

M. Sc. SEM III

Paper III Natural product & spectroscopy

Sample Questions

1. is mainly obtained from wood pulp and cotton.
 - A. Amino sugar
 - B. Chitin
 - C. Lactose
 - D. Cellulose
2. Starch is polysaccharide molecule having approximately units all.
 - A. 22-30 glucose
 - B. 25-30 glucose
 - C. 24-30 glucose**
 - D. 26-30 glucose
3. The colouring matter found in cell sap are known as.... Pigments.
 - A. Bixin
 - B. Pyran pigment
 - C. Anthocyanin
 - D. Anthrocyanin**
4. Carotenoids are aliphatic or alicyclic compound of units
 - A. Quinoid units
 - B. Isoprene units**
 - C. Pyrrole unit
 - D. Pyran unit
5. Carotenoids take part in reaction taking place in plants.
 - A. Oxidation
 - B. Redox**
 - C. Reduction
 - D. Elimination
6. Common sugar found in anthocyanin are glucose, galactose and.....
 - A. Fructose
 - B. Rhamnose**
 - C. Fucose
 - D. Lactose

7. Increase osmotic pressure of cell sap

A. Anthocyanin

B. β - Carotene

C. Quinones

D. Porphyrins

8. are pleasing colourful fluorescing pigment.

A. Anthocyanin

B. β - Carotene

C. Pterins

D. Porphyrins

9. is found in plant is found as phosphoric acid ester as Calcium salt known as chiten.

a. Cellulose

b. Starch

c. Inositol

d. Amino sugar

10. are colourless solid with high M. P.

A. Anthocyanin

B. β - Carotene

C. Pterins

D. Leucopterins

11. The haemoglobin which has four porphyrin system and complex.

A. Magnesium

B. Copper

C. Iron

D. Cobalt

12. β - Carotene consist of

A. Crotonic acid

B. Propionic acid

C. Acetic acid

D. Tannic acid

13. Chlorophyll & Haemoglobin form two important porphyrins containing..... and iron metal complex respectively

- A. Cobalt
- B. Cupper
- C. Magnesium**
- D. Zinc

14. β - Carotene adds on five moles of maleic anhydride to form adduct indicating.....double bond.

- A. 5- conjugated double bond**
- B. 5- conjugated double bond
- C. 5- conjugated double bond
- D. 5- conjugated double bond

15. Reserpine is used as _____.

- a. Defensive agents
- b. Non-steroidal anti inflammatory drugs
- c. Anticancer drugs
- d. Antihypertensive drugs

16. It is macrocyclic sesquiterpenoid.

- a. Juvabione
- b. Caryophyllene
- c. Taxol
- d. Longifolline

17. _____ is used in enlargement of seedless grapes stimulation and germination

- a. Gibberellic acids
- b. Aryl acetic acid
- c. Triacontanol
- d. Auxins

18. Insect growth regulators are used as insecticides to control _____ of harmful pests.

- a. Population
- b. Elongation
- c. Metabolism
- d. Hormonal balance

19. Hydrolysis of fatty acids carried by

- a. Reductase
- b. Dehydrogenase
- c. Lipases
- d. Carboxylase

20. Which aromatic amino acid act as a precursor of Indol-3-acetic acid biosynthesis?

- a. Methionine
- b. Tryptophan
- c. Glycine
- d. Iso pentynyl pyrophosphate

21. The abundantly distributed enzyme in germinating seeds is

- a. Lipase
- b. Proteases
- c. Cellulose
- d. Nuclease

22. Which of these is **NOT** a lipid.

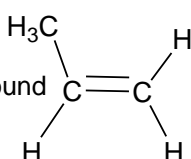
- a. Fats
- b. Oils
- c. Proteins
- d. Waxes

23. Fatty acids which react with alkali to form salts, process is known as

- a. Colloidal dispersion
- b. Saponification
- c. Mutation
- d. Hydrogenolysis

24. Which of the following is **NOT** a type of Eicosanoids.

- a. Prostaglandins
- b. Thromboxanes
- c. Leucotrienes
- d. Isoflavonoids

25. The compound  has vinyl protons

- a. magnetically equivalent
- b. chemically equivalent**
- c. magnetically & chemically equivalent
- d. chemically non – equivalent

26. -CH₂- carbon will be absent in __

- a. DEPT-90
- b. DEPT-135
- c. DEPT- 45
- d. Normal ¹³C spectrum

27. The compound 1- phenyl ethane will show_____signals in DEPT 90.

a. **3.**

b. 4

c. 5

d. 6

28. Ethyl acetate $\text{H}_3\text{C} - \text{CO} - \text{CH}_2\text{CH}_3$ shows following ^1H spectrum δ 1.3 (t), δ 2.1 (s), δ 4.1 (q). The quartet at 4.1 ppm will pair up with a signal due to _____in HETCOR spectrum.

a. C-1

b. C-2

c. **C-3**

d.C-4

29. In the Acetophenone carbonyl carbon will show signal at δ ___ppm.

a. 24.18

b. 120.39

c. **138.17**

d.169.49

30. In the following structure, δ values for $>\text{C}=\text{N}$ & $>\text{C}=\text{O}$ carbon in CMR spectra will be -----respectively.

a. 163 ppm and 113 ppm

b. 25 ppm and 14 ppm

c. **113ppm and 163ppm**

d.114ppm and 130ppm

31. A compound with molecular formula $C_3H_6O_2$ shows following spectral data: Mass spectrum $M^+ = m/z = 74$, base peak = $m/z = 31$, UV spectrum: above 205 nm, no absorption CMR spectrum δ (ppm) = 14, 60, 161, IR: 1715 cm^{-1} The peak at 161 appears positive peak in DEPT - 90 spectrum PMR spectra δ (ppm) = 8.026 (s, 1H), 4.215 (q, 2H), 1.289 (t, 3H)

Assign the structure to the compound

a. CH_3-CH_2-COOH

b. $HCOOCH_2CH_3$

c. Oxatene-2-ol

d. Propane-1,2-diol

32. Ethyl benzene shows _____ signals in its CMR spectrum

a. 3

b. 4

c. 5

d. 2

33. Base value for benzene in CMR spectra is _____

a. 128.5 ppm

b. 150 ppm

c. 200

d. 100

34. Pyridine will show _____ signals in CMR Spectrum

a. 3

b. 2

c. 4

d. 5

35. The off-resonance proton decoupled CMR spectrum of compound $\text{CH}_3\text{-CH}_2\text{-CO-CH}_3$, 'b' carbon will show a _____

- a. Doublet
- b. Triplet
- c. Quartet**
- d. singlet

36. Long range coupling in allylic system is dependent on _

- a. Inductive effect b. Electronegativity
- c. Stereochemical features**
- d. Both inductive effect and electronegativity

37. $\text{Eu}(\text{fod})_3$ used in PMR spectroscopy is _

- a. Solvent
- b. Chemical shift reagent**
- c. An internal reference
- d. A solvent and an internal reference

38. An aldehyde proton absorbs around δ ___ppm in the PMR spectrum

- a. 2
- b. 6
- c. 9**
- d. 5

39. The compound has___non equivalent vicinal protons

- a. Two
- b. Three**
- c. Four
- d. One

40. Aromatic aldehydes are characterized by _____ peak

a. $(M-1)^+$

b. M^+

c. $(M-2)^+$

d. $(M+1)^+$