?

III. Answer the following questions.   **2 X 2 = 4**

6. The pH of soil 'A' is 7.5, while that of soil 'B' is 4.5. Which of the two soils A or B should be treated with powdered chalk to adjust the pH and why?

7. 15 ml of water and 10 ml of sulphuric acid are to be mixed in a beaker
      a.   State the method that should be followed with reason.
      b.   What is this process called?

IV. Answer the following questions.   **2 X 3 = 6**

8. HCl and HNO_3 show acidic characteristics in aqueous solution while alcohol and glucose solutions do not. Give reasons

9.   a)   Why does aqueous solution of acid conduct electricity?
      b)   How does the concentration of H_3O^+ ions change when a solution of an acid is diluted?

10. pH has a great importance in our daily life. Explain by giving three examples.

V. Answer the following questions.   **1 X 4 = 4**

11. Five solutions A, B, C, D, and E showed pH as 4, 7,1, 11 and 9 respectively when tested with universal indicator. Which solution is?
      a.   Neutral,   b.   Strongly alkaline,
      c.   Strongly acidic,   d.   Weakly acidic,
      e.   Weakly alkaline.
   Arrange the pH in increasing order of H^+ ion concentration.

Chapter 2

Metals and Non-metals

I. One mark questions.   **1 Mark**

1. Name the metal and Non-metal that exist as liquid at room temperature.
A:– Liquid metal – mercury [Hg]
    Liquid Non-metal – Bromine [Br]

2. Give an example for good conductor of heat.
A:– Silver [Ag] and Copper [Cu]

3. Name two soft metals.
A:– 1. Sodium [Na]
    2. Potassium [K]

4. Name one Non-metal that has luster surface.
A:– Iodine [I]

5. Which gas is liberated when metals react with acids?
A:– Hydrogen [H_2]

6. Silver articles become black after some time when exposed to air. Give reason.
A:– Because silver reacts with sulpher in the air to form a layer of silver sulphide

7. What is meant by gangue?
A:– Impurities present in ore is called gangue.

8. What is meant by calcination?
A:– Heating powdered ore strongly in limited air is called as calcination.

9. What is meant by amalgam?
A:– An alloy with mercury as one of the constituents of metal.

II. Two mark questions.   **2 Mark**

1. List out any four Physical properties of metals.
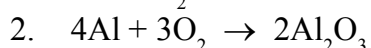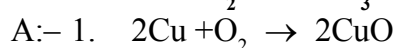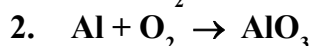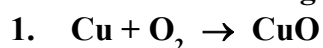A:– Physical properties of metals.
    (a) Metals have lustrous surface
    (b) Sonorous in nature
    (c) Metals are good in malleability and ductility.
    (d) Metals have high melting and boiling points.

**2. Balance the following chemical equation.**
    1. $Cu + O_2 \rightarrow CuO$
    2. $Al + O_2 \rightarrow AlO_3$
A:– 1. $2Cu + O_2 \rightarrow 2CuO$
    2. $4Al + 3O_2 \rightarrow 2Al_2O_3$

3. Calcium starts floating when reacts with water. Give reason with equation.

A:– Calcium starts floating because the bubbles of hydrogen gas formed stick to the surface of the metals.

$$Ca + H_2O \rightarrow Ca(OH)_2 + H_2\uparrow$$

4. Give reason.

  1. School bells are made of metals.

  2. Electric wires are made of copper.

A– 1. Metals are sonorous in nature.

  2. Copper is a good conductor of electricity

5. Copper and aluminum utensils are used for cooking. Why?

A– The above metals are good conductors of heat and have high melting point.

6. Whether any color change when iron nail is immersed in copper sulphate solution? If your answer is yes, Give reason.

A– Yes – There is a color change from blue to green in salt solution.

  Reason – In this chemical reaction iron displaces copper from copper sulphate solution

$$Fe + CuSO_4 \rightarrow Cu + FeSO_4$$

7. Arrange the below elements in according order based on reactivity series.

  (a) Sodium [Na]   (b) Zinc [Zn]   (c) Silver [Ag]

  (d) Iorn [Fe]   (e) Copper [Cu]   (f) Gold [Au]

A – **Au < Ag < Cu < Fe < Zn < Na**

8. Write any four precautionary measures to check rusting of iron.

A– (a) By painting   (b) oiling

  (c) greasing   (d) Galvanization

  (e) chromium plating   (f) Anodizing

9. Write chemical equation that show aluminum oxide reacts with acids and bases

A– 1. $Al_2O_3 + 6HCl \rightarrow 2AlCl_3 + 3H_2O$

  2. $Al_2O_3 + 2NaOH \rightarrow 2NaAlO_2 + H_2O$

10. Write the components of solder And Why solder is used for welding electrical wires together.

A– 1. Lead [Pb] tin [Sn] are the components of solder.

  2. Because solder has a low melting point

11. Differentiate between Roasting and Calcination.

Roasting	Calcination
• Heating ores strongly in the presence of excess air changed	• Heating ores strongly in limited air
• Sulphide ores are changed into oxides	• Carbonate ores are changed into oxides

1**2. What is meant by galvanisation?**

A Galvanisation is the process of applying a protective zinc coating to iron or steel.

13. Which is meant by thermite process? Write one application of thermite process.

Reaction of iron oxide with aluminium is highly exothermic result in molten iron.

$Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3 + Heat$
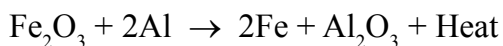
It is used to join railway or cracked machine parts.

14. Write the components and one use of the following.

(a) brass   **(b) bronze**

Brass : Copper and Zinc. It is used in utensils.

Bronze: Copper and tin. It is used in coins, metals, bells etc.,

Note : Ascending order of reactivity series of metals

$Au < Ag < Hg < Cu < H_2 < pb < Fe < Zn < Al < Mg < Ca < Na < K$

III. Three mark questions.   **3 Mark**

1. Give scientific reasons for the following

a) Sodium is kept immersed in kerosine

b) Aluminum oxide and zinc oxide are amphoteric

c) Aluminum utensils won't corrode oxides easily.

A– a)   Sodium reacts with air and water vigorously but not in kerosine.

b)   Aluminum and zinc oxides reacts with acids and bases give salt and water

c)   Aluminum with a thin layer of oxide prevents the metal from further oxidation

2. Name the following

1. Element that kept under kerosene

2. Liquid non-metal

3. Metal melts when it is on the palm

4. Metal which is poor conductor of heat

A– 1.   Sodium

2.   Bromine

3.   Gallium & Cesium

4.   Lead &Mercury

3. Write any three properties of ionic compounds.

A– Properties of ionic compounds

1.   Ionic compounds have high melting and boiling points.
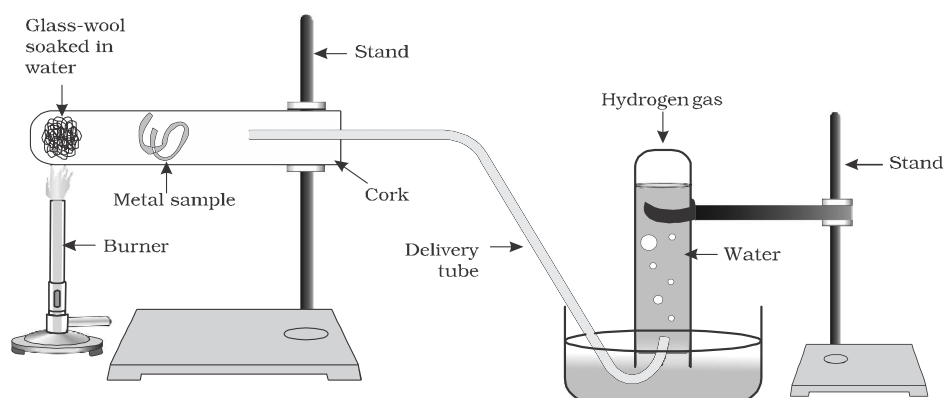
2.   It dissolves in water.

3.   Conducts electricity in aqueous solution.
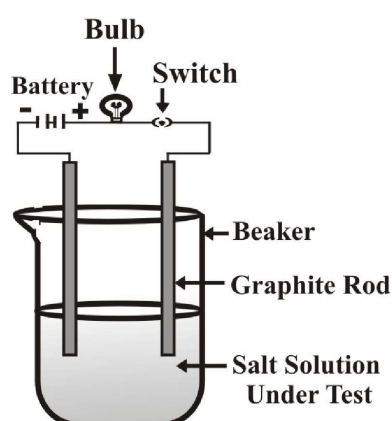
4.   Ionic compounds are in solid state.

Diagrams

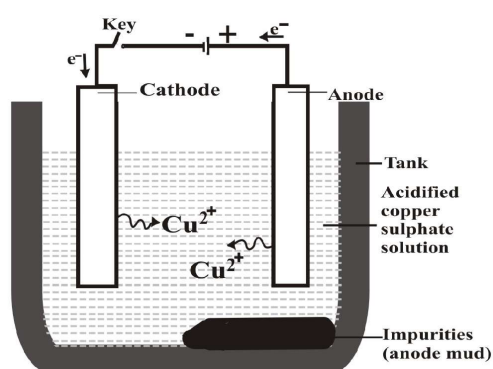1. Draw a diagram of "action of steam on a metal". (3 Marks)

Glass-wool soaked in water
Stand
Metal sample
Cork
Burner
Hydrogen gas
Stand
Delivery tube
Water

2. Draw a diagram that shows salt solution conduct electricity. (2 Marks)

Bulb
Battery
Switch
Beaker
Graphite Rod
Salt Solution Under Test

3. Draw a neat diagram of electrolytic refining of copper and label the parts (3 Marks)

Key
Cathode
Anode
Tank
Acidified copper sulphate solution
Cu^{2+}
Cu^{2+}
Impurities (anode mud)

UNIT TEST

I. Multiple choice questions.   **3 X 1 = 3**

1. An example of good conductor of heat.
    a) Iron   b) Graphite
    c) Lead   d) Silver

2. Gas liberated when metals reacts with acids.
    a) Hydrogen   b) Oxygen
    c) Carbon dioxide   d) all the above

3. Gangue means
    a) ore   b) essential material of the ore
    c) Impurities of the ore   d) None of these.

II. Answer the following in word or sentences.   **2 X 1 = 2**

4. What is meant by amalgam?

5. Name the Non-metal which has luster surface.

III. Answer the following in two/three sentences.   **4 X 2 = 8**

6. Calcium starts floating when reacts with water. Give reason with equation.

7. Give reason :
    a) School bells are made of metals.
    b) Electric wires are made of copper.

8. Write any precautionary measures to check the rusting of Iron.

9. Which are the components of solder? Why solder is used for welding electrical wires together?

IV. Answer the following :

10. Write any three properties of ionic components.   3

11. Draw a diagram of electrolytic refining of copper.   4

Chapter 3

Carbon and Its Compounds

I.   One mark questions.

1.   What is the main use of methane?
Fuel

2.   Name the two fules which methane is the main component?
Bio gas and compressed natural gas (CNG)

3.   List the unique properties of carbon.
   • Catenation
   • Tetra valiancy
   • Isomerism
   • Allotropism

4.   What is catenation?
Carbon has the unique ability to from bonds with other carbon atoms to form long chain molecules.

II.   Two marks questions :

5.   List the general properties of carbon.
   • They are covalent compounds
   • They are the weak conductors of electricity
   • They have low melting point and boiling point.

6.   Difference between saturated and unsaturated hydrocarbons

Saturated hydrocarbons	Unsaturated hydrocarbons
• Single bond is present between the carbon atoms	• Double or triple bond is present
• Less reactive	• More reactive
• Burns with clean flame	• Burns with sooty yellow flame
• Undergo substitution reaction	• Undergo addition reactions.

7.   Differentiate between soaps and detergents.

Soaps	Detergents
• Soaps are sodium or potassium salts of long chain carboxylic acids	• Detergents are sodium salts of long chain benzene sulphonic acids or ammonium sulphate
• Prepared from oils or fats	• Prepared from petroleum products
• Do not cleans well in hard water	• Cleans well in hard water
• Eco – friendly.	• Pollute soil and water.

8. **What is homologous series? Give example.**
Among the two respective hydrocarbons in the same series the difference is CH_2
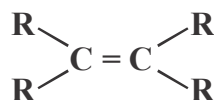EX: 1) Alkane series – CH_4, C_2H_6, C_3H_8, C_4H_{10}
    2) Alkene series – C_2H_4, C_3H_6, C_4H_8, C_4H_{10}
    3) Alkyne series – C_2H_2, C_3H_4, C_4H_6, C_5H_8
    4) Alcohol series – CH_3OH, C_2H_5OH, C_3H_7OH

9. **Explain the addition reactions with chemical reaction.**
Addition of hydrogen in the presence of nickel or palladium catalyst to unsaturated Hydrocarbon.

$$\begin{array}{c} R \\ \diagdown \\ R \diagup \end{array} C = C \begin{array}{c} \diagup R \\ \\ \diagdown R \end{array}$$

10. **What are oxidizing agents? Give examples.**
Some substances are capable of adding oxygen to others.
Ex. Alkaline potassium permanganate, acidified potassium dichromate.

11. **Generally vegetable oils are healthy. Give reason.**
Vegetable oils generally have long unsaturated carbon chains. The double or triple bond in unsaturated carbon chain is easily breakable. Therefore the food made with vegetable oils is easily digestable.

12. **Differentiate between oils and facts**

Oils	Fats
• Contains unsaturated fatty acids	• Contains saturated fatty acids
• easily digestable	• Slowly digestable
• Good for health	• Not good
• Usually liquid at room temperature	• Usually solid at room temperature

13. **Write the molecular formula and structural formula of the hydrocarbon having 3 carbon atoms and general formula C_nH_{2n}.**
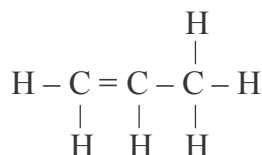General Formula $= C_nH_{2n}$
number of carbon atoms $= n = 3$
$$= C_3H_{2(3)}$$
$= C_3H_6$ - propene
Structural formula

$$\begin{array}{ccccc} & & & H & \\ & & & | & \\ H - C & = & C & - C & - H \\ | & & | & | & \\ H & & H & H & \end{array}$$

III. Three marks questions :

1. Which is the first member of hydrocarbons? Explain its structure with the help of electron dot structure.
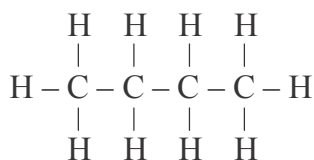
Methane;

Molecular formula of methane is CH_4. Carbon is a tetravalent (4) element, it has 4 unpaired valence electrons in its outer most shell. valence of hydrogen is 1. 4 valence electrons of carbon are paired with 4 electrons of hydrogen try to attain the configuration of insert gases. A covalent bond is formed between carbon and hydrogen by sharing a pair of electrons.
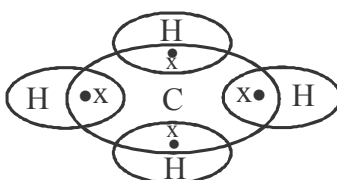
Electron dot structure of methane.

2. What are structural isomers? Explain with examples.

Same molecular formula but different structural formula. n- butane and Iso butane are structural isomers. Both have same molecular formula i.e. C_4H_{10}. But n- butane have straight chain structure and Isobutane has branched chain structure.
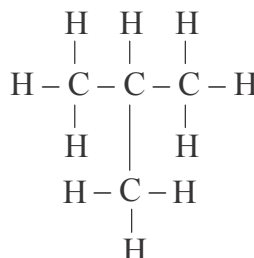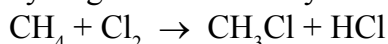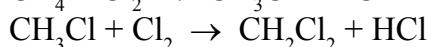

n-Butane (C_4H_{10})   Isobutane (C_4H_{10})

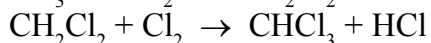**3. "Chlorine replaces the hydrogen atoms one by one in methane". Explain with chemical reactions.**

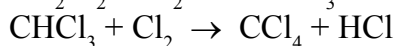In the presence of sunlight chlorine is added to methane (hydrocarbon) Which replaces hydrogen atoms one by one.

$CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$ Methyl chloride
$CH_3Cl + Cl_2 \rightarrow CH_2Cl_2 + HCl$ Methyl dichloride
$CH_2Cl_2 + Cl_2 \rightarrow CHCl_3 + HCl$ Methyl tri chloride (chloroform)
$CHCl_3 + Cl_2 \rightarrow CCl_4 + HCl$ carbon tetra chloride.

4. Explain the method of naming a carbon compound propanone.

1) Propanone is a 3 carbon atom containing hydrocarbon therefore its name starts with propane.

2) Ketone functional group is in propanone compound. Therefore it has suffix 'one'.

3) The suffix 'one' is in the functional group ketone it begins with a , e, i, o, u, then the name of the carbon chain is modified by deleting the final 'e' and adding the appropriate suffix

∴ Propane – e = Propan + one

= Propanone

5. Differentiate between alkane, alkene and alkyne.

Property	Alkane	Alkene	Alkyne
• suffix	ane	ene	yne
• General formula	C_nH_{2n+2}	C_nH_{2n}	C_nH_{2n-2}
• Covalent Bond	Single	Double	Triple
• reactivity	Less saturated	High unsaturated	High unsaturated

IV. Four marks Questions :

1. Write the molecular formula and the structural formula of the saturated hydrocarbon having 4 carbon atoms. Write the molecular formula of the two succeeding members of the series. Examine whether they are in homologous series? Give reasons.
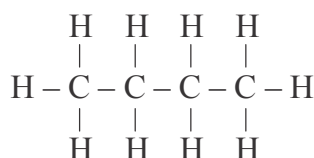
Saturated hydrocarbon = Alkane = ane

4 carbon atoms = but

name = but + ane

= butane

Molecular formula of butane = C_4H_{10}

Structural formula of butane:-

$$\begin{array}{ccccccc} & H & H & H & H \\ & | & | & | & | \\ H- & C- & C- & C- & C- & H \\ & | & | & | & | \\ & H & H & H & H \end{array}$$

Succeeding members of the series

- pentane, hexane

Molecular formula of pentane → C_5H_{12}

Molecular formula of hexane → C_6H_{14}

Series →   Butane,   pentane,   hexane

C_4H_{10} C_5H_{12} C_6H_{14}

Difference → CH_2 CH_2

This is a homologous series, because the difference between the two successive hydrocarbon is CH_2.

V. Five Mark Questions :

1. **Write the name of the saturated hydrocarbon having 6 carbon atoms. Write the three types of chains of this hydro carbon. Write their names and structural formula clarify whether they are structural isomers or not?**

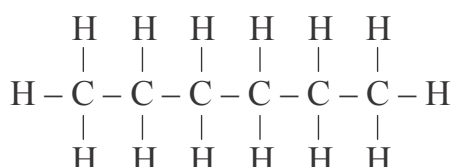Saturated = Alkane = ane

6 carbon = Hex

Name = Hex + ane

= Hexane
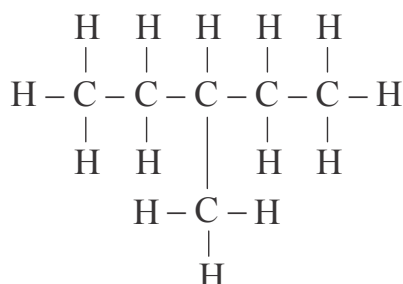
Molecular formula of hexane = C_6H_{14}

3 types of chains
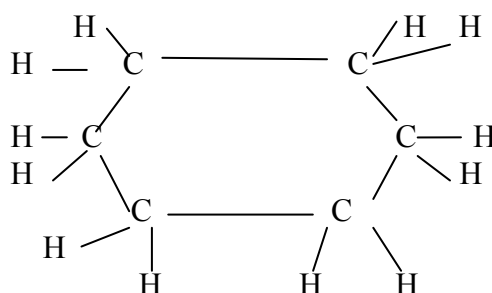
1) Straight chain

   n- Hexane (C_6H_{14})

$$H - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - H$$

2) Branched chain

   iso hexane (C_6H_{14})

$$H - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{|}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - H$$

$$H - \underset{\underset{H}{|}}{C} - H$$

3) Ring (branched) chain;
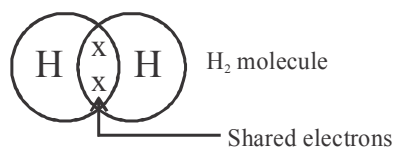   cyclo hexane (C_6H_{12})

Among these n – hexane and iso hexane are structural isomers. Because they have same molecular formula (C_6H_{14}) but different structural formula.
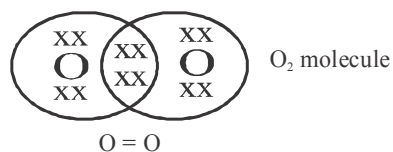
Whereas cyclohexane is not a structural isomer of hexane because it has different molecular formula and structural formula.
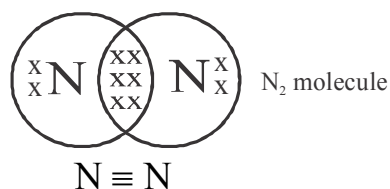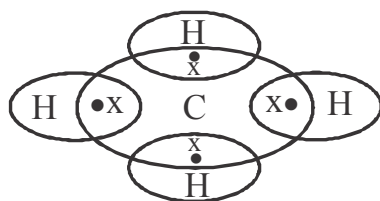
Electron dot structures
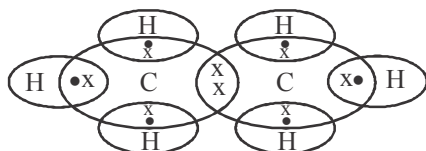
1. **Hydrogen molecule (H_2)**

2. **Oxygen molecule (O_2)**

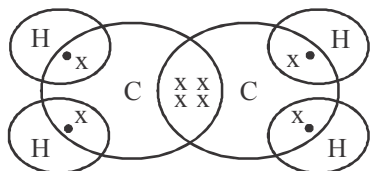3. **Nitrogen molecule (N_2)**

4. **Methane (CH_4)**

5. **Ethane (C_2H_6)**

6. **Ethene (C_2H_4)**

Easy method of writing molecular formula and structural formula of alkanes, alkenes, and alkynes

Table - 1

Number of carbon atoms	First word prefix
1	Meth
2	Eth
3	Prop
4	But
5	Pent
6	Hex

Table - 2

General Formula	Bonds
• Alkane – ane – C_nH_{2n+2}	• Alkane – ane – single bond (–)
• Alkene – ene – C_nH_{2n}	• Alkene – ene – double bond (=)
• Alkyne – yne – C_nH_{2n-2}	• Alkyne – yne – triple bond ($\equiv$)

by using these 2 tables we can easily write the molecular formula and structural formula of alkanes, alkenes and alkynes.

1) **Example 1 - Ethane**

Ethane = Eth + ane

Eth = n= 2

G. F of ane = C_nH_{2n+2} n= 2

$\qquad = C_2H_{2(2)+2}$

$\qquad = C_2H_{4+2}$

M.F of ethane = C_2H_6

Structural formula dof ethane
$$H - \overset{\overset{\displaystyle H}{|}}{\underset{\underset{\displaystyle H}{|}}{C}} - \overset{\overset{\displaystyle H}{|}}{\underset{\underset{\displaystyle H}{|}}{C}} - H$$
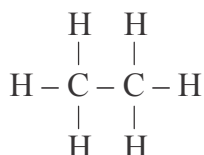
2) **Example - 2 : Propene**

Propene = Prop + ene

Prop = n = 3

G . F of ene = C_nH_{2n}

$= C_3H_{2(3)}$ (n = 3)

M.F of propene = C_3H_6

Ene = Double bond (=)

Structural formula of propene

$$H - C = C - \overset{\displaystyle \overset{H}{|}}{C} - H$$
$$\quad\;\; |\quad\; |\quad\; |$$
$$\quad\;\; H\quad H\quad H$$
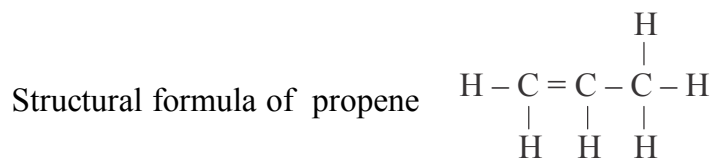
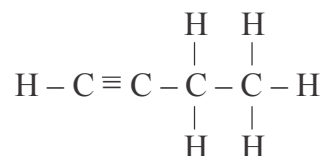3) **Example - 3 : Butyne**

Butyne = But + yne

But = n = 4

G. F. of yne = C_nH_{2n-2}

$\qquad\qquad = C_4H_{2(4)-2}$

$\qquad\qquad = C_4H_{8-2}$

$\qquad\qquad = C_4H_6$

yne = triple bond ($\equiv$)

Structural formula of Butyne

$$\qquad\qquad H\quad H$$
$$\qquad\qquad |\quad\; |$$
$$H - C \equiv C - C - C - H$$
$$\qquad\qquad |\quad\; |$$
$$\qquad\qquad H\quad H$$

Write the structural formula of the following :

1. **Benzene → C_6H_6**
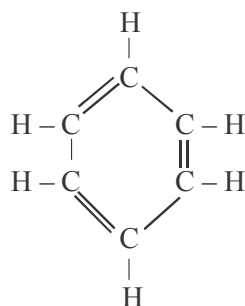
2. **Chloro Propane → C_3H_7Cl**

$$H\quad H\quad H$$
$$|\quad\; |\quad\; |$$
$$H - C - C - C - Cl$$
$$|\quad\; |\quad\; |$$
$$H\quad H\quad H$$

3. **Bromo propane → C_3H_7Br**

$$H\quad H\quad H$$
$$|\quad\; |\quad\; |$$
$$H - C - C - C - Br$$
$$|\quad\; |\quad\; |$$
$$H\quad H\quad H$$

4. Pentane → C_5H_{12}

$$\begin{array}{ccccccccc} & H & & H & & H & & H & & H \\ & | & & | & & | & & | & & | \\ H - & C & - & C & - & C & - & C & - & C & - H \\ & | & & | & & | & & | & & | \\ & H & & H & & H & & H & & H \end{array}$$
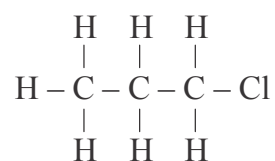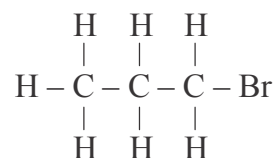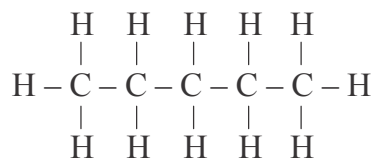
Remember :

1. **General Formula (G.F)**

Sl. No.	Compounds	G.F.
1	Alkane	C_nH_{2n+2}
2	Alkene	C_nH_{2n}
3	Alkyne	C_nH_{2n-2}
4	Alkanol	$C_nH_{2n+1}OH$
5	Benzene	C_nH_n

2. **Functional Group**

	Functional group	Suffix	Example
1	Alcohol – OH	ol	propenol
2	Aldehyde – CHO	al	propenal
3	Ketone – CO	one	propenone
4	Carboxylic acid – COOH	oic acid	propenoic acid

3. **Names of alkane, alkene and alkynes.**

No. of carbon atoms	Root word	Alkane		Alkene		Alkyne	
		Suffix	Name	Suffix	Name	Suffix	Name
1	Meth	ane	methane CH_4	–	–	–	–
2	Eth	ane	Ethane C_2H_6	ene	Ethene C_2H_4	yne	Ethyne C_2H_2
3	Prop	ane	Propane C_3H_8	ene	Propene C_3H_6	yne	Propyne C_3H_4
4	But	ane	Butane C_4H_{10}	ene	Butene C_4H_8	yne	Butyne C_4H_6
5	Pent	ane	Pentane C_5H_{12}	ene	Pentene C_5H_{10}	yne	Pentyne C_5H_8
6	Hex	ane	Hexane C_6H_{14}	ene	Hexene C_6H_{12}	yne	Hexyne C_6H_{10}

UNIT TEST

I. Choose the correct answer :   **[2 x 1 = 2]**

1. The Compound formed when three hydrogen atoms are replaced by chlorine atoms from methane are _____.
    A) Chloroform   C) Carbon tetrachloride
    B) DDT   D) Methanol
2. The ratio of carbon and hydrogen atoms is alkenes are _____.
    A) 1:1   C) 1:3
    B) 1:2   D) 2:1

II. Answer the following :   **[2 x 1 = 2]**

3. What is esterification?
4. Name the functional group present in the following hydrocarbon

    A) Propenal
    B) Propenone

III. Answer the following :   **[2 x 2 = 4]**

5. Write electron dot structure for nitrogen molecule (N_2).
6. Write the molecule formula and structural formula for benzene.

IV. Answer the following :   **[3 x 1 = 3]**

7. Differentiate between saturated and unsaturated hydrocarbons. Give examples

V. Answer the following :   **[4 x 1 = 4]**

8. Explain addition and substitution reactions with the help of an Example. C_2H_4 under goes addition reaction but not substitution.

VI. Answer the following :   **[5 x 1 = 5]**

9. Write the molecular formula and structural formula of the saturated Hydrocarbon having 4 carbon atoms. Write the branched and ring Structure of the same. Classify whether these three are structural Isomers?

Chapter 4

Periodic Classification of Elements

I. One mark questions.

1. Define dobereiner's law of triads.
Triads were written in the order of increasing atomic masses. The atomic mass of the middle element was approximately average equal to the atomic masses of the other two elements. A, B, C are triads. The average mass of A and C are roughly equal to

atomic mass of B = $\dfrac{A+C}{2}$

2. Define Newland's law of octaves.
When elements are arranged in an increasing order of their atomic mass the first element resembles the eighth element in its chemical properties.

3. Define Mendeleev's law of periodic table
The properties of elements are the periodic function of their "atomic masses".

4. Define Modern periodic law.
The properties of elements are the periodic functions of their "atomic numbers".

5. Name the group of inert gases.
Group 18.

6. What are periods and groups?
In a periodic table the horizontal rows are called periods and the vertical columns are called groups. There are 7 periods and 18 groups.

7. Compare whether the dobereiner's triads are there in the New land's octaves. If there name the traid.
Yes. Dobereiner's triads are present in the new land's octaves. They are Li, Na and K.

8. Why the f – block elements are kept separately in periodic table?
F' block elements have more horizontal or periodical similarities than the group so they are kept separately in the periodic table.

II. Two mark questions :

9. Write the limitations of Dobereiner's classification
It is possible to group a few elements in a group called triads. It is not possible for all the elements.

10. What are the limitations of Newland's law of octaves.
   •   Newland's law of octaves is applicable till calcium, after calcium this law ia not applicable.

- Newland discovered only 56 elements. No element would be discovered in the future. But when they discovered they do not follow law of octaves.
- To adjust the new elements in to this periodic table, but also some unlike elements were kept in the same column.

11. What are metalloids? Given an example

Some elements show characters of both metals as well as nonmetals those are called metalloids. E.g. Silicon, Germanium.

12. Explain the speciality of 18 group elements? Give example.

18 group elements are Nobel gases. They are very less reactive and zero valency E.g. Ne, Ar, Kr, Xe, Rn.

13. Define a) Atomic Radius b) Ionization energy

Atomic radius :- The distance between the center of the nucleus and the outermost shell of the atom.

Ionization Energy :- Energy required to remove a single electron from the outermost shell of an isolated atom.

14. Name the two elements which has similar properties of chlorine. Give reason.

Fluorine and bromine. These have same number of valency electrons as chlorine.

III. 3 marks Questions

15. In a modern periodic table how the properties of elements vary along the period and down the group.

Properties	Across a period	Down the group
1) Atomic Radius	Decreases	Increases
2) Ionization energy	Increases	Decreases
3) Metallic nature	Decreases	Increases
4) Nonmetallic nature	Increases	Decreases
5) Electro positivity	Decreases	Increases
6) Electro negativity	Increases	Decreases

16. Write the electronic configuration of given elements and mention the group period and block.

Sl.no	Element	Electronic configuration	Block	Period	Group
1	$_6C^{12}$	$1s^2 2S^2 2P^2$	P	2	14
2	$_{18}Ar^{36}$	$1s^2 2S^2 2P^6 3S^2 3P^6$	P	3	18
3	$_{21}SC^{45}$	$1s^2 2S^2 2P^6 3S^2 3P^6 4S^2 3d^1$	d	4	3
4	$_{20}Ca^{40}$	$1s^2 2S^2 2P^6 3S^2 3P^6 4S^2$	S	4	2

17. To Remember periods and groups elements

S Block – $1S^1$ – 1 Period, 1 group S- block

$1S^2$ – 1 Period, 2 group S- block

P Block – P^1 – 13 group (2+ 10 + 1) = 13

P – block

1	Electronic configuration	$2P^1$ (12+1)	$3P^2$ (12+2)	$3P^3$ (12+3)	$4P^4$ (12+4)	$5P^5$ (12+5)	$6P^6$ (12+6)
2	Group	13	14	15	16	17	18
3	Period	2	3	3	4	5	6
4	Block	P	P	P	P	P	P

IV. 4 Marks Question

18. A part of the periodic table has been shown below complete the Question Table.

Group → Period ↓	1	2	13	14	15	16	17	18
1								
2	A	C		D			E	
3	B						F	G

a) **Which is the noble gas?**

G

b) **Which is the more electro-negative element? Why?**

E. Because along the period electro negativity increases and down the group decreases.

c) **Write the electronic configuration of D.**

$1S^2$ $2S^2$ $2P^2$

19. What are the achievements and limitations of Mendeleev's periodic table?

Achievements :

- Mendeleev left some gaps in his periodic table for newly discovered elements.
- After the discovery of noble gages they could be placed in a new group without distrubring the existing order.
- Elements having similar properties were kept in the same group.

Limitations :

- No fixed position can be given to hydrogen in the periodic table.
- Isotopes of all elements posed a challenge to Mendeleev's periodic law.
- The atomic masses do not increase in a regular manner.

UNIT TEST

I. Answer the following questions by choosing correct answer :   [1 x 3 = 3]

1. Electronic configuration of an element 'x' is 2.8.1 and for 'Y' 2.8.7 then mention the bond existing between 2 elements.
    a) Covalent bond   b) Ionic bond
    c) Hydrogen bond   d) Metallic bond

2. Identify the element in a 2nd period and 14th group with valency 4.
    a) Carbon –C   b) Silicon – Si
    c) Boron – B   d) Fluorine – F

3. Modern periodic law state that "the properties of elements are the periodic function of their _____.
    a) Atomic number   b) Atomic mass
    c) Valiancy   d) Atomic radius

II. Answer the following Questions :   [1 x 3 = 3]

4. Define Newlands law of octaves.
5. Name the group of hydrogen.
6. Define Dobereiner's law of triads

III. Answer the following Questions :   [2 x 2 = 4]

7. Give reason why helium kept in 'p' Block.
8. What are metalloids? Give example.

IV. Answer the following Questions :   [2 x 3 = 6]

9. In a Modern periodic table how the ionization energy, metallic nature and atomic radius vary?

10. $_6C^{12}$, $_{20}Ca^{40}$, $_{21}SC^{45}$ Write the Electronic configuration of given elements and mention the group period and block.

V. Answer the following Questions :   [1 x 4 = 4]

11. A part of the periodic table has been shown below

Group → Period ↓	1	2	13	14	15	16	17	18
1	A							
2					D			B
3	C			E				

Answer the following questions on the basis of position of elements in the above table.

12. Name the elements which do not have neutron?
13. Name the alkali metal.
14. Identify the Nobel gas.
15. Write the electronic configuration of element 'E'.

Chapter - 5

LIFE PROCESS

I. Define

1. Transpiration : loss of water through aerial parts of the plant body.

2. Translocation: The process of movement of materials from leaves to all the other parts of the plant body.

3. Nephron : The structural and functional unit of excretory system.

4. Excretion : Removal of unwanted waste materials from the body.

II. One mark questions.

1. What is the function of valves in human heart?
Valves prevents backward flow of blood.

2. Why more oxygen is supplied in birds and mammals?
In mammals and birds there is complete separation of oxygenated and deoxygenated blood hence more oxygen is supplied.

3. Name the device which is used to measure blood pressure.
Spigmomonometer.

4. The colourless fluid which resembles blood?
Lymph.

5. Name the treatment given to kidney failure patients to remove nitrogenous waste products.
Dialysis.

III. Two marks questions.

1. What is double circulation? Mention its types?
For one complete circulation blood reaches twices the heart is called double circulation.
Types:
(i) Pulmonary circulation.
(ii) Systemic circulation.

2. Differentiate between arteries and veins.

Arteries	Veins
1. Supplies blood from heart to different parts of the body 2. Arteries have thick wall	1. Supplies blood from different parts of the body to heart 2. Veins have thin wall.

3. Differentiate between blood and lymph.

Blood	Lymph
1. Red in colour, contain RBC, WBC and platelets	1. The colourless fluid which resembles blood.
2. Supplies nutrients to cells of our body	2. Produces antibodies to fight against diseases.

IV. 3 marks questions.

1. How do plants excrete wastes materials.
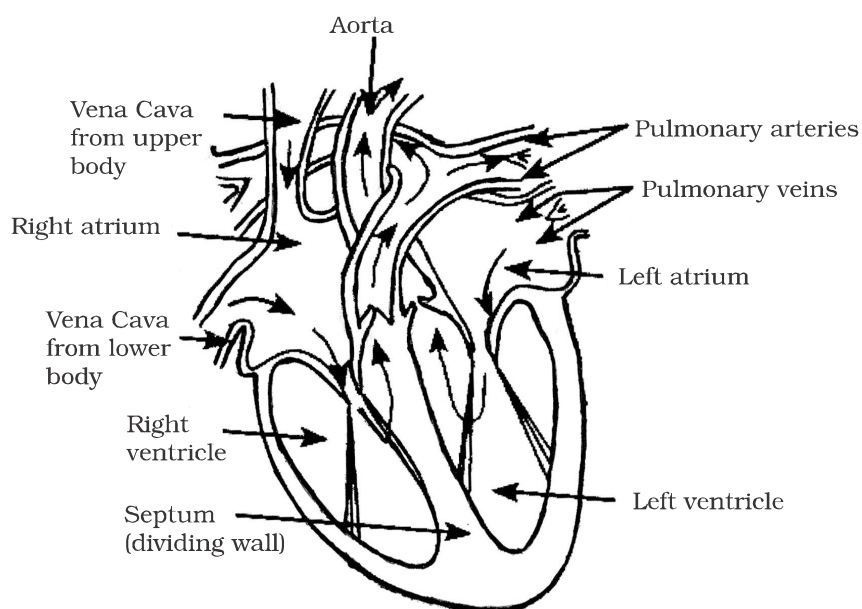   (i) Collects wastes and dispose it from leaves.
   (ii) Removes waste from bark or epidermis
   (iii) From old xylem in the form of resins and gums.
   (iv) Removes wastes from roots.
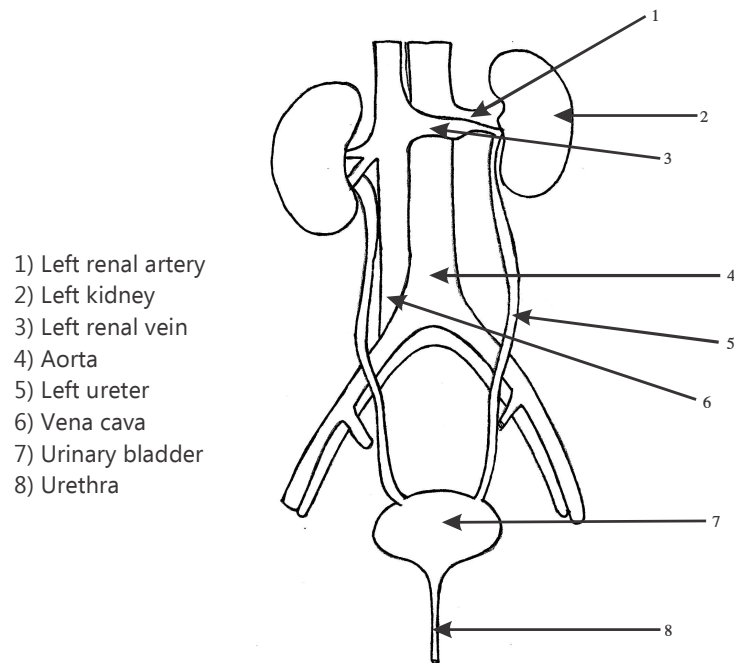
2. Explain the functions of constituent of plasma?
   (i) Red blood cells (RBC):- Supplies oxygen to the cells.
   (ii) White blood cells (WBC):- poducess antibodies to fight against diseases.
   (iii) Platelets:- Helps in clotting of blood.
   (iv) Plasm Facilitates the movement of materials.

V. Diagrams to practice.
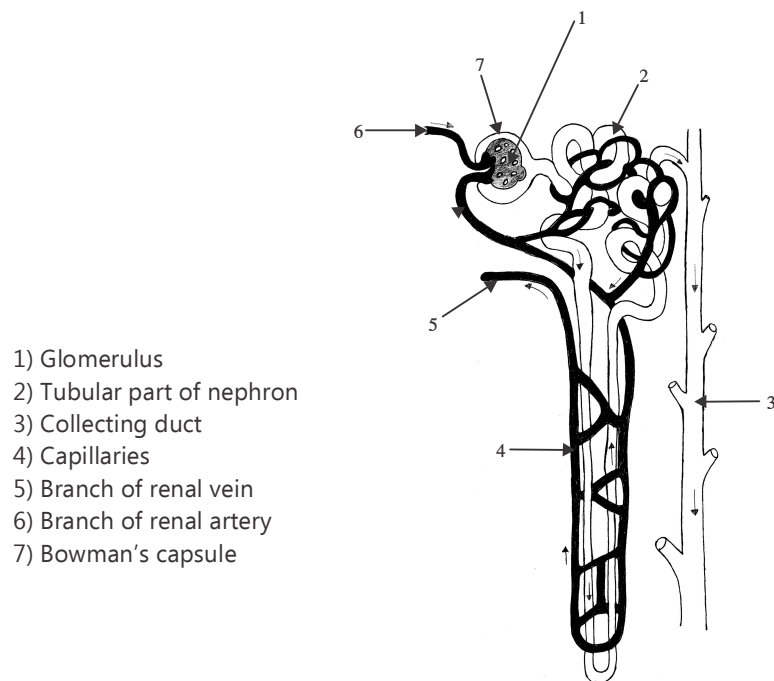
1. Vertical section of human heart.

2. Human excretory system

1) Left renal artery
2) Left kidney
3) Left renal vein
4) Aorta
5) Left ureter
6) Vena cava
7) Urinary bladder
8) Urethra

3. Nephron.

1) Glomerulus
2) Tubular part of nephron
3) Collecting duct
4) Capillaries
5) Branch of renal vein
6) Branch of renal artery
7) Bowman's capsule

UNIT TEST

Max marks [20]

I. **Choose the correct answer.**   **2 x 1 = 2**
1. The colorless fluid which resembles blood.
    a) Blood   b) lymph
    c) plasma   d) RBC
2. The process of removal of nitrogenous wastes from the body.
    a) Transpiration   b) excretion
    c) Translocation   d) photosynthesis

II. **One marks questions.**   **5 x 1 = 5**
3. What is translocation?
4. What are the functions of valves?
5. Name different types if blood cells.
6. Name the treatment given to the patients in case of kidney failure.
7. How many chambered heart is present in fishes?

III. **Two marks questions.**   **3 x 2 = 6**
8. What is double circulation? Mention its types?
9. Differentiate between arteries and veins?
10. How plants excrete, waste products.

IV. **3 marks questions.**   **1 x 3 = 3**
11. Explain the functions of constituents of Blood.

V. **4 marks questions.**   **1 x 4 = 4**
12. Draw a neat labeled diagram of vertical section of human heart.

Chapter - 6

CONTROL AND CO ORDINATION

I. **Define the following:**
1) **Reflex action:** A spontaneous involuntary response to a stimulus.
2) **Reflex arc:** Nerve path involved in the reflex action.
3) **Coordination:** Many organs in the body working together in a systematic way.
4) **Irritability:** The capacity of an organism to respond to a stimulus (environmental change)

5) Hormone:(Chemical messenger)
Chemicals secreted by the specialised cells of the body that diffuse to a distant target organ in the body and control the specified function there.

II. Answer the following questions (One mark Question)

6) Name the two systems that are responsible for Control and coordination in animals.
1) Nervous system   2) Endocrine glands.

7) What is the importance of control and coordination in organisms?
Living organisms must use systems providing control and coordination to detect the stimuli from the environment and respond properly to them in order to survive safely and conveniently.

8) Which is the functional unit of nervous system?
Neuron or Nerve cell.

9) What is a gland?
Gland is a cell or organ specialized for the function of secretion.

10) What are receptors?
The specialized tips of the nerve cells located in the sense organs, that can detect some specified stimulus or information from the environment.

11) What is synapse?
The functional junction between the two neurons is called synapse.

12) Write the components of central nervous system.
Brain and Spinal cord.

13) Write the components of peripheral nervous system.
12 pairs of cranial nerves and 31 pairs of spinal nerves.

14) Which are the three major parts of human brain?
a) Forebrain   b) Mid brain   c) Hind brain.

15) Which is the main coordinating centre of the body?
Brain is the main coordinating centre.

16) Which is the controlling centre of reflex actions?
Spinal cord.

17) Which are the factors of chemical coordination in plants?
Plant hormones or Phyto hormones.

18) Mention the two types of movements that occur in the plants?
Growth dependent tropic movements.
Nastic movements which are independent of growth.

19) Which hormone is considered as 'personality hormone'?
Thyroxine is considered as personality hormone.

III. Two mark questions.

20) Differentiate between tropic movements and mastic movements that occur in plants. Give an example for each.

Tropic movements	Nastic movements
These are growth dependent, directional movements towards or away from a specific stimulus The phyto hormones assist the tropic movements Ex: Geotropism Where roots grow towards gravity	These are the undirectional and growth independent movements. Plant cells change their shape by changing the amount of water. Ex: Folding of the leaves of the touch sensitive plant in response to touch.

21) Use of iodized salt in diet is recommended. Give scientific reason.
* Iodine is essential nutrient for the thyroid gland to synthesize thyroxine.
* In case of iodine deficiency we might suffer from goiter disease symptomised by swollen neck or enlarged thyroid gland in order to increase its secretion.

22) How does the walking action differ from a jerking movement of foot when stepped on the thorn?
Walking: It is the voluntary movement
Controlled by brain.
Jerking movement of foot when stopped on the thorn
→ It is a reflex action.
→ It is controlled by spinal cord.

23) How does the adrenaline hormone prepare the body to deal with emergency (scary) situations.
* In the scary situation of the body adrenal gland secrets more adrenaline hormone into the blood.
* The adrenaline is carried to different parts of the body. Increases heart beat, breathing rate and enables more oxygen supply to the muscles, to make immediate necessary action. So it is called agency hormone.

24) Mention about the two disorders related with secretion of growth hormone from pituitary gland.
1) Dwarfism: Occur due to deficiency of growth hormone in childhood symptomised by stunted growth.
2) Gigantism: Occur due to over secretion of growth hormone in childhood symptomised by giant growth of the body.

IV. Three mark questions.

25) How do the nervous system and endocrine glands differ from each other regarding control and coordination in animals.

Nervous system	Endocrine Glands
The messages are transmitted in the form of electric impulses through neurons to the target organs	The messages are transmitted in the chemical form that is hormone through the blood to the target organs.
Transmission of message is fast and quick response is possible	Transmission of message is slow and the response is slow usually.
The effect is temporary and occur only in the cells which are connected.	The effect is specific and of long term and occur in all the cells of target organs.

26) How does the secretion of hormones regulated? Explain with an example.
   *   The secretion of hormones is regulated by the feedback mechanism.
   *   For example the rise of sugar level in the blood stimulates the pancreas to secrete insulin. And
   *   When the blood sugar level falls insulin secretion is reduced.

27) A person has been treated by injecting insulin. Which disease he is suffering from? Mention its symptoms.
   *   The person suffering from diabetes.
   *   Due to lower secretion of insulin, the blood sugar level in the body is not regulated.
   *   And hence high sugar levels in blood and urine occur. He also suffers from frequent urination, Thirst, sweating and weakness.

V. Answer the following questions (Four mark Question)

28) Write about any four kinds of tropic movements that occur in plants.
   (Tropism =means growth related movement)
   **1) Phototropism**
      *   Tropic movements or plants in response to the light stimulus
      *   Stems grow towards light where as roots away from the light (negatively phototropic)
   2) Geotropism : Tropic movements of plants to the stimulus of gravity. Stems negatively geotropic roots positively geotropic (towards gravity)
   **3) Chemotropism :** Tropic movements of plants to the stimulus of Chemicals development of pollen tubes towards the ovules.
   4) Hydrotropism : Tropic movements of plants to the stimulus of water. Roots grow towards water (positive hydrotropism)
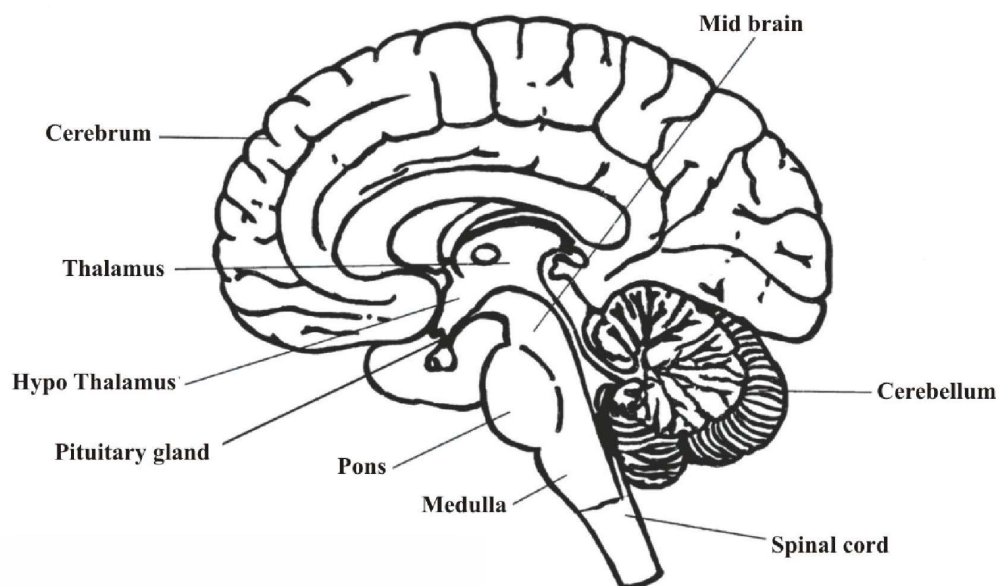
29) A) Draw the neat diagram of neuron and label the parts.
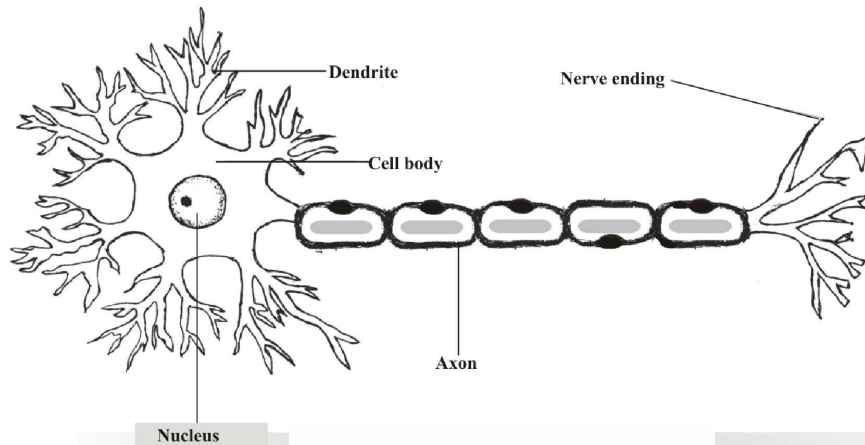
B) Write the path of nerve impulses in the neuron.

Stimulus

Dendrite → Cell body → Axon → Nerve ending → Synapse
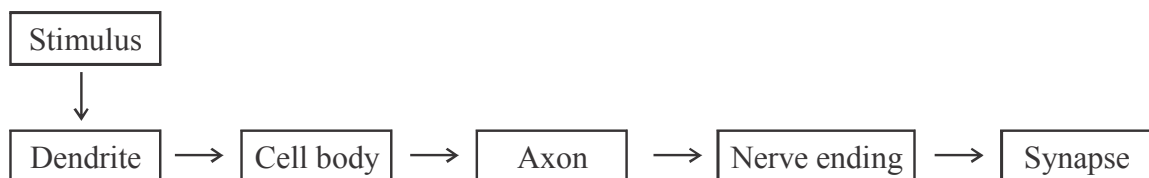
30) Draw the sectional view of Human brain and label the parts.

VI. Five mark questions.

30) A person has pulled back his hand immediately when he touches a hot cup. Write the stages involved in this reflex action.

The five stages or aspects involved in this reflex action are :

1) **Receptor:** In the skin (sense organ) grasps the stimulus of heat.
2) **Sensory nerve:** transmits the stimulus from receptor to relay neuron in the spinal cord.
3) **Relay Neuron :** Analyses the stimulus and indicates the appropriate response.
4) **Motor Neuron :** Transmits the response from relay neuron to effectors/muscle.
5) **Effectors:** Performs the response or (muscle) essential action (pulling hand backward)

1. Important parts of brain and their Functions.

Parts of the brain	Function
Forebrain a) Cerebrum b) Hypothalamus	 Memory,reasoning, judgment, controls the voluntary responses. Controls sleep Appetite Water balance Body temperature and food
Midbrain	Relay station of nerve impulses between from forebrain and hind brain
Hindbrain a) Cerebellum b) Medulla c) Pons	 Procession of voluntary actions like bicycle riding and maintenance of body posture and equilibrium Controls involuntary functions such as breathing, heartbeat, blood pressure, salivation vomiting, swallowing etc. Controls of Mastication Facial expression and respiration.

2. Important plant hormones and their functions.

Plant hormones	Functions
Growth promoters Auxins	 Stimulates cells to grow faster
Gibberellins	Helps in the growth of the stem
Cytokines	Promotes cell division mainly in fruits & seeds
Growth Inhibitors Abscisic acid	 Inhibits growth and induces wilting of leaves

3. **The sens organs of human beings and special receptors in them**

Sense organ	Specified receptor
Eye	Photo recertors
Ear	Audio receptors for sound
Nose	Olfactory receptors for smell
Tongue	Gustatory receptors for taste
SkinReceptors for touch ,hot cold pain and pressure	

4. **Important endocrine glands in human beings their secretions and their functions.**

Endocrine Glands	Hormones secreted	Function
1. Pituitary	Pituitary hormone	Stimulates growth in all organs
2. Thyroid	Thyroxin	Regulates metabolism for body growth
3. Adrenal	Adrenaline	Prepares for emergency
4. Pancreas	Insulin	Regulates blood sugar level
5. Ovaries	Estrogen	Development of female sex organs, regulates menstrual cycle
6. Testis	Testosterone	Development of male characters.

UNIT TEST

Max marks [20]

I. **For each statement four alternatives are given Choose the most appropriate answer.**   **2 x 1 = 2**

1. The growth of pollen tubes towards ovules is an example of _____.
   a) Geotropism   b) Hydrotropism
   c) Chemotropism   d) Photo tropism

2. The incorrect statement about Insulin is
   a) It is produced from pancreas
   b) It regulates growth and development of the body
   c) It regulates blood sugar levels.
   d) Insufficient secretion of this with cause diabetes

II.   Answer the following questions:-   **2 x 1 = 2**

3. Which are the components of peripheral nervous system?

4. Give an example to the mastic movement (growth independent) that occurs in plants.

III. Answer the following questions.   **3 x 2 = 6**

5. Use of iodizedsalt is recommended in diet
    Give scientific reason

                                    (OR)

    Briefly explain how the adrenaline hormone prepares the body to deal with scary situations.

6. Differentiate between the walking and a jerking movement of foot when stepped on a thorn.

7. What is phototropism? Mention the plant hormone that is involved here and write its function.

IV. Answer the following questions: **2 x 3 = 6**

8. Draw the diagram of neuron and indicate the path of nerve ion pulse.

9. What is reflex are? Mention the five stages or functional unit's involved. Here.

V. Answer the following questions: **1 x 4 = 4**

10. Draw the diagram of sectional view of human brain and label the following parts.
    a) Centre of memory
    b) Controlling centre of involuntary functions.

Chapter - 7

HOW DO ORGANISMS REPRODUCE

1. Mention some sexually transmitted disease.
    AIDS, GomorrahFive mark oeaSyphilis.

2. What might be the reasons for adopting contraceptive methods.
    • To postpone, and prevent pregnancy.
    • To Control population.

3. Name the glands associated with male reproductive system.
    Testes, Prostrate gland, seminal vesicle.

4. Why reproduction is essential?
    It is essential for.
    a) Continuation of life on earth.
    b) Replacement of dead organisms.

c) To maintain the size of the population.

d) Transfer of variation from one generation to another.

5. What is the importance of sexual mode of reproduction

- Is helps in crossing over.
- It is essential for variation.
- To maintain constant number of chromosomes throughout the species.

6. Differentiate the following.

a)

Self Pollination	Cross Pollination
• The process of transfer of pollen grains from anther to the stigma of the same flower • e.g. Hibiscus, mustard	• The process of transfer of pollen grains from another to the stigma of another flower • e.g. Papaya, water melon

b)

Unisexual plant	Bisexual plant
• The flower contains either stamens or pistil is called unisexual • e.g. papaya, watermelon • Only cross pollination is possible here	• The flower contains both stamens and pistil is called Bisexual. • Hibiscus, Mustard • Both self or cross pollination is possible

c)

Male gametes	Female gametes
1. Generally smaller in size 2. It contains small amount of reserve food 3. Male gametes are usually motile 4. Sperns – male gametes	1. Generally larger in size 2. It contains large amount of reserve food 3. Female gametes are usually non–Motile 4. Ovum – female gametes.

d)

Pollination	Fertilization
• It is the process of transfer of pollen grain from anther to stigma • Pollination ends with fertilization	• It is the process of fusion of male and female gametes • Fertilization ends with the formation of seeds and fruit.

7. **What are the different methods of contraception?**
   - By using condom (Male / Female)
   - By using loop or copper-T, are placed in the uterus.
   - By surgical methods.
   - By taking oral pills.

8. **The yield of crop is reduced because of the reduce in the number of insects in nature". Justify the statement.**
   Most of the cross pollination from insects is essential for to getting good yield will be reduced. So that above statement is correct.

9. **What happens when the ovum is not fertilized? How does menstruation occur?**
   If the ovum is not fertilized the thick and spongy lining of utters, is slowly breaks and comes out through the vagina as blood and mucus this is called menstruation.

10. **What are the advantages of sexual reproduction over asexual reproduction?**
    Sexual reproduction promotes diversity of characters in an offspring due to combinations of gene which can lead to variation.Where in asexual reproduction evolutionary changes is not possible as only same parent involved therefore no variation takes place.

11. **How does developing embryo get nourishment in mother's body? (Write the functions of placenta)**
    a) The placenta is a special tissue
    b) It provide nutrition to the developing embryo (Glucose and oxygen)
    c) It helps in the exchange of CO_2 and oxygen.
    d) It helps in the remove at of waste substance.
    e) It helps in the attachment of focus to the wall of uterus and protects the fetus.

12. **What are the changes are seen in boys and girls at the time of puberty?**
    In Boys:
    - The growth of hairs in armpits and genital area.
    - Thick hair growth on the face.
    - Penis occasionally begins to enlarged and erect.
    - Androgen and testosterone hormones are released.

    In Girls:
    - The growth of hairs in armpits and genital area.
    - Breasts enlarge skin around the nipples darkness.
    - Girls begin to menstruate.
    - Estrogen hormone is released.

13. **What is germination? Name the parts of germination.**
    The seed contains the future plant or embryo which develops in to a seedling under appropriate conditions this process is known as germination.Parts of Germination is:

a) Cotyledon (Food store)
b) Plumule (Future shoot)
c) Radicle(Future root)

14. What are the changes are seen in flower after fertilization?
- By the fusion of male and female gametes forms zygote.
- The zygote divides several times to form an embryo within the ovule.
- The ovule develops a tough coat and is converted in to seed, seed contains the future plant or embryo.

15. In twenty years old boy hasn't seen thick hairs on the face. Why?
Due to the deficiency in secretion of hormone like Testosterone.

16. A girl in insisting for the blood test report of the groom decided by her parents for marriage why?
For the confirmation of sexual transmitted disease.

17. Sperm formation in scrotum is located outside the abdominal cavity. Why?
Because sperm formation requires a lower temperature than the normal body.

18. Male reproductive system :

Parts	Functions
Testes	Formation of sperms and secretion of testosterone hormone takes palce in testes
Urethra	Common passage for both the sperms and urine
Prostrate-gland	It produces a fluid medium a component of semen is necessary for transport of sperms
Vas deferens	It transports mature sperms to the urethra, the tube that carries sperm to outside of the body in preparation of ejalulation
Seminal vesicle	It produces a nutritive recreation needed for the sperms and it promotes the movement.
Scortum	It has protective function and acts as climate control system for the testes
Penis	It acts as conduct for urine and sperm to leave the body

19. Female reproductive system
1. Ovary : - Production of eggs and oestrogen hormone
2. Follopiantube :- It transfers egg from ovary to the uterus
3. Uterus :- It nurtures the fertilized ovum that develops in to the foetus and holding till the body is mature enough for birth
4. Cervix :- It direct the sperms in to the uterus during inter course

5. Vagina :- It receives the penis during sexual intercourse and during child birth the baby passes through the vagina.

20. Explain the developing of fertilized egg into a foetus.

*   The fertilized egg starts dividing and forms a ball of cells or embryo
*   The embryo is implemented in the lyning of the uterus where they continue to grow and develop organs to become foetus.
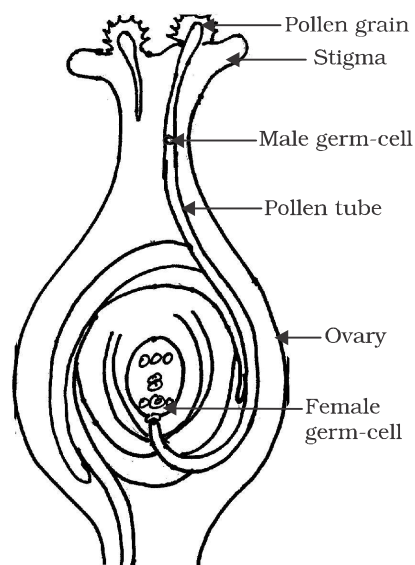
21. Can incorporation of copper-T be preventes sexual transmitted disease in women? If not Give reason.

No. Because copper – T is a device used to avoid pregnancy but condom is avoid both of them.

22. Draw a neat labeled diagram of longitudinal section of flower.
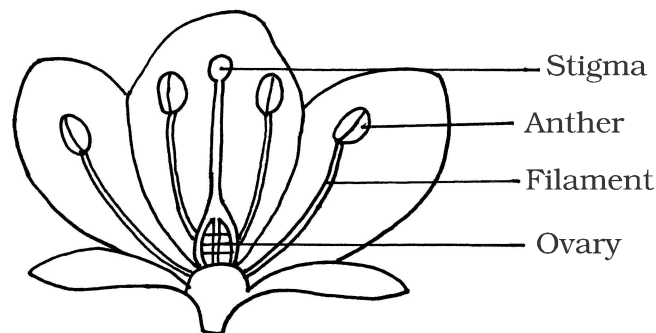
23. Draw a neat labeled diagram of germination of pollen on stigma.

UNIT TEST

I. Choose the correct answer and write.   **[2 x 1 = 2]**

1. The embryo gets nourishment from the mothers blood with the help of a special tissue called _____.
    a) Zygote   b) Uterus
    c) Placenta   d) Villi

2. The seed that contains the future plant is called, the _____.
    a) Cotyledons   b) Seed coat
    c) Germ cells   d) Embryo

II. Answer the following questions in one sentence.   **[2 x 1 = 2]**

3. Name the contraceptive methods.

4. Write the names of male and female sex hormones.

III. Answer the following questions in two sentence.   **[2 x 2 = 4]**

4. What is placenta? Explain the importance of placenta.

5. Differentiate between self-pollination and cross pollination
                              OR
    Draw a labeled diagram of the L S of flower

IV. Answer the following questions in three sentence.   **[1 x 3 = 3]**

6. Define the following
    a) Puberty   b) Germination   c) Fertilization
                              OR
    Write the functions of the following.
    a) Prostate gland   b) Testies   c) Fallopian tube

V. Answer the following questions in four sentences.   **[1 x 4 = 4]**

7. What happens in human female

    a) When egg is fertilized   b)   When egg is not fertilized

VI. Answer the following questions in four sentences.   **[1 x 5 = 5]**

8. a) What change seen in girls at the time of puberty.

    b) What change seen in flower after pollination

    c) In twenty years old boy hasn't seen hairs on the face. Give reason.

Chapter - 8

Heredity & Evolution

I. **Definitions**

1. **Heredity :-** The process by which traits and characteristics are reliably inherited.**OR** The process of transmission of characters from one generation to another through genes.

2. **Gene:-**It is a unit of heredity, take part in expressing a particular character.

3. **Mutation:** Hereditary changes in DNA.

4. **Speciation:** The formation of new species due to gradual changes over long period in the path of evolution.

5. **Genetics:** Branch of biology deals with the study of heredity and variation**.**

6. **Variation:** The Differences in characteristics between individuals of the same species or different species.

7. **Fossil:** Remains of past Geological age.

8. **Genetic Drift:-**Variation in the relative frequency of different genotypes in a population, owing to the chance of disappearance of particular genes as individuals die or do not reproduce.

9. **Geographical isolation:** Isolation of species by physical barriers resulting in the new species evolution.

10. **Manohybrid Cross:** The cross between two homozygous individualsdiffering in one character.

11. **Law of Dominance:** When two different factor responsible for a single trait, one is expressed & the other is suppressed.

12. **Law of Segregation:** When more than one pair of traits are present, each pair of trait move independently at the time of gamates formation.

13. **Evoluation :** A slow and gradual change leads to the formation of simple to complex organisms.

II. **1 mark questions.**

14. **What is the cause of variations in sexually reproducing organism?**
Environmental factors and Mutations.

15. **Who is the father of genetics?**
Gregor Johan Mendel.

16. **Name the genetic material that is responsible for inheritance of traits?**
DNA (DeoxyRibo Nucleic Acid)

17. **Give reason: Traits acquired during the life time of an individual are not inherited.**

    Reason: An acquired trait cannot be passed on to germ cells.

18. **Define : Gene for a protein.**

    A section of DNA that provides information for one protein is called the gene for that protein.

19. **In a beetle population, the number of green beetles is more than Blue & red beetles. Give reason behind this situation.**

    It is because of natural selection.

20. **Why is the progeny always tall when a tall pea plant is crossed with a dwarf pea plant?**

    The tait which represents the tallness in a pea plant is dominant over the dwarf. Hence progeny becomes tall.

II. **2 Marks questions:**

21. **How does the creation of variations in a species promote survival?**

   Variations help in the survival of the species by allowing the organisms to adopt for the changing environment**.**

22. **What factors could lead to the rise of new species?**

    The factors that could lead to the rise of a new species are a) Change in the number chromosomes b) Genetic drift c) Natural selection d) Geographical isolation.

23. **Differentiate between acquired traits and inherited traits with examples.**

Acquired traits	**Inherited traits**
Traits developed during the life time of an individual Cannot be passed on to the progeny Eg: Swimming ability in man	Characteristics transmitted from parents to offspring Can be passed on to the progeny Eg: Skin color in man

24. **The sex of child is determined by the hereditary chromosome of the father. How?**
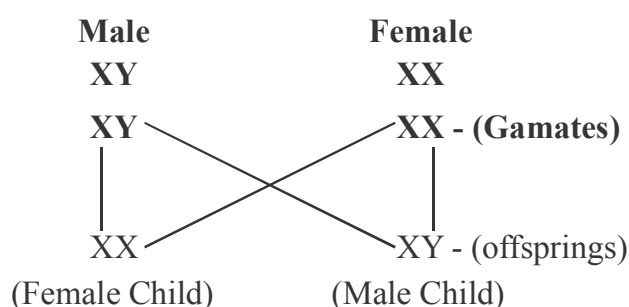
25. How Homologous organs are different from analogous organs?

Homologous organs	Analogous organs
These organs have the similar basic structure, same origin but perform different functions.	These organs have different structure and different origin but perform similar functions.
Eg : Hands of human beings and fore limbs of horse.	Eg : wings of butterfiles wings of birds and bat.

26. Why did mendel select pea plants for his experiments on inheritance?
Reasons:
1) Pea plants are easy to grow in all climatic conditions.
2) They are annual plants
3) They produce fertile offsprings both by self & cross pollination.
4) These plants show many distinct traits.

27. Why are human beings who look so different from each other in terms of size to belong to the same species.
a) They have similar DNA sequences and have descended from the same ancestors.
b) There variations may have arisen due to the environmental factors.
c) Mutation &mixing of characters during reproduction.

28. How natural selection leads to evolution?
a) Natural Selection leads to evolutionary changes when individuals with Certain characteristics have a greater survival.
b) Natural selection is consistent difference in survival and reproduction between Different genotypes.

29. Can the wing of a butterflies the wing of a bat be considered as homologous organs? Why or why not?
Wings of butterfly are composed of membrane, while wings of a bat are composed of bony Skelton. Hence these are not homologous organs but they are analogous organs.

30. Will geographical isolation be a major factor in the speciation of a self-pollinating species? Why or Why not?
Geographical isolation is not a major factor in the speciation of a self-pollinating. Plant species because stigma is pollinated by the pollen grains coming from the same plant.

IV. 3 Marks Questions:

31. "Certain traits cannot be passed on to the next generation" .Justify this statement.
Certain traits for example, the traits which are acquired by an organism during its life time cannot be passed on to the progeny as these traits doesn't make any change in

the genetic materials of the organisms. Change in non- reproductive tissue cannot be passed on to the DNA of the germ cells.

32. "Evolution should not be equated with progress". Give scientific evidences.
"There is no real progress in the idea of evolution. Evolution is simply the generation of diversity by environmental selection the only progressive trend in evolution seems to be that more & more complex body designs have emerged over time. This doesn't meant that the older designs are inefficient. So many of the order & simpler designs still survive on the earth so Evolution should not be equated with progress.

33. Explain the importance of fossils in deciding evolutionary relationships.
Fossils are the remains & relics of dead organisms of the past. They provide evidences of evolution by revealing the characteristics of the previously existing organisms & present organisms. They help us to trace the evolutionary history of organisms.

34. Explain how asexual reproduction gives rise to more viable variations than asexual reproduction. How does this affect the evolution of those organisms that reproduce sexually?
Sexual reproduction involves the fusion of gamats between two different organisms. As the off springs are not exact copies of their parents sexual reproduction allows more variations where as in asexual reproduction offsprings are produced from a single parent&they exact copies of the parents most of the time. So there is less chance of variations. Variations help the species to survive indifferent environmental conditions. So sexually reproducing organisms show faster evolution.

V. 4 Marks Questions.

35. Complete the following table with characteristics of the progeny.

	Cross	Progeny
a)	**RRYY X rryy** **Round Yellow Seed, Wrinkled Green Seed**	i.
b)	**RrYyX RRYY** **Round yellow Seed, Round Green Seed**	ii.
c)	**RryyX rryy** **Wrinkled Green seed & Wrinkled Green seeds**	iii.
d)	**RRyyX rryy** **Round Green Seed x Wrinkled Green Seed**	iv.

i)   Round yellow seed   ii)   Round yellow seed
iii) Wrinkled green seed   iv)   Round green seed.

36. With the help of the following pattern briefly explain the reason.
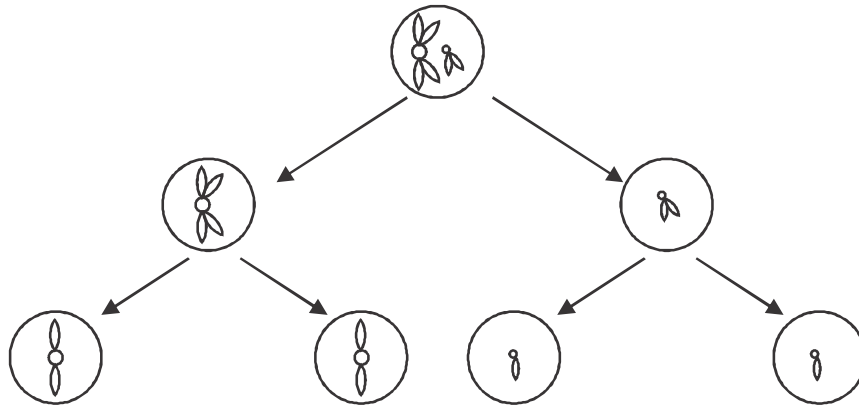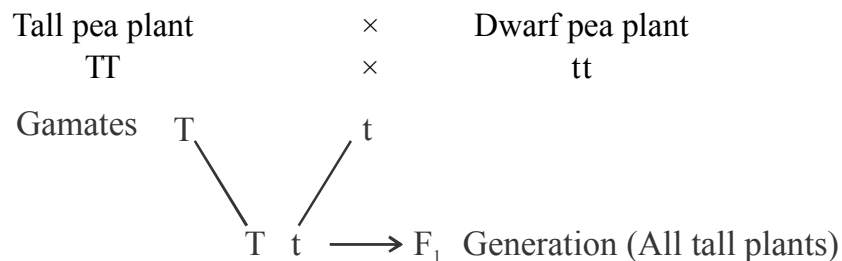

a) **DNA stability**
b) **Variationphenomenon found in the successive generationof species.**

a) Gamates will have half of the genetic material as compared to the somatic cells. This is archived by a special type of reduction cell devision called Meiosis. When these germ cells fuse to produce Zygote during fertilization again the chromosome number is maintained by ensuring DNA stability.

b) Sexual reproduction involves the fusion of gametes which come from two different individuals that leads to the variations in every successive generation due to recombination of genetic material.

37. Prepare a checker board showing Mendal's cross experiment with respect to tall and dwarf pea plants, on the basis of this identity Dominate and Recessive trait.

Tall pea plant $\times$ Dwarf pea plant
TT $\times$ tt

Gamates T t

T t $\longrightarrow$ F_1 Generation (All tall plants)

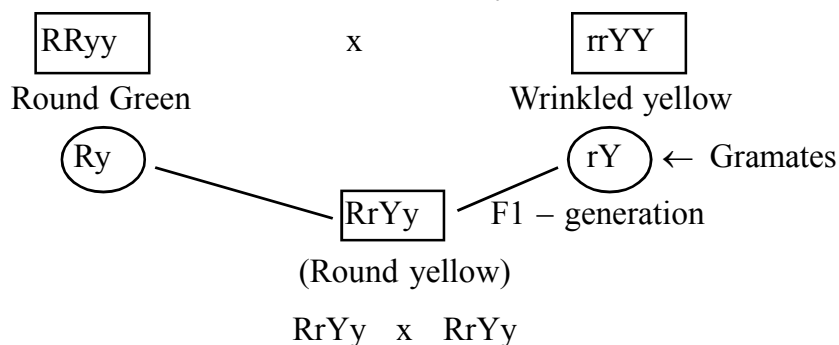| Gamates	T	t
T	TT	Tt
t	Tt	tt

Manohybrid cross ratio = 3 : 1
Tall plants = 3; Dwarf plant = 1
Dominate trait (T) - Tallness
Recessive trait (t) - Dwarfnes

VI. 5 Marks Question

38. With the help of pun net checker Board show di-hybrid cross experiment between Round Green seeds & Wrinkled yellow seeds.

RRyy   x   rrYY

Round Green   Wrinkled yellow

Ry   rY ← Gramates

RrYy   F1 – generation

(Round yellow)

RrYy   x   RrYy

Gamates	RY	Ry	rY	ry
RY	RRYY	RRYy	RrYY	RrYy
Ry	RRYy	RRyy	RrYy	Rryy
rY	RrYY	RrYy	rrYY	rrYy
rY	RrYy	Rryy	rrYy	rryy

Round Yellow – 9
Round green – 3
Wrinkled yellow – 3
Wrinkled green – 1
Dihybrid ratio 9:3:3:1.

UNIT TEST

Max marks [20]

I. Choose the right answers for the following.   [1 x 2 = 2]

1. Homologous organs are :
   a) evolved from different ancestors   b) functionally similar
   c) structurally different   d) Evolved from common ancestors.

2. TtRr : Tall Round seed :: ttrr : _____.
   a) Tall wrinkled seed   b) Tall round seed
   c) Dwarf round seed   d) Dwarf wrinkled seed.

II. Answer the following questions.   [1 x 2 = 2]

3. What is speciation?

4. What are fossils?

III. Answer the following questions. [2 x 3 = 6]

5. How analogous organs are differ from homologous organs?

6. Draw a flow chart to illustrate the sex determination in human beings.

7. Explain the importance of fossils in deciding evolutionary relationships.

IV. Answer the following questions. [3 x 2 = 6]

8. "Certain traits cannot be passed on to the next generation." Justify this statement.

9. How natural selection leads to evolution. Explain.

OR

Explain Mendal's Manohybrid cross experiment with checker board.

V. Answer the following questions. [4 x 1 = 4]

10. Explain Mendal's dihybrid cross experiment with checker board.

OR

a) Why did Mendal select pea plants for conducting his experiments?

b) What factors could lead to the rise of a new species?

Chapter 9

Light – Reflection and Refraction

I. One mark questions :

1. Why light is called an Electromagnetic wave?
Light wave do not require any material media for its propagation hence light is an Electromagnetic wave.

2. What is the speed of light in vacuum?
Speed of light in vacuum is $C = 3 \times 10^8$ m/s.

3. What are the properties of light?
The important properties of light is - light get Reflection, Refraction Interference, Diffraction, Dispersion, Polarization etc.

4. Define refraction of light?
When light is travelled from one Transparent medium to another transparent media it changes its direction is called as Refraction of light.

5. State laws of Refraction / snells law.

$$\frac{\sin i}{\sin r} = \text{Constant}$$

6. **Write the mathematical form of Lens formula.**

The relationship between object distance (u), image distance [V] and focal length (f).

Its lens formula $\dfrac{1}{v} - \dfrac{1}{u} = \dfrac{1}{f}$

7. **What is meant by magnification?**

The ratio of height of the image to the height of the object is called as magnification. It is represented by 'm'.

∴ Magnification (m) = $\dfrac{\text{Height of image (h')}}{\text{Height of object (u)}} = \dfrac{-v}{u} = \dfrac{h'}{h}$

8. **Define power of lens, with its unit?**

The degree of convergence or divergence of light rays obtained by a lens is expressed in terms of its power. "Power of lens is expressed in terms of its power." Power of lens is defined as the reciprocal of its focal length

∴ $P = \dfrac{1}{f}$. Power its S.I. unit is Diapter.

9. **State the laws of refraction of light.**   **2 Marks Questions**

1st law :- The incident ray the refracted ray and normal to the surface of separation at the point of incidence all are in the same plane.

2nd law :- The ratio of sine of the incidence and the sine of the angle of refraction is constant for a given pair of media.

$n_{21} = \dfrac{\sin i}{\sin r}$ = Constant [It is also called as Snells law.]

10. **Give three points of differences between real and virtual images.**

Real images	Virtual images
1) It is always inverted	1) It is always Erect
2) It can be taken on a screen	2) It can't be taken on a screen
3) All the rays actually meet at the image point	3) All the rays appear to diverge from the image point.

11. **The power of lens : Prescribed by a Doctor is + 1.5D of a lens. Find the focal length and Type of its lens?**

Power of lens is $P = \dfrac{1}{f}$

∴ $f = \dfrac{1}{P} = \dfrac{1}{+1.5} = \dfrac{1}{+1.5} \times \dfrac{10}{10} = \dfrac{10}{+15}$

f = + 0.66 meter

Focal length of a lens is positive sign. Hence it is called as Converging lens.

12. What are the two types of lenses. Write the difference.

In the spherical lens there are two types. Canvex lens and Concave Lens

Convex lens	Concave lens
1) Two spherical surfaces bulding out wards.	1) Two spherical surfaces curved inwards
2) Thicker at middle and thinner at edges	2) Thickness at the ends & thin at the center.
3) It is also called converging lens	3) It is also called as diverging lens.

13. An object 2 cm tall M kept on the principal axis of a converging lens of the focal length 8 cm. Find the position nature and size of the image formed of the object in at 12 cm. From lens, also find the magnification produced by the convex lens.

Height of object h = +2cm

Focal length f = 8 cm

Object distance u = 12 cm

Image distance V = ?

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$\therefore \frac{1}{v} = \frac{1}{f} + \frac{1}{u}$$

$$= \frac{1}{8} + \frac{1}{-12} \quad = \frac{1}{8} - \frac{1}{12}$$

$$= \frac{3-2}{24}$$

$$\frac{1}{v} = \frac{1}{24}$$

$$\therefore v = 24 \text{ cm}$$

Magnification M = $\frac{h'}{h}$

$$\therefore h' = M \times h$$

$$= \frac{v}{u} \times h$$

$$= \frac{24}{-12} \times 2$$

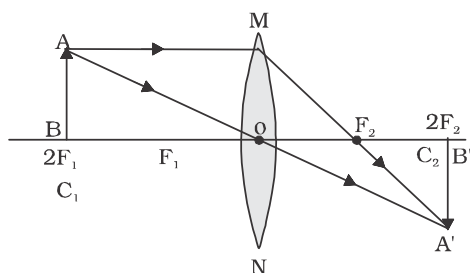h' = –2 × 2

h' = –4 cm

It is a –ve signs of h' and m. Hence the image is real and Inverted.

It is formed below the principal axis.

14. If same size of image is formed by a convex lens. What is the position of the object. Write its nature of image formed with its real diagram.
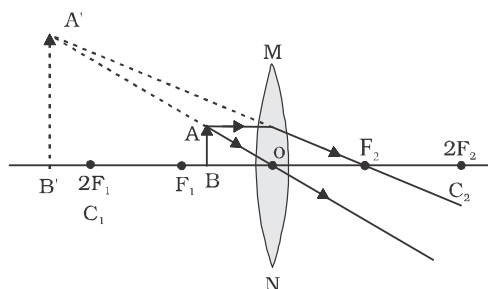
When the object is kept at $2F_1$ in front of the convex lens the image is formed at $2F_2$ with the same size and real inverted image.

15. In front of the convex lens when the object is placed between $2F_1$ and F_1 where the image formed. Draw its neat diagram. Mention its nature and size of the image.
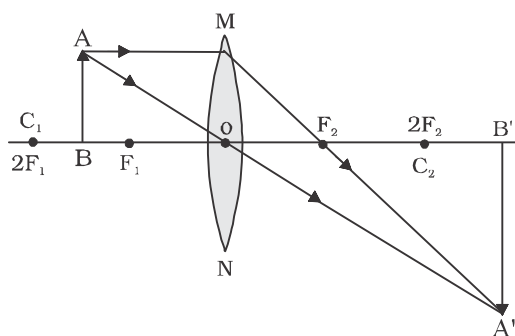
When the object M kept between $2F_1$ and F_1 in front of a convex lens the image is formed Beyond $2F_2$ the size is enlarged real and inverted image is formed.

16. Draw a neat diagram of object is kept between focus F1 and Optical Centre 'O'. Write the nature, size and position of image formed.

When the object is kept between F_1 and optic center in front of the Convex lens. The enlarged image is formed on the same side of the lens as the object. It is virtual and erect.

17. Find the focal length of a lens of power –2.0 D. What type of lens is this?

Power of lens is $P = \dfrac{1}{f}$

$\therefore \ f = \dfrac{1}{P} = \dfrac{1}{-2.0} = \dfrac{1}{-2.0} \times \dfrac{10}{10} = \dfrac{10}{-20}$

f = –0.5 meters.

Due to negative sign the type of lens is cancave lens i.e. f = 50 cm.

18. An object is kept at a distance of 30 cm from a diverging lens of focal length 15 cm. At what distance the image is formed from the lens? Find the magnification of the image.

By the data : Distance of an object u = –30 cm.

Focal length of a diverging lens f = –15 cm

Find the image distance V = ?

We know the formula $\dfrac{1}{v} - \dfrac{1}{u} = \dfrac{1}{f}$ or $\dfrac{1}{v} = \dfrac{1}{f} + \dfrac{1}{u}$

$\dfrac{1}{V} = \dfrac{1}{-15} + \dfrac{1}{-30}$

$\dfrac{1}{V} = \dfrac{-2-1}{30}$

$\dfrac{1}{v} = \dfrac{-3}{30}$

$\therefore \ v = -10$ cm is the image distance of an object.

Also we find the magnification $m = \dfrac{v}{u}$

$m = \dfrac{-10}{-30}$

$m = \dfrac{1}{3}$

Magnification size of an object is $\dfrac{1}{3}$ times = 0.33 cm

19. If Radius of curvature of a convex lens is 30 cm. Find the focal length?

Radius of curvature R = 30 cm

Focal length f = ?

We know the formula $f = \dfrac{R}{2} = \dfrac{30}{2} = 15$ cm

f = 15 cm. Focal length of a lens.

20. Explain the experiment to find out the focal length of a convex lens. The focal length of a convex lens. The focal length of a convex lens is 100 cm. Find its power?

- Take a convex lens hold it on a paper to get refracted rays.
- Due to convex lens is a converging lens all light rays are focused on a paper. Adjust the convex lens in such a way that to get a clear image of sun on a paper/ screen.
- Measure the distance between convex lens and a screen it is the focal length of a given convex lens.

By the data given that focal length f = 100 cm. We need power P = ?

$$\therefore P = \frac{1}{f} = \frac{1}{100 \text{ cm}} = \frac{1}{1 \text{ meter}} = 1 \text{ D}$$

Hence power of lense is 1 Dicipter. It is the reciprocal of the focal length of the lens.

21. Well practice the following table of image formation by a convex lens for various position of the object kept at different places as shown in the table.

Sl. No.	Position of the object	Position of the image	Size of the image	Nature of the image	H.W. Ray diagram
1.	Object kept at infinity	Image focus at 'F'	Highly Diminished point sized	Real and inverted	
2.	Object kept beyond $2F_1$	Image formed between F_2 and $2F_2$	Diminished	Real and inverted	
3.	Object kept at $2F_1$	Image formed also at $2F_1$	Same size	Real and inverted	
4.	Object b/w F_1 and $2F_1$	Beyond $2F_2$	Enlarged	Real and inverted	
5.	At Focus F_1	At infinity	Infinitely large or Highly large	Real and inverted	
6.	Object kept between F_1 and optic Center 'O'	Image is beyond the mirror	Enlarged	Virtual and erect	

22. Define Refractive index of a medium? You are given kerosene, turpentine and water. In which of the these does the light travel faster?

Refractive index is the ratio of light travelled in vacuum to the speed of light in medium.

$$n = \frac{\text{Speed of light in vacuum } (C)}{\text{Speed of light in medium } (V)} = \frac{C}{V}$$

For Kerosene n = 1.44
For Turpentine oil n = 1.47
For a Water n = 1.33

From this the refractive index of water is the lowest.
When compare to the opitcally rarer medium to the kerosene, turpentine oil. Hence light travels faster in water.

23. Draw a ray diagram to show the refraction of light through Rectangular glass slab. Mention any three wonderful phenomena refraction of light takes place in a nature?
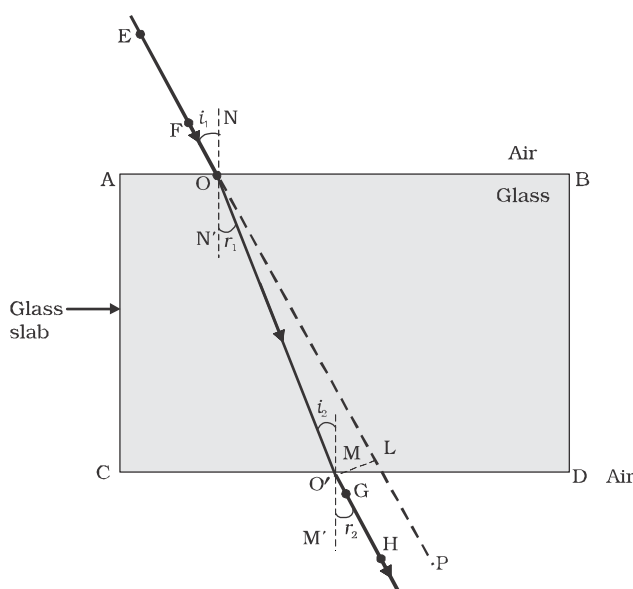
Refraction of light takes place in nature in the following;-
1) The bottom of a swimming pool and a water tank appear to be raised.
2) When a pencil or stick is dipped in a beaker containing water is appear to be bends.
3) Image f a person emerged in front of mirror left side and right side opposite each.

UNIT TEST

I. Choose the correct answer to the following question out of four alternatives and write it in full sentences. [1 x 2 = 2]

1. When light is travelled from one transparent medium to another transparent medium. It get refraction reason for this
   a) Both are transparent
   b) Both are non transparent
   c) Difference in Densities
   d) Equal in Densities.

2. The effective diameter of a circular outline of a spherical lense is called as
   a) Aperture
   b) Optic center
   c) Optic radie
   d) Center of curvature

II. Answer the following questions. [2 x 1 = 2]

3. Define the Refraction of light?

4. What is meant by Refractive Index?

III. Answer the following questions. [3 x 2 = 6]

5. State the laws of Refraction?

6. One object is placed at $2F_1$ on one side of a convex lens, where is its image formed. Draw its ray diagram.

7. Mention any two uses of convex and concave lens.

IV. Answer the following questions. [2 x 3 = 6]

8. A convex lens has a focal length of 15 cm. At what distance should the object from the lens be placed, so that it forms an image at 10 cm from the lens? Find the magnification produced by the lens.

9. Write the difference between the following.
   a) Real and virtual images
   b) Convex and Concave lens

V. Answer the following questions. [1 x 4 = 4]

10. Draw a ray diagram showing refraction of light in a Rectanglur glass slab. Mention any two wonderful phenomenon of refraction of light takes place in nature.

Chapter 10

ELECTRICITY

1. **What is an electric current?**
   Rate of flow of charge is called electric current.

2. **Write the formula to calculate electric current and write the unit for electric current?**
   Electric current I = Q/t
   S.I. Unit is Ampere

3. **What is an Electrical Circuit?**
   Region around a charge with in which its influence can be experienced is called electric field.

4. **What is the S.I. Unit of charge?**
   S.I. Unit of charge is Coulomb 'C'.

5. **Define electric potential difference and write the S.I. Unit for electric potential difference.**
   Amount of workdone in bringing a unit positive charge from one point to another point in an electric field is called electric potential difference S.I. Unit is volt (V)

6. **Write the mathematical form for potential difference**
   $$V = \frac{\text{Work done}}{\text{Charge}} = V = \frac{W}{Q} \text{ volts}$$
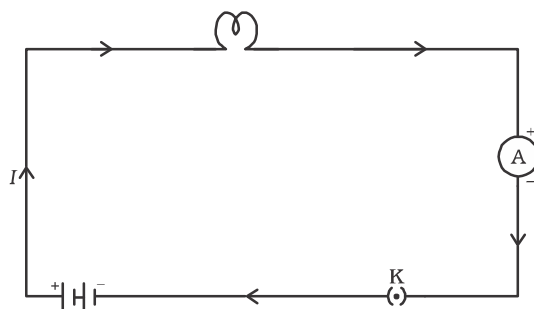
7. **Name the instrument to measure potential difference.**
   Voltmeter

8. **Write the use of Galvanometer.**
   Galvanometer is used to measure direction of electric current.

9. **You have given electric cell, electric bulb, Ammeter and plug key construct an electric circuit.**

10. Circuit symbols of electrical elements (components)

Sl. No.	Components	Symbols
1	An electric cell	
2	A battery or a combination of cells	
3	Plug key or switch (open)	
4	Plug key or switch (closed)	
5	A wire joint	
6	Wires crossing without joining	
7	Electric bulb	
8	A resistor of resistance R	
9	Variable r esistance or r heostat	
10	Ammeter	
11	Voltmeter	

11. What is electric resistance?

The property of a conductor to appose the flow of current through it, is called electric resistance.

12. Write the formula for resistance.

$$\text{Electric resistance} = \frac{\text{Potential difference}}{\text{electric current}}$$

$$= R = \frac{V}{I}\,\Omega$$

13. State Ohm's law? Write its mathematical form?

Electric current flowing through a conductor is directly proportional to the potential difference across its ends, provided the temperature remains constant.

$$V = IR$$

14. Write the applications of resistance.

Resistivity of an alloy is generally higher than that of its constituent metals. They are used in electrical heating devices like electric iron, toasters. Electric bulb (Tungsten is used).

15. What is resistivity? Write the mathematical form.

The resistance offered by a wire of unit length and unit cross section area is called resistivity.

$$R = \rho \frac{l}{A}$$

Where,

     R = resistivity

     A = Area of cross section

     l = length

16. What are the factors on which resistance of a conductor depends?

Resistance depends on

(i)   Its length

(ii) Its area of cross section

(iii) Nature of material

17. State Joules law.

Heat produced in a resistor is directly proportional to

(i)   Square of the current (I^2)

(ii) Resistance (R) for given current

(iii) Time (t) for which current flows.

     H = I^2Rt

18. Nichrome and Tungsten are used in electric heating devices. Give reason.

They have high resistivity and high melting point, hence used as heating elements.

19. Name any four devices which works on heating effect of electric current.

Electric iron, electric heater, oven, electric stove.

20. In house hold industries electric circuit, resistors are not connected in series? Justify?

1.   Each device gets full battery voltage.

2.   If one device is switched off low. Others are affected.

3.   Different components will not get different current requirements.

4.   Total resistance increases.

21. Write the differences between resisters in series and parallel connections.

Series connection	Parallel connections
1. Resistance increases	1. Total resistance decreases
2. $R_s = R_1 + R_2 + R_3$	2. $\dfrac{1}{R_P} = \dfrac{1}{R_1} + \dfrac{1}{R_2} + \dfrac{1}{R_3}$
3. One component fails, none of the component works.	3. All the components works even though one component fails.

22. Define the following :

a) **Coulomb :** The S.I. unit of electric charge is coulomb (c). Which is equivalent to the charge contained in nearby 6×10^{18} electrons.

b) **Ampere :** The electric current is expressed by a unit called ampere (A).
1 A = 1C / 1S

c) **Volt :** The S.I. unit of electric potential and potential difference
1 V = I J / IC.
One volt is the potential difference between two points in a current carrying conductor when 1 Joule of work is done to move a charge 1 coulomb from one point to the other.

d) **One Ohm :** If the potential difference across the two ends of a conductor is 1V and the current through it is 1 A, then the resistance R of the conductor is 1Ω.

$$1 \text{ Ohm} = \frac{1 \text{ Volt}}{1 \text{ Ampere}}$$

e) **One Watt :** The S.I. unit of electric power is watt (W). It is the power consumed by a device that carries 1A of current when operated at a potential difference of 1 V.
1 W = 1 volt × 1 ampere = 1 VA.

**23. What is an electric fuse? Write the function of fuse.**
It is a safety device, protects electrical appliances in case of short circuit and over loading.

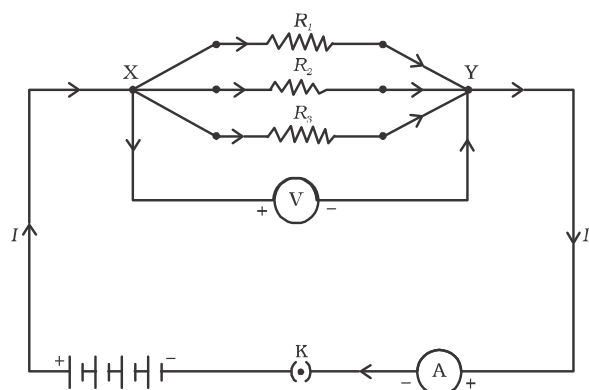**24. Name the alloy used in electric fuse? Give reason .**
Electric fuse is made up of alloys of lead and tin.
It has low melting point. It melts & protects electrical devices in case of short circuit and over loading.

25. Diagram of resistors in series.
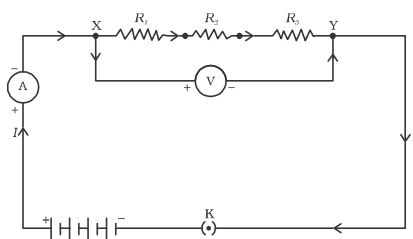
26. Schematic diagram of resistors in parallel.

27. Teaches has given. Raju 12V battery, Resistor $R_1 = 10\Omega$, $R_2 = 40\Omega$, $R_3 = 30\Omega$, $R_4 = 20\Omega$, $R_5 = 60\Omega$ and Ammeter and ask him to construct circuit diagram in series combination and parallel combination. Find the total resistance by both in series & parallel combinations.

$R_1 = 10\Omega$, $R_2 = 40\Omega$, $R_3 = 30\Omega$, $R_4 = 20\Omega$, $R_5 = 60\Omega$, $V = 12V$

a) Effective resistance R'

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$= \frac{1}{10} + \frac{1}{40}$$

$$= \frac{4+1}{40}$$

$$= \frac{5}{40}$$

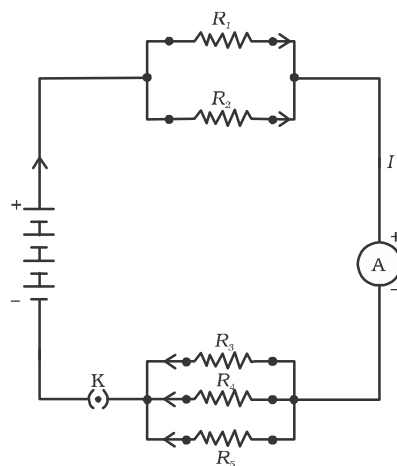$$\frac{1}{R} = \frac{1}{8}$$

$R' = 8\Omega$

b) Resistance in parallel

$$\frac{1}{R_n} = \frac{1}{R_3} + \frac{1}{R_4} + \frac{1}{R_5}$$

$$\frac{1}{R_n} = \frac{1}{30} + \frac{1}{20} + \frac{1}{60}$$

$$\frac{1}{R_n} = \frac{2+3+1}{60}$$

63

$$\frac{1}{R_n} = \frac{6}{60} = \frac{1}{10}$$

R" = 10Ω

Total = R' + R"

= 8 + 10

R' + R" = 18Ω

28. What is electric power? Write SI unit for electric power.

The rate at which energy is consumed by an appliance S.I. Unit is watt.

P = V × I

P + I × R × I

$P = I^2 R$

Problems :

1) How can three resistors of resistance 2Ω, 3Ω in and 6Ω be connected to give a total resistance of (a) 4Ω (b) 1Ω.

a) By parallel combination of 3Ω and 6Ω.

$$R\ total = R_1 + \left[\frac{1}{R^2} + \frac{1}{R^3}\right]$$

$$= 2 + \left[\frac{1}{3} + \frac{1}{6}\right]$$

$$= 2 + \left[\frac{3}{6}\right]$$

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

$$= 2 + 2$$

$$= 4Ω$$

b) By connecting 2Ω, 3Ω and 6Ω in parallel.

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{2} + \frac{1}{3} + \frac{1}{6}$$

$$= \frac{3 + 2 + 1}{6} = \frac{6}{6} = 1$$

R = 1Ω

2) **What is (a) the highest (b) the lowest total resistance that can be secured by** combination of four coils of resistance 4Ω, 8Ω, 12Ω and 24Ω?

(a) Highest resistance can be obtained by connecting the four coils of series.

$R = 4 + 8 + 12 + 24 = 48\Omega$

(b) Lowest resistance can be obtained by connecting four coils in parallel.

$$\frac{1}{R} = \frac{1}{4} + \frac{1}{8} + \frac{1}{12} + \frac{1}{24} = \frac{12}{24} = \frac{1}{2}$$

$R = 2\Omega$

3) **When a 12V battery is connected across an unknown resistor, there isa current of 25mA in the circuit. Find the value of the resistance of the resistor.**

$V = 12V; \quad I = 2.5mA = 2.5 \times 10^{-3}A$

$$R = \frac{V}{I} = \frac{12}{2.5 \times 10^{-3}} = 4800\Omega$$

4) **A battery of GV is connected in series with resistor of 0.2Ω, 0.3Ω, 0.5Ω and 12Ω respectively. How much current would flow through the 12Ω resistor.**

Current through each component is same

Total resistance R= 0.2 + 0.3 + 0.4 + 0.5 + 12 =13.4Ω

$$\text{Current } I = \frac{V}{R} = \frac{9}{13.4} = 0.67 \text{ A}$$

5) **Which uses more energy a 250W TV set in 1hr or a 1200W toaster in 10 minutes.**

Energy used by TV set

$E_1 = P \times t = 250 \times 1hr$

   $= 250Wh$ or $0.25kwh$

Energy used by toaster

$E = P \times t$

   $= 1200 \times 12/60$ hr

   $= 200wh$

   $= 0.2kwh$ for 10 min.

6) **In electric heater of resistance 8 takes a current of 15A. Calculate the rate of heat produced in 2 hours**

$R = 8\Omega; \quad I = 15A; \quad t = 2$ hour

$H = I^2Rt$

   $= (15)^2 \times 8 \times 2 \times 60 \times 60$

$H = 15 \times 15 \times 3600 \times 16$

   $= 225 \times 57600$

$H = 12960000$ J

Rate of heat produced = H/t

$$= \frac{12960000}{2 \times 60 \times 60}$$

Heat energy = 1800W

UNIT TEST

I. Answer the following question according to marks.

1. What is the SI unit of electrical change?

2. Kilowatt hour is equal to
    a) 3.6×10
    b) 36×10^6
    c) 3.6×10^{16}
    d) 3.6×10^{-6}

3. Write the electrical symbols for the following a) wire joint   b) Ammetre

4. Write the mathematical form of ohm's law?

5. What is an Electric Circuit? Give one example?

6. State Ohm's law

7. State Jouls Law of heating?

8. Name the factors on which resistance of a conductor depend?

9. A current of 1.5 A is drawn by a filament of an electric bulb for 15 minutes find the amount of electric charge that flows through the circuit?

10. Write the circuit diagram showing resistors in series and explain Ohm's law?

11. What is a fuse? Name the principal used in it? What is the fuse rating of domestic wiring?

CHAPTER -11

MAGNETIC EFFECTS OF ELECTRIC CIRCUIT

1. **Mention the different effects of electric current?**
    When electric current is passed through any conductor the following 3 effects are obtained.
    (a) Magnetic effects of electric current.
    (b) Heating effects of electric current.
    (c) Chemical effects of electric current

2. **Define magnetic effects of electric current?**
    When electric current is passed through any conductor results in the formation of magnetic field around it. This effect of electric current is called magnetic effects of electric current.

3. **How can you detect the magnetic field around the conductor?**
    Magnetic needle is used to defect the magnetic field around the current carrying current conductor by showing deflection.

4. **Name some devices worked on the basis of magnetic effects of electric current.**
Some devices looked on the basis of magnetic effects of electric current are electric motor, electrical calling bells, electric generators.

5. **Write neat diagram showing "Detection of magnetic field assound a current carrying conductor?**
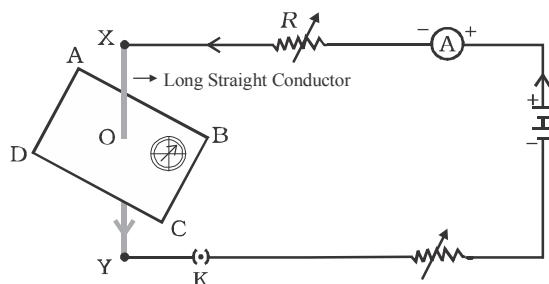
6. **What is magnetic field?**
The region surrounding a magnet. In which the force of the magnet can be detected. This region is called magnetic field.

7. **What are magnetic lines of force?**
The lines of force represent magnetic field around a bar magnet are called magnetic lines of force.

8. **Write the properties of magnetic lines of force?**
The properties of magnetic lines of force are.
   i)   Field lines never intersect each other.
   ii) Field lines arise from north pole and ends at south pole of the magnet.
   iii) Shows the direction of magnetic field.

9. **Magnetic field is a vector quantity Justify.**
Justification: Magnetic field has both magnitude & direction.

10. **Draw a labeled diagram shows magnetic field due to current through a straight conductor.**
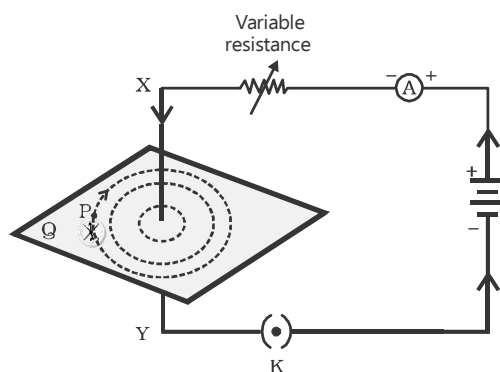
11. **State right hand thumb rule.**
    Imagine you are holding a current carrying straight conductor in your right hand such that the thumb is pointing towards the direction of current. Then the fingers wrapped around the conductor gives the direction of magnetic field.

12. **Draw a diagram to show magnetic field lines of the field produced by a current carrying circular loop**
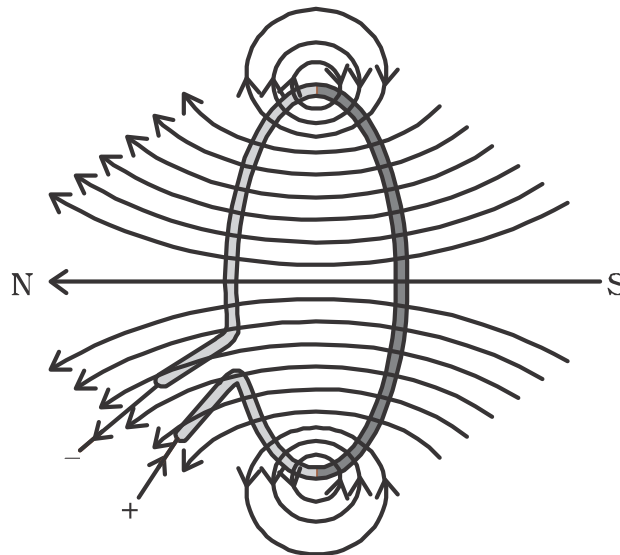
13. **What is solenoid? How does it behaves when the current is passed through it? Write its application.**
    A coil of many circular turns of insulated copper wire wrapped closely in the shape of cylinder is called a solenoid.
    When current is passed through the Solenoid, one end behaves as a magnetic north pole while the other behaves as the south pole.

14. **State fleming's left hand rule.**
    When we stretch our thumb, fore fingers & the middle finger of our left hand such that they are perpendicular to each other. Fore dinger points in the direction of magnetic field, middle finger in the direction of current, the thumb represents the direction of motion.

15. **State fleming's right hand rule.**
    Hold the thumb, fore finger & the middle finger of right hand at right angles to each other, the fore finger is in the direction of magnetic field, the thumb towards the direction of motion of conductor & the middle finger indicators the direction of induced current.

16. Name the devices worked on the basis of Fleming's left stand rule/write the application of Fleming's left hand rule.

Electric generator, electric motor, loud speakers, microphones and dynamos.

17. What is electric generator/dynamo.

Electric generator is a device which convert mechanical energy into electrical energy.

18. What is electric motor? On which principle does it works?

Electric motor is a device which converts electrical energy into mechanical energy. It works on the basis of Fleming's right hand rule.

19. What is alternating current?

The current which changes its direction periodically.

20. What precautions should be taken to avoid the overloading of domestic electric circuits?

- Arrange the appartues in parallel connections.
- Too many appliances should not be connected to a single socket.
- Fuse should be connected in the circuit.

21. Write the differenced between electric motor & electric generator.

Electric Motor	Electric Generator.
• It converts electrical energy into mechanical energy. • It works on Fleming's left hand rules.	• In converts mechanical energy into electrical energy. • It works on Fleming's right hand rule.

22. Write the differences between A.C Dynamo & D.C. Dynamo

A.C.Dynamo	D.C.Dynamo
• Alternating current is produced • When Current flows continuously changes its direction. • Complete rings are used	• Direct current is produced. • Current flows in unidirection. • Split rings are used.

Problems :

23. The capacity of an electric motor is 1.5KW. what happens if it is used in 5A domestic electric circuit.

Fuse melts and stops the movement of motor

Power (P) = 1.5 × 1000 w

= 1500 wat

$P = VI$ or $I = P/V$

$$= \frac{1500W}{220V} = 6.8 \text{ Ampes}$$

24. An electric circuit uses 5A electric current. In this how many 40 watts bulbs with 220 volts. Potential differences are used?

According to Ohm's law. $I = \dfrac{P}{V} = \dfrac{40W}{220V} = \dfrac{2}{11} A$

∴ 1 Bulb uses 0.18A of current.

∴ Total No of bulbs $= \dfrac{\text{Total electric current}}{\text{current consumed by 1 Bulb}}$

$$= \frac{5A}{0.18} = \frac{5 \times 100}{0.18 \times 100} = \frac{500}{18} = 27$$

∴ Total No of bulbs = 27

25. An electric oven of 2KW power rating is operated ina domestic electric current (220V) that ha a current rating of 5A. what result do you expect? Explain?

$P = 2K = 2 \times 1000W$

$\quad\quad = 2000$ W

$V = 220V; \quad I = ?$

$P = VI$

$I = P/V$

$$= \frac{20000}{220}$$

$I = 9.091A$

Electric fuse melts & breaks the circuit.

26. Draw a labeled diagram of an electric motor. Explain its working.

Electric motor is a device which converts electrical energy into mechanical energy. It works on Flemings left hand rule.
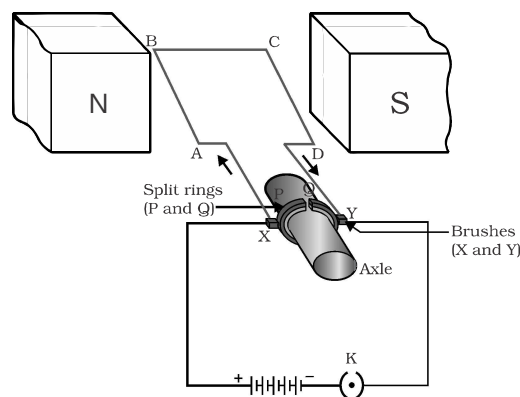
Arrange the parts as shown in the above diagram.

- Take insulated rectangular copper coil ABCD place this in between 'N' & 'A' magnets with B_1 & B_2 carbon brushes apply the electric current.
- When electric current flows, magnet & electrical energy are perpendicular to each other, motor starts to work.
- Exchange the mechanical energy takes place. When 2 splits rings comes over the insulated copper wire AB & CD. Thus motor works continuously.

NS → Two poles of a magnet

ABCD → rectangular copper coil

S_1S_2 → Split rings

B_1B_2 → carbon Brushes

C → battery

A sinupls electric motor.

28. **What is electric generator or dynamo? On which principle does it works? Explain its wiring with a labeled diagram?**

A device which converts mechanical energy into electrical energy is called a electric generator/ Dynamo. It works on Fleming's right hand rule.

- As shown in the above diagram, an insulated rectangular copper coil ABCD is placed in between the two strong magnets 'N' & 'S'. the 2 ends of the copper coils are connected to R_1R_2 two slip rings. This inturn connected to B_1 & B_2 carbon brushed. Now connect to electric sources & complete the circuit.
- Due to mechanical energy ABCD copper coil in between N&S strong magnets perpendicular to each other (current & magnetic field) due to magnetic effect, current is produced indicated by using Galvanometer.
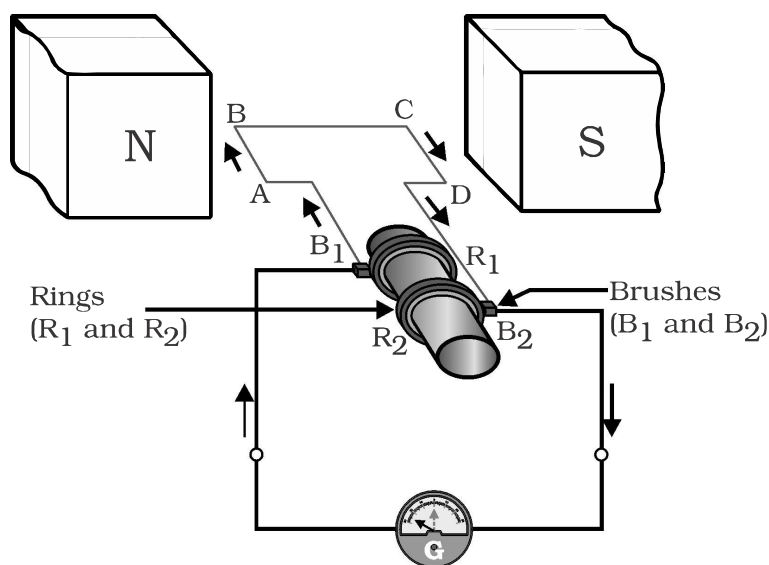
AC Dynamo

NS $\rightarrow$ Strong magnets

ABCD $\rightarrow$ Armature

$R_1R_2 \rightarrow$ slip rings

$B_1B_2 \rightarrow$ carbon brushes

L $\rightarrow$ loaded current

D.C Dynamo

NS $\rightarrow$ strong dynamets

ABCD $\rightarrow$ armature

$R_1R_2 \rightarrow$ Split rings

$B_1B_2 \rightarrow$ carbon brushes

L $\rightarrow$ loaded current

UNIT TEST

I.   Answer the following questions according to Marx

1.   What is a electric generator?

2.   Define neutral wire?

3.   What is the commutator?

4.   In right hand grip rule name the finger which shows direction of electric current?

5.   What are magnetic lines of force?

6.   Write neat diagram showing magnetic field lines around a loop?

7.   State Fleming's right hand rule?

8.   Write a diagram showing electrical motor.

9.   What is the Galvanometer? How is it connected in a circuit.

10. Write a diagram showing electrical generator and explain in its working.

11. What is short circuit? How can we avoid short circuit? What is the effect of short circuit?

CHAPTER - 12

SOURCES OF ENERGY

I.   One mark questions :

1.   How much voltage and power can be produced by a solar cell, when exposed to the sun
0.5 – 1 v , 0.7 W

2.   What is the speed of wind required to maintain the speed of the turbine?
Higher than 15 Km/h

3.   Name the components of bio gas.
Methane, carbon dioxide, hydrogen, hydrogen sulphide.

4.   The slurry left behind in biogas plant is used as excellent manure. Give reason.
Because this manure is rich in nitrogen and phosphorous.

5. **How much land area required to generate 1 MW power from wind energy?**
    2 hectares

6. **Which material is required for making solar cells?**
    Silicon

7. **What is the main reason for high and low tides of sea?**
    Gravitational pull by moon.

II. Two marks Questions :

8. **List out the applications of solar cells**
    They are used in
    *   Artificial satellites and space probes
    *   Radio and wireless transmission system, T.V. relay stations, traffic signals.
    *   Calculators and many toys
    *   Domestic use

9. **List out the characteristics of a good source of energy.**
    *   Be easily accessible
    *   Easy to store and transport
    *   Be economical
    *   Do not produce smoke or ash (residue)
    *   Release more heat on burning.

10. **Differentiate between conventional and non-conventional sources of energy.**

Conventional energy sources	Non-conventional energy sources
• They are non – renewable	• Renewable
• They pollute the environment	• Eco – friendly
• Their deposition is less	• abundant
• They are being used for a long time	• They are not used for a long time

11. **Hydro power is less harmful than nuclear power how?**
    *   Hydro power is eco – friendly
    *   Hydropower plants do not emit any radiations.
    *   It is renewable source of energy

12. **Explain the method of conversion of geo-thermal energy into electrical energy.**
    The water at the surface of the sea or ocean is heated by the sun. The warm surface water is used to boil a volatile liquid like ammonia.
    The vapours of the liquid are then used to run the turbine of generator.

13. **How electricity is generated from nuclear energy? Explain.**
    *   The nucleus of a heavy atom when bombarded with low – energy neutrons. Can be split apart into higher nucleus.

- In this phenomenon enormous amount of energy is released in the form of heat.
- The released energy can be used to produce steam and further generate electricity.

III. Three marks Questions :

14. What are the disadvantages of

a) Fossil fule
- Pollute environment
- Non – renewable
- Limited source

b) Nuclear energy
- storage and disposal of nuclear fuels and wastes cause environmental contamination
- Risk of accidental leakage of nuclear radiation
- High cost of installation of a nuclear power plant
- Limited availability of uranium

15. Give reason

a) In a solar cooker in and out of the box is painted black
Because to absorb more heat

b) Solar cookers are covered with a glass plate.
Because to prevent the evaporation of heat from the box.

c) Fire wood is not a good source of energy
Because
- It leaves ash
- heating capacity is less
- release more smoke

16. What are the advantages of using

a) Solar energy
- Everlasting
- Renewable
- Eco – friendly
- Abundant source of energy

b) Bio-gas
- It burns without smoke
- Its heating capacity is high
- It does not leave any residue like ash
- It also used for lighting

17. What are the disadvantages of burning of fossil fuels?
- They pollute the environment
- Excess use of these fuels will cause the scarcity of fuels in the future.
- Burning of these fuels will cause acid rain greenhouse effect etc.

18. Explain the construction and working of bio-gas plant.
- The plant has a dome – live structure built with bricks.
- Slurry of cow dung and water is made in the mixing tank from where it is fed into the digester.
- The digester is a closed chamber in which there is no oxygen.
- Anaerobic micro – organisms decompose the slurry in the digester.
- At the end of the process bio – gas is produced and stored in the gas tank above the digester.
- The gas is drawn through pipes for use.

19. Diagram - Biogas Plant.
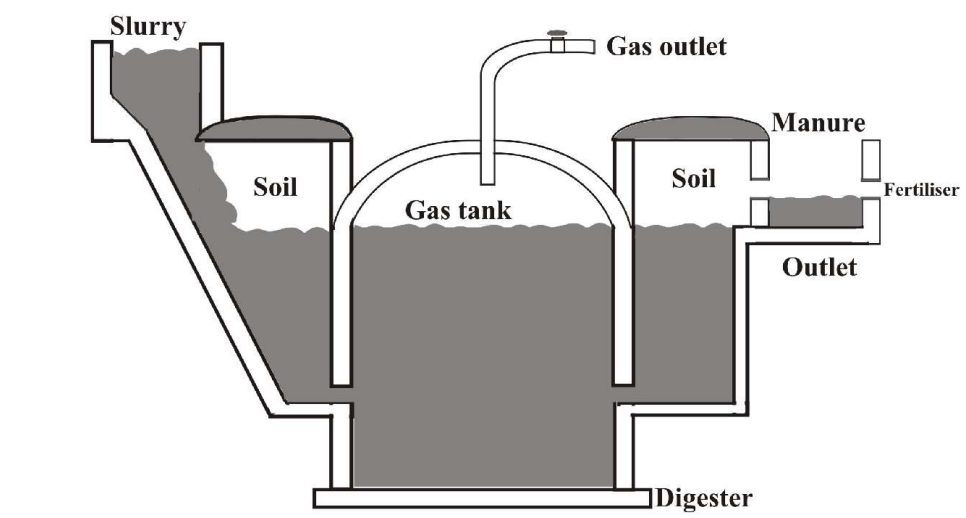
UNIT TEST

Max marks [20]

I. Choose the correct answer :   **[3 x 1 = 3]**

1. The most common source of heat energy in ancient times is _____.
   a) Wood   b) Coal
   c) Petroleum   d) Natural gas

2. The estimated value of solar constant is _____.
   a) 14 KJ per second   b) 1.4 KJ per second
   c) 0.7 KJ per second   d) 0.5 – 1 KJ per second

3. The required speed to maintain turbines when electricity generated from wind energy is _____.
   a) Higher than 15 Km/h   b) Higher than 12 km/h
   c) Higher than 10 km/h   d) Higher than 20 km/h

II. Answer the following questions :   **[3 x 1 = 3]**

4. Many thermal power plants are set up near coal or oil fields. Why?

5. What is the reason for tidal energy in seas?

6. In a solar cooker in and out of the box is painted black. Why?

III. Answer the following questions :   **[4 x 2 = 8]**

7. What are the qualities of an ideal sources of energy?

8. What are the disadvantages of wind energy?

9. "Use of nuclear energy is not eco-friendly" Why?

10. Differentiate between renewable and non-renewable sources of energy.

IV. Answer the following questions :   **[3 x 2 = 6]**

11. What is Solar cell? List out the uses of it.

12. Explain the construction and working of bio-gas plant.

CHAPTER – 13

OUR ENVIRONMENT

I. Definitions :

1. **Ozone :-** Ozone (O3) is a molecule formed by three atoms of oxygen

2. **Bio degradable substances :-** Substances that are broken down by biological process

3. **Non Bio degradable substances :-** Substances that are not broken down by biological process.

4. **Ozone depletion :-** When ozone reacts with the chemicals like chlorofluro carbons leads to ozone depletion

II. 1 mark questions :

5. **Why it is mandatory to manufacture CFC free refrigerators?**
    It is mandatory to manufacture CFC free refrigerators because chlorine gas released from the CFC's cause ozone depletion.

6. **Identify Biodegradable waste from the following DDT, agricultural waste, glass, leather**
    Agricultural waste, leather

7. **Name any 2 non-biodegradable waste substances.**
    Plastic materials, Polythene bags, DDT

8. Name the synthetic chemicals which are used as refrigerants and in fire extinguishers.

Chlorofluro carbons (CFCs)

III. 2 Mark questions

9. Differentiate between bio-degradable and non-biodegradable substances with examples

Biodegradable	Non-Biodegradable
Substances that are broken down by Biological processes *Ex :* papers, kitchen waste, sewage water	Substances that are not broken down by biological processes *Ex :* Plastics, glass

10. Even though ozone is a deadly poison how does it protects the earth?

Ozone is deadly poison; however at the higher levels of the atmosphere, it performs an essential function. It shields the surface of the earth from ultraviolet radiations from the sun.

11. Give any 2 ways in which biodegradable substances would affect the environment.

* The huge amount of biodegradable substances produces foul gases and pollute the environment
* A number of pathogens and pests breed in such places and spread the diseases.

12. Give any 2 ways in which non- biodegradable substances would affect the environment.

* Non-biodegradable substances chock the sewage system and pollute the soil.
* Affects the life of both aquatic and terrestrial animals

13. If all the waste we generate is biodegradable, will this have no impact on the environment?

If the biodegradable waste are disposed properly then this have no impact on the environment but these waste too causes environment pollution if they are not disposed properly.

14. What are the advantages of cloth bags over plastic bags during shopping?

Advantages of cloth bags over plastic bags during shopping are,

* Cloth bags are biodegradable thus can be easily decomposed by microorganisms.
* Cloth bags can be used again can be washed and do not causes any harm to the environment.
* Whereas plastic bags are non-biodegradable and hence can pollute the environment.

15. **Why should biodegradable and non-biodegradable wastes be discarded in 2 dustbins?**

    Biodegradable waste is broken down by the activities of microorganisms in nature into simple harmless substances. Non-biodegradable wastes need a different treatment for disposal and hence both should be discarded in two different dustbins.

III. 3 Mark Questions

16. **How is ozone formed in the upper atmosphere?**

    Ozone formed in the upper atmosphere is product of uv radiation acting on oxygen molecule (O_2) into free oxygen atoms (O). these atoms then combine with the molecular oxygen to form ozone

    $$O_2 \xrightarrow{\text{Uv - radiation}} O + O$$

    $$O + O_2 \longrightarrow O_3 \left(\text{ozone}\right)$$
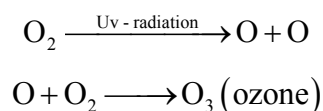
17. **What are the consequences of ozone depletion?**
    * Uv-radiation enters into atmosphere causes skin cancer, cataract in humans
    * It affects the growth and Physiological functions of both plants and animals
    * Causes DNA mutations.

18. **"Damage to the ozone layer a cause of concern" Justify. What steps are being taken to limit this damage?**

    Ozone layer has become a cause of concern because depletion of ozone can cause serious effects on human body and other organisms of the environment
    * Cancer and loss immunity in humans.
    * Destruction of aquatic life and vegetation

    Steps taken to limit this damage to the ozone layer – Reducing the use of CFCs

19. **Give suggestions for the problems of waste disposal.**
    * Minimize the use of disposable items.
    * Recycle the materials to be used
    * reduce the usages of non-biodegradable substances like plastic, Poly thanes bags, Pesticides etc.

20. **Why some substances biodegradable and some are non-biodegradable?**

    Substances which are broken down by enzymes produced by decomposes are biodegradable

    Eg: Sewage, livestock waste, agricultural waste etc.

    The substances which cannot be broken down by enzymes produced by decomposes are non-biodegradable

    Eg: Plastic, Glass, Polythene bags etc.

UNIT TEST

Marks -20

I. Choose the correct answers of the following.   1 x 2 = 2

1. This method gives better solution for Non Biodegradable waste management
    a) Burning   b) Land filling
    c) Recycling   d) Dumping

2. Depletion of ozone layer is mainly due to
    a) Carbon   b) chloral fluro carbon
    c) methane   d) pesticide

II. Answer the following questions:-   1 x 2 = 2

3. Name any 2 Biodegradable substances.

4. What is ozone?

III. Answer the following questions:-   2 x 5 = 10

5. How Biodegradable substances are different from non Biodegradable substances?

6. Classify the following in to Biodegradable Non Biodegradable substances – DDT, Polythene covers, cow dung, glass, vegetable peels.

7. How is ozone formed?

8. Why some materials are not decomposed by the action of micro organisms?

9. Why is ozone layer important for the existence life earth?

IV. Answer the following questions:-   3 x 2 = 6

10. "Damage to the ozone layer is a cause of concern" justify this statement.

11. List the advantages of cloth bags over plastic bags.

Chapter 14

SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

I. One mark Questions :

1. Name the bacteria for the pollution of River Ganga
Coliform bacteria.

2. Name the award started recently to conserve wild life from Indian government.
"Amruthadevi Bishnoui National award"

II. Two mark Questions :

3. List the 5 R's to be followed in our daily life to conserve the natural resources.
5R's → Reduce > Reuse > Refuse > Recycle > Repurpose

4. **What are the precautions to be taken while using natural resources?**
   - Natural resources are not available continuously
   - Increases in population also increase the demand for natural resources.
   - Miss use of these resources for getting limited profits.

5. **Forests are Bio-diversity Hot-spots. Justify?**
   Because large number species and the range of different life forms are found in forests

6. **Why do the environmentalists oppose the construction of huge dams?**
   Because of 3 definite problems
   - Social problems
   - Economic problems
   - Environmental problems

7. **Reuse method is the best method of environment conservation. Justify?**
   Reuse method is the best method because
   - There is no loss of energy
   - Minimise the pressure on the environment
   - Used materials are once again used.

8. **List out the ways to lead eco-friendly life.**
   Eco friendly practices are
   - Planting trees in our surroundings
   - Renewable and Bio – degradable resources must be encouraged
   - Avoid the miss- use of food
   - Waste management.

9. **Name the main stake holders found in the conversation of forests and wild life.**
   - The people who live in or around the forest
   - Forest department of the government
   - Small and large scale industries
   - Eco – friends

UNIT TEST

Marks -20

I.   Choose the correct answer   **1 x 3 = 3**

1) _____ are biodiversity hotspots
   a) Forests   b) Plants
   c) soil   d) Rain

2) Khejri village is located in Which State
   a) Kerala   b) Tamilnadu
   c) Rajasthan   d) Goa

3) Tehri dam was constructed on _____ river
   a) Ganga   b) Sindhu
   c) Kaveri   d) Godavari

II. Answer the following questions in one sentence each :   **1 x 3 = 3**
4) Define Biodiversity?
5) List out any two industries Based on forest products.
6) What is rainwater harvesting

III. Answer the following questions in 2 - 3 sentence each :   **2 x 4 = 8**
7) Reuse is better than recycling of materials give reason to justify your statement

8) What is conservation of water ? Mention two methods to conserve it.

9) Suggest any four changes that would you like to incorporate in the life style of students of your age towards a sustainable use of available resources?

10) Conservation of forests and wildlife is very essential. Substantiate your answer.

IV. Answer the following questions in 2 - 3 sentence each :   **3 x 2 = 6**
11) Briefly explain some harmful effects of agricultural practices on the environment.

12) What is dam? Mention any two advantages and disadvantages of constructing a dam?

❊ ❊ ❊ ❊

			ವಿದ್ಯಾರ್ಥಿಗಳ ದಿನಚರಿ
1	ಬೆಳಿಗ್ಗೆ 5–00 ರಿಂದ 5–15	15 ನಿಮಿಷ	ನಿದ್ರೆಯಿಂದ ಎದ್ದು, ಲಘು ವ್ಯಾಯಾಮ, ಹಲ್ಲು ಉಜ್ಜುವುದು, ಮುಖತೊಳೆದು, ಬೆಳಗ್ಗಿನ ಅಭ್ಯಾಸಕ್ಕೆ ಸಿದ್ಧಗೊಳ್ಳುವುದು.
2	ಬೆಳಿಗ್ಗೆ 5–15 ರಿಂದ 8–00	1–30 ಗಂಟೆ	ಬೆಳಗಿನ ಓದು, ಕ್ಲಿಷ್ಟ ವಿಷಯಗಳ ಅಭ್ಯಾಸ ಗಣಿತ/ ಇಂಗ್ಲೀಷ್ / ವಿಜ್ಞಾನ / ಸಮಾಜ ವಿಜ್ಞಾನ
3	ಬೆಳಿಗ್ಗೆ 5–15 ರಿಂದ 8–00	1–30 ಗಂಟೆ	ಮನೆ ಕೆಲಸದಲ್ಲಿ ಪೋಷಕರಿಗೆ ಸಹಕರಿಸುವುದು ಮತ್ತು ನಿತ್ಯಕರ್ಮಗಳನ್ನು ಪೂರೈಸುವುದು.
4	ಬೆಳಿಗ್ಗೆ 8–00 ರಿಂದ 8–30	30 ನಿಮಿಷ	ಬೆಳಗಿನ ಉಪಹಾರ ನಂತರ ಶಾಲೆಗೆ ಹೊರಡಲು ಸಿದ್ಧತೆ ಮಾಡಿಕೊಳ್ಳುವುದು.
5	ಬೆ. 8–30 ರಿಂದ 9–00	30 ನಿಮಿಷ	ಶಾಲೆಗೆ ಪ್ರಯಾಣ ಮಾಡುವುದು.
6	ಬೆ. 9–00 ರಿಂದ 10–15	1–15 ಗಂಟೆ	ಶಾಲೆಯ ವಿಶೇಷ ತರಗತಿಗಳು/ಪರಿಹಾರ ಬೋಧನಾ ತರಗತಿ/ಗುಂಪು ಅಧ್ಯಯನದಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳುವುದು.
7	ಬೆ 10–15 ರಿಂದ ಮ 4–30	6–15 ಗಂಟೆ	ತರಗತಿಯಲ್ಲಿ ಕಲಿಕೆಯಲ್ಲಿ ತೊಡಗಿರುವುದು.
8	ಸಂ 4–30 ರಿಂದ 5–00	30 ನಿಮಿಷ	ಆಟೋಟಗಳಲ್ಲಿ ಭಾಗವಹಿಸುವುದು.
9	ಸಂ. 5–00 ರಿಂದ 5–30	30 ನಿಮಿಷ	ಮನೆಗೆ ಹಿಂತಿರುಗುವುದು
10	ಸಂ 5–30 ರಿಂದ 6–30	1 ಗಂಟೆ	ಸಂಜೆಯ ಚಟುವಟಿಕೆಗಳು
11	ಸಂ 6–30 ರಿಂದ 8–00	1–30 ಗಂಟೆ	ಶಾಲೆಯಲ್ಲಿ ನೀಡಿರುವ ಗೃಹ ಕಾರ್ಯಗಳನ್ನು ಪೂರ್ಣಗೊಳಿಸುವುದು.
12	ರಾತ್ರಿ 8–00 ರಿಂದ 8–30	30 ನಿಮಿಷ	ತೃತೀಯ ಭಾಷೆ ಅಭ್ಯಾಸ
13	ರಾತ್ರಿ 8–30 ರಿಂದ 9–00	30 ನಿಮಿಷ	ರಾತ್ರಿ ಊಟ
14	ರಾತ್ರಿ 9–00 ರಿಂದ 10–00	1 ಗಂಟೆ	ಕ್ಲಿಷ್ಟ ವಿಷಯಗಳ ಅಭ್ಯಾಸ
15	ರಾತ್ರಿ 10–00 ರಿಂದ 11–00	1 ಗಂಟೆ	ಸಮಾಜ ವಿಜ್ಞಾನ, ಪ್ರಥಮ ಭಾಷೆ ಅಭ್ಯಾಸ
16	ರಾತ್ರಿ 11–00 ರಿಂದ 5–00	6 ಗಂಟೆ ನಿದ್ದೆಗೆ ಮೀಸಲು	ಪುನರ್ ಮನನ ಮಾಡುತ್ತಾ ಸುಖ ನಿದ್ರೆಗೆ ಜಾರುವುದು

ವಿಷಯ ಸೂಚನೆ : ಪ್ರತಿ ದಿನ ನಿದ್ರೆಗೆ ಜಾರುವ ಮುನ್ನ ಆಯಾ ದಿನದಲ್ಲಿ ನಡೆದ ಎಲ್ಲಾ ಚಟುವಟಿಕೆಗಳನ್ನು ಒಮ್ಮೆ ನೆನಪಿಸಿಕೊಳ್ಳಬೇಕು. ಅವುಗಳಲ್ಲಿ ಯಾವುದಾದರೂ ಸೂತ್ರ, ಕೆಲವು ಚಿತ್ರದ ಭಾಗಗಳು, ಪತ್ರ ಲೇಖನಗಳು, ಉತ್ತರಗಳಲ್ಲಿನ ಸಾಲುಗಳು ಇವುಗಳನ್ನು ಬೆಳಿಗ್ಗೆ ಎದ್ದ ಕೂಡಲೇ ಪುನಃ ಒಮ್ಮೆ ಗುರುತುಮಾಡಿಕೊಳ್ಳಬೇಕು. ಹೀಗೆ ಮಾಡುವುದರಿಂದ ಓದಿದ್ದು ಶಾಶ್ವತವಾಗಿ ಮೆದುಲಿನಲ್ಲಿ ಉಳಿಯುತ್ತದೆ. ಆದರೂ ಕ್ಲಿಷ್ಟತೆ ಅನಿಸಿದರೆ ಶಿಕ್ಷಕರು ಅಥವಾ ಸಹಪಾಠಿಗಳೊಂದಿಗೆ ಚರ್ಚಿಸಿದರೆ ಅನುಕೂಲವಾಗುತ್ತದೆ.

(ಸೂಚನೆ : ಇಲ್ಲಿ ನೀಡಿರುವುದು ಕೇವಲ ಮಾದರಿ ದಿನಚರಿ ನಮೂನೆಯಾಗಿದ್ದು, ವಿದ್ಯಾರ್ಥಿಗಳು ತಮಗೆ ಅನುಕೂಲವಾಗುವ ರೀತಿಯಲ್ಲಿ ಮಾದರಿ ದಿನಚರಿಯನ್ನು ಸಿದ್ಧಪಡಿಸಿಕೊಳ್ಳುವುದು.

2020-21ನೇ ಸಾಲಿನ ಕ.ರಾ.ಪ.ವ. ... ...

ಕ್ರ. ಸಂ.	ವಿಭಾಗ	ಬೆಂಗ ಆಶ್ರಿತ ಸಂಖ್ಯೆ (ಸಮಿತಿಗಳು)	ಬೆಂಗ ಅಂಕ			ಗರಿಷ್ಠ ಅಂಕ	ಬೆಂ - ಅಂಕಗಳ ವಿವರ					ಬೆಂ ಆಶ್ರಿತ ಸಂಖ್ಯೆಗಳು	ನಿಗದಿ	ನಿಗದಿ	ದಾಖಲು	ಉಪಸ್ಥಿತಿ
			ಅಂತರಿಕ	ಲಿಖಿತ	ಒಟ್ಟು		1	2	3	4	5					
1	ಬೆಂಗ	17	25	100	125	3.15	17	10	11	5	2	45	107	75	63	44
2	ಬೆಳಗಾವಿ	14	20	80	100	3.00	16	8	9	4	1	38	85	60	50	53
3	ಕಲಬುರಗಿ	16	20	80	100	3.00	16	8	9	4	1	38	85	60	50	35
4	ಮೈಸೂರು	11	20	80	100	3.15	16	8	9	4	1	38	85	60	50	35
5	ಮಂಗಳೂರು	14	20	80	100	3.15	16	8	9	4	1	38	85	60	50	35
6	ಶಿವಮೊಗ್ಗ	31	20	80	100	3.15	16	8	9	4	1	38	85	60	50	35
	ಒಟ್ಟು	103	125	500	625	19.00	97	50	56	25	7	235	532	375	313	189

2020–2021 ರ ಎಸ್.ಎಸ್.ಎಲ್.ಸಿ ವಾರ್ಷಿಕ ಪರೀಕ್ಷೆಯ ವೇಳಾಪಟ್ಟಿ

ದಿನಾಂಕ ಮತ್ತು ವಾರ	ವಿಷಯ	ಸಮಯ	ಒಟ್ಟು ಅವಧಿ	ಗರಿಷ್ಠ ಅಂಕಗಳು
21–06–2021 ಸೋಮವಾರ	ಕನ್ನಡ	ಬೆಳಿಗ್ಗೆ 9.30 ರಿಂದ ಮಧ್ಯಾಹ್ನ 12.45	3 ಗಂಟೆ 15 ನಿಮಿಷ	100
24–06–2021 ಗುರುವಾರ	ಗಣಿತ	ಬೆಳಿಗ್ಗೆ 9.30 ರಿಂದ ಮಧ್ಯಾಹ್ನ 12.45	3 ಗಂಟೆ 15 ನಿಮಿಷ	80
28–06–2021 ಸೋಮವಾರ	ವಿಜ್ಞಾನ	ಬೆಳಿಗ್ಗೆ 9.30 ರಿಂದ ಮಧ್ಯಾಹ್ನ 12.45	3 ಗಂಟೆ 15 ನಿಮಿಷ	80
30–06–2021 ಬುಧವಾರ	ಹಿಂದಿ	ಬೆಳಿಗ್ಗೆ 9.30 ರಿಂದ ಮಧ್ಯಾಹ್ನ 12.30	3 ಗಂಟೆ	80
01–07–2021 ಗುರುವಾರ	ಇಂಗ್ಲೀಷ್	ಬೆಳಿಗ್ಗೆ 9.30 ರಿಂದ ಮಧ್ಯಾಹ್ನ 12.30	3 ಗಂಟೆ	80
05–07–2021 ಸೋಮವಾರ	ಸಮಾಜ ವಿಜ್ಞಾನ	ಬೆಳಿಗ್ಗೆ 9.30 ರಿಂದ ಮಧ್ಯಾಹ್ನ 12.45	3 ಗಂಟೆ 15 ನಿಮಿಷ	80

2020–21 ನೇ ಸಾಲಿನ ವಾರ್ಷಿಕ ಪರೀಕ್ಷೆಗೆ ಕೌಂಟ್ ಡೌನ್

29-03-2021 84	30-03-2021 83	31-03-2021 82	01-04-2021 81	02-04-2021 80	03-04-2021 79	04-04-2021 78	05-04-2021 77
06-04-2021 76	07-04-2021 75	08-04-2021 74	09-04-2021 73	10-04-2021 72	11-04-2021 71	12-04-2021 70	13-04-2021 69
14-04-2021 68	15-04-2021 67	16-04-2021 66	17-04-2021 65	18-04-2021 64	19-04-2021 63	20-04-2021 62	21-04-2021 61
22-04-2021 60	23-04-2021 59	24-04-2021 58	25-04-2021 57	26-04-2021 56	27-04-2021 55	28-04-2021 54	29-04-2021 53
30-04-2021 52	01-05-2021 51	02-05-2021 50	03-05-2021 49	04-05-2021 48	05-05-2021 47	06-05-2021 46	07-05-2021 45
08-05-2021 44	09-05-2021 43	10-05-2021 42	11-05-2021 41	12-05-2021 40	13-05-2021 39	14-05-2021 38	15-05-2021 37
16-05-2021 36	17-05-2021 35	18-05-2021 34	19-05-2021 33	20-05-2021 32	21-05-2021 31	22-05-2021 30	23-05-2021 29
24-05-2021 28	25-05-2021 27	26-05-2021 26	27-05-2021 25	28-05-2021 24	29-05-2021 23	30-05-2021 22	31-05-2021 21
01-06-2021 20	02-06-2021 19	03-06-2021 18	04-06-2021 17	05-06-2021 16	06-06-2021 15	07-06-2021 14	08-06-2021 13
09-06-2021 12	10-06-2021 11	11-06-2021 10	12-06-2021 09	13-06-2021 08	14-06-2021 07	15-06-2021 06	16-06-2021 05
17-06-2021 04	18-06-2021 03	19-06-2021 02	20-06-2021 01	**Good Luck**			

ಅಭ್ಯಾಸದ ಹಾಳೆಗಳು