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MPC 104 T

Roll No. of candidate | | | | | | | | | | |

2021

M.Pharm. 1st Semester (Regular) Examination

Pharmaceutical Chemistry

CHEMISTRY OF NATURAL PRODUCTS (THEORY)

(New Regulations w.e.f. 2017-18)

Full Marks – 75 Time – Three hours

The figures in the margin indicate full marks for the questions.

SECTION – A

1. (A) Choose the correct answer from the following: (10 × 1 = 10)

(i) Which of the following analytical instrument is used to detect the functional groups of compounds?

(a) NMR spectroscopy (b) FT-IR spectroscopy

(c) Mass spectroscopy (d) GC-FID spectroscopy

(ii) Which of the following is a neuromuscular blocking agent?

(a) Emetin (b) Diosgenin

(c) d-tubocurarine (d) Azithromycin

(iii) In the UV-Visible range, quercetin has two absorption band ———— and ————.

(a) B and A (140-180 nm) and B and B (240-240 nm)

(b) B and A (240-280 nm) and B and B (340-440 nm)

(c) B and A (340-380 nm) and B and B (440-540 nm)

(d) None of the above

[Turn over

(iv) In general, ephedrine and its enantiomers show how many stereoisomers?

(a) 2 (b) 4

(c) 6 (d) 8

(v) Which of the following is a β-lactam antibiotic?

(a) Sulphonamides (b) Clarithromycin

(c) Carbapenem (d) All of the above

(vi) Which of the following is a monoterpenoid compound?

(a) Retinol (b) Squalene

(c) Phytol (d) Citral

(vii) Hybridoma are specialized cells which are formed by the fusion of _____ and _____ cells

(a) Lymphocyte-B and Cancerous cells

(b) Lymphocyte-B and T-Cell

(c) Cancerous cells and T-Cell

(d) Cancerous cells and platelets

(viii) Which of the following phytochemical compounds has a ketone functional group in its structure?

(a) Morphine (b) Ephedrine

(c) Emetine (d) Camphor

(ix) Biological source of plant containing emetine is _____

(a) *Ceaphaelis ipecacuanha* (b) *Claviceps purpurea*

(c) *Strychnos nux-vomica* (d) *Ephedra sinica*

(x) Reserpine is obtained from which of the following?

(a) Rauwolfia (b) Opium

(c) Ephedra (d) Taxus

(B) Answer the following in short (any *five*) (5 × 2 = 10)

(i) Give the stereochemistry of ephedrine.

(ii) Give the mechanism of action of neuromuscular blocking agent.

(iii) Describe in brief the mechanism of antioxidant activity of flavonoids.

(iv) How volatile oil components can be extracted and isolated?

(v) Give the name of at least four plants having antidiabetic activity.

(vi) Give the application of NMR spectroscopy.

SECTION – B

2. Answer the following questions (any *seven*): (7 × 5 = 35)

(a) Match the following crude drugs with their active constituents (5 × 1 = 5)

Group A		Group B	
(i)	*Gymnema sylvestre*	(1)	Curcumin
(ii)	*Swertia chirata*	(2)	Kinotannic acid
(iii)	*Pterocarpus marsupium*	(3)	Steroidal diosgenin and Yamogenin
(iv)	*Trigonella foenum gracum*	(4)	Gymnemic acid
(v)	*Turmeric*	(5)	Gentiopicrin and amarogentin

(b) Write a detail note on the study of natural products as leads for the pharmaceutical development taking into account the CNS drug (Morphine). (5)

(c) Explain in brief the biological mechanism and chemistry of cardiac glycosides. (2+3)

(d) Give the chemistry and physiological significance of Vitamin A. (5)

(e) Classify terpenoids and describe the isoprene rule in detail citing suitable example. (2+3)

(f) Describe in detail the chemistry of any one male/female contraceptive agents. (5)

(g) Define flavonoids. Give the general procedure for the isolation, purification and structural elucidation of quercetin. (0.5 +4.5)

(h) Write a note on the gene therapy and its application. (5)

(i) Describe in brief the chemistry of macrolide antibiotics. (5)

SECTION – C

3. Answer the following questions (any *two*): (2 × 10 = 20)

(a) Describe the structural characterization of camphor taking into account the utility of various spectroscopic techniques. (10)

(b) Describe in detail the isolation, purification, molecular modification, biological activity and structural elucidation of any one of the following compounds. (10)

(i) Ephedrine

(ii) Emetine

(c) Write a short note on the following (any *two*) (5+5)

(i) Recombinant DNA technology.

(ii) Oligonucleotide therapy.

(iii) rDNA technology.