



Set No. : 1

Question Booklet No.

**RET/17/TEST-B**

**606 Medicinal Chemistry**

(To be filled up by the candidate by blue/black ball point pen)

Roll No.

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Roll No. (Write the digits in words) .....

Serial No. of OMR Answer Sheet .....

Day and Date .....

( Signature of Invigilator )

### INSTRUCTIONS TO CANDIDATES

*(Use only blue/black ball-point pen in the space above and on both sides of the Answer Sheet)*

1. Within 30 minutes of the issue of the Question Booklet, Please ensure that you have got the correct booklet and it contains all the pages in correct sequence and no page/question is missing. In case of faulty Question Booklet, Bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. *A separate Answer Sheet is given. It should not be folded or mutilated. A second Answer Sheet shall not be provided.*
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. *On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.*
6. *No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and Roll No. and OMR sheet no. on the Question Booklet.*
7. *Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.*
8. *This Booklet contains 40 multiple choice questions followed by 10 short answer questions. For each MCQ, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by pen as mentioned in the guidelines given on the first page of the Answer Sheet. For answering any five short Answer Questions use five Blank pages attached at the end of this Question Booklet.*
9. For each question, darken only **one** circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero marks).*
11. For rough work, use the inner back pages of the title cover and the blank page at the end of this Booklet.
12. *Deposit both OMR Answer Sheet and Question Booklet at the end of the Test.*
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

**Total No. of Printed Pages : 20**

RET/17/TEST-B

606/Medicinal Chemistry

**ROUGH WORK**

रफ़ कार्य

## Research Entrance Test-2017

No. of Questions : 50

प्रश्नों की संख्या : 50

Time : 2 Hours

Full Marks : 200

समय : 2 घण्टे

पूर्णाङ्क : 200

**Note: (1)** This Question Booklet contains **40** Multiple Choice Questions followed by **10** Short Answer Questions.

इस प्रश्न पुस्तिका में **40** वस्तुनिष्ठ व **10** लघु उत्तरीय प्रश्न हैं।

**(2)** Attempt as many MCQs as you can. Each MCQ carries **3 (Three)** marks. **1 (One)** mark will be deducted for each incorrect answer. **Zero** mark will be awarded for each unattempted question. If more than one alternative answers of MCQs seem to be approximate to the correct answer, choose the closest one.

अधिकाधिक वस्तुनिष्ठ प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक वस्तुनिष्ठ प्रश्न **3 (तीन)** अंकों का है। प्रत्येक गलत उत्तर के लिए **1 (एक)** अंक काटा जायेगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा। यदि वस्तुनिष्ठ प्रश्नों के एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

**(3)** Answer only **5** Short Answer Questions. Each question carries **16 (Sixteen)** marks and should be answered in **150-200** words. Blank **5 (Five)** pages attached with this booklet shall only be used for the purpose. Answer each question on separate page, after writing Question No.

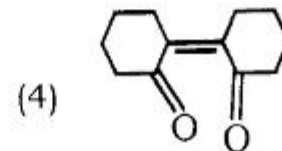
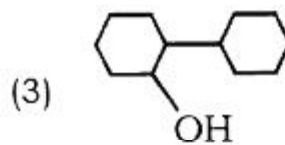
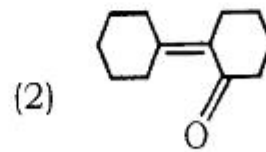
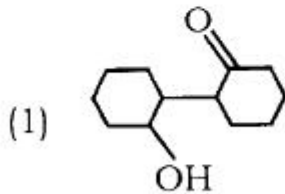
केवल **5 (पाँच)** लघुउत्तरीय प्रश्नों के उत्तर दें। प्रत्येक प्रश्न **16 (सोलह)** अंकों का है तथा उनका उत्तर **150-200** शब्दों के बीच होना चाहिए। इसके लिए इस पुस्तिका में लगे हुए सादे **5 (पाँच)** पृष्ठों का ही उपयोग आवश्यक है। प्रत्येक प्रश्न का उत्तर एक नए पृष्ठ से, प्रश्न संख्या लिखकर शुरू करें।

01. Mala of Medo dhatu is :  
(1) Mutra (2) Sveda  
(3) Purisha (4) Medo roga
02. Takrarista is indicated in which disease ?  
(1) Sandhivata (2) Gridhrasi  
(3) Urustambha (4) Grahani
03. The synonym of Rasakriya is :  
(1) Kalka (2) Avaleha  
(3) Churna (4) Vati
04. According to Charak Samhita, Sankhapushpi should be used as Medhya Rasayana in form of :  
(1) Svarasa (2) Churna  
(3) Kalka (4) Kwatha
05. Main Kalpana of Snehapana is :  
(1) Vasti (2) Yusha  
(3) Audan (4) Acchapeya
06. Use of Kalyanaka Ghrita is described in Kashyapa Samhita in :  
(1) Vedanadhayaya (2) Lehadhayaya  
(3) Dantajanmika adhayaya (4) Visesa Kalpa adhayaya
07. Vamana is the choice of treatment in which type of ajirna :  
(1) Amajirna (2) Vidagdhajirna  
(3) Vistabdhajirna (4) Rasasesajirna
08. According to Charak Samhita, pure blood resembles the colour of :  
(1) Gunja phala (2) Bhallataka phala  
(3) Udumbara phala (4) Madhuka phala
09. Which of the following drug is **not** Yogavahi ?  
(1) Draksha (2) Pippali  
(3) Madhu (4) Ghrita

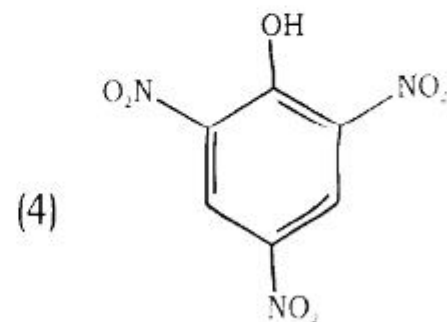
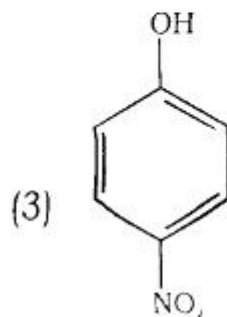
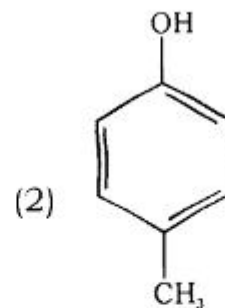
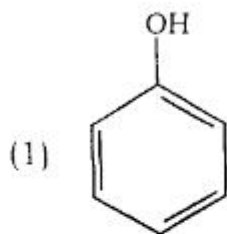
10. Gunja is enumerated in Gana called :

- (1) Upavisha (2) Visha  
(3) Mahavisha (4) Garavisha

11. Which of the following product is formed when cyclohexanone undergoes Aldol condensation followed by heating ?



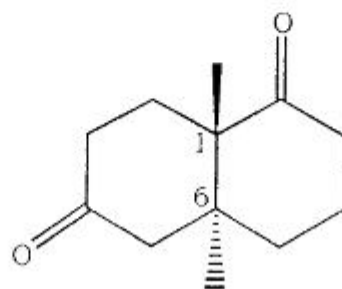
12. Which one of the following is the most acidic compound ?



13. Thermodynamically the most stable form of carbon is :

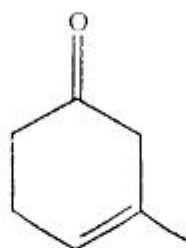
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|-------------|----------------|
| (1) Diamond | (2) Graphite   |
| (3) Coal    | (4) Fullerenes |

14. The configuration (R-S Notation) at C-1 and C-6 of the compound given below are :



- |           |           |
|-----------|-----------|
| (1) 1S,6S | (2) 1S,6R |
| (3) 1R,6R | (4) 1R,6S |

15. Give the nomenclature of the following molecule :



- (1) 3-Methyl-1-cyclohex-4-en-1-one
- (2) 3-Methyl-1-cyclohex-3-en-1-one
- (3) 1-Methyl-1-cyclohex-1-en-5-one
- (4) 2-Methyl-1-cyclohex-1-en-4-one

16. Which of following is the Heterocyclic compounds ?
- (1) Lysine (2) Tryptophan  
(3) Tyrosine (4) Methionine
17. Amylose is a :
- (1) Monosaccharide (2) Disaccharide  
(3) Polysaccharide (4) Lipid
18. The reaction that proceeds through a carbo-cation species is :
- (1) Friedal Crafts reaction (2) Witting reaction  
(3) Claisen reaction (4) Aldol condensation
19. The solvent that commonly used in Grignard reaction is :
- (1) Anhydrous ethanol (2) Anhydrous acetic acid  
(3) Anhydrous ether (4) Anhydrous acetone
20. The optical rotation of freshly prepared solution of  $\alpha$ -D glucose changes gradually from  $111^\circ$  to  $52.5^\circ$  due to :
- (1) Decomposition (2) Recemization  
(3) Mutarotation (4) Partial Resolution
21. The most reactive saturated hydrocarbon is :
- (1) Cyclobutane (2) Cyclohexane  
(3) Cyclopropane (4) Propane
22. Which of the following compounds does not absorb light in UV/Visible spectrum ?
- (1) Aspirin (2) Paracetamol  
(3) Chloral Hydrate (4) Phenobarbitone



23. In which region of infrared spectrum would you expect to find a peak characteristic of a triple bond stretch ?
- (1) 4000-3000  $\text{cm}^{-1}$                       (2) 2500-2000  $\text{cm}^{-1}$   
(3) 2000-1500  $\text{cm}^{-1}$                       (4) 1500-750  $\text{cm}^{-1}$
24. Vicinal coupling is :
- (1) Coupling between  $^1\text{H}$  nuclei in an alkene  
(2) Coupling between  $^1\text{H}$  nuclei attached to same C atom  
(3) Coupling between  $^1\text{H}$  nuclei attached to adjacent C atom  
(4) Coupling between  $^1\text{H}$  nuclei in an alkane
25. What is meant by a 'lead' compound in medicinal chemistry ?
- (1) A drug containing element lead  
(2) A leading drug in a particular area of medicine  
(3) A compound that acts as a starting point for drug design and development  
(4) A drug which is normally the first to be prescribed for a particular ailment
26. In NMR spectroscopy the intensity of signal tells us about :
- (1) Kinds of proton                      (2) Electronic environment  
(3) Relative number of proton      (4) Neighbouring protons
27. The test recommended for the identification of Glycosides is :
- (1) Keller-Killani test                      (2) Shinoda test  
(3) Dragandorff test                      (4) Ninhydrin test
28. In cholesterol biosynthesis, the rate limiting step is :
- (1) Farensey1 PP formation                      (2) Squalene formation  
(3) HMG CoA formation                      (4) Mevalonate formation

29. The active site amino acid that could be involved in a reaction catalyzed by an enzyme with a pH optimum of 4 would be :
- (1) Arginine (2) Cysteine  
(3) Serine (4) Glutamate
30. Electron flow in cytochrome oxidase in the respiratory chain can be blocked by :
- (1) Cyanide (2) Rotenone  
(3) Amytal (4) Cycloheximide
31. Activated fatty acyl group are transported inside the mitochondria by :
- (1) Co-enzyme A (2) Carnitine  
(3) Ceramide (4) Citrate
32. Which of the following amino acid does not contribute to fluorescence of a protein ?
- (1) Cysteine (2) Tyrosine  
(3) Phenyl alanine (4) Tryptophan
33. Which one of the following is not a factor affecting electrophoretic separation ?
- (1) Voltage (2) Ionic strength of buffer  
(3) Current (4) Loading dye
34. Which of the following factors will have no effect on the sedimentation rate of a particle during centrifugation ?
- (1) Temperature  
(2) Mass of the sedimenting particle  
(3) Angular velocity of rotation  
(4) Density of the solution

35. These enzymes have different structure but the same catalytic function. Frequently they are oligomers made from different polypeptide chains. These enzymes are called :
- (1) allosteric enzymes                      (2) isozymes  
(3) proenzymes                                (4) zymogens
36. All of the following processes occur in the mitochondria of the mammalian cell EXCEPT :
- (1) Fatty acid biosynthesis                (2) Beta oxidation of fatty acids  
(3) The citric acid cycle                    (4) Ketogenesis
37. After vigorous exercise, lactate generated in skeletal muscle is :
- (1) transported to the liver, where it is converted to glucose by gluconeogenesis.  
(2) converted to glycerol-3-phosphate.  
(3) converted back to glucose via gluconeogenesis in skeletal muscle.  
(4) imported into muscle mitochondria and further metabolized
38. Each of the following statements concerning DNA is true EXCEPT which one ?
- (1) Base pairs lie in a plane perpendicular to the long axis of the helix.  
(2) DNA can be found in either circular or linear forms.  
(3) The two DNA strands of the double helix are antiparallel.  
(4) Covalent bonds hold the DNA helix together.
39. Named reaction in which Benzaldehyde heated with acetic anhydride in presence of sodium salt of acetic acid to form cinamic acid is :
- (1) Claisen condensation                    (2) Reformetosky reaction  
(3) Perkin reaction                            (4) Aldol condensation

40. Ashwagandha root, used in Ayurvedic medicine, is rich in withanolides which contains :

- |                       |                       |
|-----------------------|-----------------------|
| (1) Steroidal nucleus | (2) Indole nucleus    |
| (3) Quinolone nucleus | (4) Imidazole nucleus |

**Short Answer Questions**

**Note:** Attempt any **five** questions. Write answer in **150-200** words. Each question carries **16** marks. Answer each question on separate page, after writing Question Number.

01. How will you differentiate between following by NMR spectroscopy ?
  - (a) 1-bromopropane and 2-bromopropane
  - (b) 1-butyne and 2-butyne
02. Write a Short note on Friedel-Crafts reactions.
03. Explain stereospecificity with suitable example.
04. Write briefly the theory involved in chromatographic technique. Mention the name of different chromatography techniques known to you.
05. Write short notes on Wurtz reaction OR Cannizzaro reaction.
06. Discuss briefly that how TCA cycle can serve as a source of biosynthetic precursors.
07. Briefly explain the Central dogma of molecular biology.
08. Write the principle and uses of radioimmunoassay.
09. Write a short note on Enzymes and explain how they accelerate a reaction.
10. Name different ketone bodies found in our body. What purpose ketone bodies serve in the body ?

Question No.

Page for Short Answer

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Question No.

Page for Short Answer

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Question No.

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Question No.

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**ROUGH WORK**

रफ़ कार्य

## अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली-काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा। केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्नपुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्नपुस्तिका पर अनुक्रमांक और ओ० एम० आर० पत्र संख्या की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिए आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिए केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो संबंधित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ कार्य के लिए प्रश्न-पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा उत्तर-पुस्तिका के अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ एम आर उत्तर-पत्र परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।