### MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE SEMESTER END EXAMINATION

#### B.Sc. (Hons.) Agriculture

Semester	: II (New)	Term	: II	Arado	emic Year : 2017-18
Course No.	: ENTO 121 : 2 (1+1)	Title	: Fundamentals of Entomology		
	: Thursday, 03.05.2018	Time	: 09.00 to	o 11.00	Total Maries : 40
Note:	<ol> <li>Solve ANY EIGHT questions from SECTION "A".</li> <li>All questions from SECTION "B" are compulsory.</li> </ol>				
	3. All questions carry equal m				
	4. Draw neat diagrams where	ver neces	sary.		

#### SECTION "A"

- Q.1 Explain in brief reasons of dominance of insects in animal kingdom.
- Q.2 Describe insect integument with figure.
- Q.3 Draw well labeled diagram of insect head capsule and enlist segments of head region.
- Q.4 Explain mouthparts of honey bec.
- Q.5 Define metamorphosis. State its significance and explain types of metamorphosis.
- Q.6 Explain with diagram male reproductive system of cockroach.
- Q.7 Define taxonomy. Enlist important characters of class Insecta.
- Q.8 State important characters of order Hemiptem.
- Q.9 Describe central nervous system of insects.
- Q.10 Write short notes (Any Two).
  - a) Modifications of wings
- b) Structure of typical leg
- c) Binomial Nomenclature

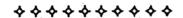
#### SECTION "B"

- 0.11 Do as directed.
  - 1) Give full form of CIB and RC.
  - 2) Ommatidium is concerned with compound eyes. (State True or False)
  - 3) Which type of antenna is present in mango stem borer?
  - 4) What do you mean by apodous larva?
- Q.12 State the function of following.
  - 1) Spiracle

2) Juvenile hormone

3) Johnston's organ

4) Gizzard



# MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE SEMESTER END THEORY EXAMINATION

B.Sc. (Hons.) Agri.

Semester : II (New)

Academic Year : 2017-18

Course No. : ENT-231 121

Title: Fundamentals of Entomology

Credits : 2 (1+1) Total Marks: 40

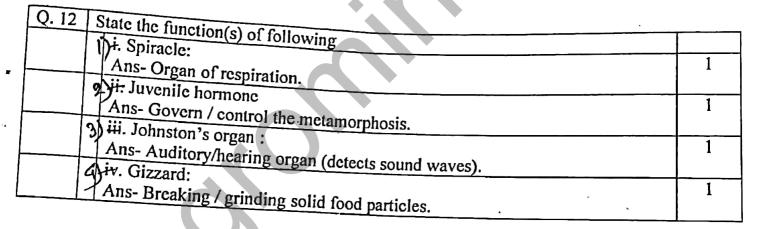
## MODEL ANSWER SET SECTION 'A'

Q. 1	Explain in brief reasons of deminance of insects in animal kingdom	Marks	
Ans.	Explain in brief reasons of dominance of insects in animal kingdom.		
Alls.	Explanation on any eight points from the following points  1. Exoskeleton 2. Small size 3. Quicker speciation 4. Hexapod locomotion		
		*	
1	5. Functional wings 6. Differentiation of body 7. Developmental characteristics 8. Chemical communication 9. Physiological adaptations		
Q. 2	characteristics 8. Chemical communication 9. Physiological adaptations		
Ans.	Describe insect integument with figure.	1	
Alis.	Figure with labels.	3	
l	Description on the following parts:	'	
	1. Cuticle: procuticle, exocuticle and endocuticle		
1	2. Epidermis / hypodermis		
0.3	3. Basement membrane.		
Q. 3	Draw well labeled diagram of insect head capsule and enlist segments of head		
Ans.	region.	1 2	
Ans.	Well labeled diagram of insect head capsule.	2 2	
	Segments of head:	2	
0.4	Pre-antennary, Antennary, Intercalary, Mandibular, Maxillary, Labial segment		
Q. 4	Explain mouth parts of honey bee with figure.		
Ans.	Well labeled figure of mouthparts of honey bee.	2	
	Explanation regarding modifications, structures and functions of 1. Labrum	2	
	2.Mandibles 3.Maxillae 4. Labium		
Q. 5	Define metamorphosis. State its significance and explain types of		
	metamorphosis.		
	Definition: Metamorphosis is the conspicuous change in growth and	1	
	development an insect undergoes during its life cycle from birth to maturity		
	Significance:	1	
	Reduces competition. Helps to overcome unfavourable climatic conditions.		
	Types and its explanation in short:		
	Ametabola, Hemimetabola (Incomplete metamorphosis), Holometabola	2	
	(Complete metamorphosis), Hypermetamorphosis		
Q. 6	Explain with diagram male reproductive system of cockroach.		
Ans.	Well labeled diagram of reproductive system of male cockroach.	1	
	Explanation on structure and functions of - Testes, Vas efference, Vas	3	
	difference, Seminal vesicle, Median ejaculatory duct, Accessory glands, etc.		
Q. 7	Define taxonomy. Enlist important characters of class Insecta.		
Ans	Taxonomy: Science of classification. Placing organisms or forms in order.	1	
	Theoretical study of classification including basis, principles, procedures and		
- 1	rules. Taxonomy includes nomenclature and classification.		
	Characters of Class Insecta: •	3	
	1 Body divisions, 2. Head bears pair of antennae and a pair of compound eyes		
1	3. Thorax- centre of locomotion with 3 pairs of legs and 2 pairs of wings.		
	4. Excretion mainly through malpighian tubules	1	
	5 Tracheal system for respiration is well developed.		
	6. Juvenile (immature stages) undergoes metamorphosis		

### Telegram - AgroMind

Q. 8	State important characters of order Hemiptera.	
	Any eight characters of Hemiptera from following:	4
1	1. Head position: Opisthognathous. 2. Piercing and sucking type of mouthparts.	4
	3. Mandibles and maxillae modified into stylets.	
	4. Antennae 5 segmented or less than that.	
	5. Ocelli: 2-3. 6. Thorax- well developed. 7. Some cases, Pronotum- triangular.	
	o. Fore wings: Hemelytra = Heteroptera: Uniform consistency= Homoptera	
	7. Addomen: Soft, terminal end tancring / hulging (11 segmented)	
	10. Some cases 1st or 2nd segments of abdomen modified for sound production	
	o.b. Cicaua	
	11. Cerci absent 12. Metamorphosis = Incomplete (Egg, nymph and adult)	
Q. 9	- VIII ALLIULI VIIII CVCTOM OF INCOME	
Ans.	Generalized figure of CNS.	
	Description on structure and family	1
	Description on structure and functions of sub-esophageal ganglion, supra- esophageal ganglion (brain) and ventral nerve cord.	3
Q. 10	Write short notes (Nov. Tions)	
	Modifications of wings	
	1. Tegmina e g. cooksee t	4
	1. Tegmina e.g. cockroach, mantid, grasshopper.  2. Elytra e.g. fore wings of head	
	2. Elytra e.g. fore wings of beetle and weevils.  3. Hemelytra e.g. forewings of beetle and weevils.	
	4. Halters e.g. true flies, mosquito, male scale insect.	
	5. Fringed wings: e.g. thrips.	
	6. Scaly wings: e.g. butterfly and moths 7. Membranous wings:	
	and a mind, by a form	
1	cockroach, grasshopper, both fore and hind wings of wasp, bees, dragon fly	
1	Figure and description of typical leg.	1
	Figure and description on following parts  1. Coxa 2. Trochester 2. F.	4
	2. Hochanier a Femura Til 1 c m	
1	Binomial Nomenclature	
	Described by Carolus Linnaeus in 1758 in his book "Systema Naturae". The scientific name of a organism consists a first one is consisted.	4
1	scientific name of a organism consists - first one is genus and second one is species. This system is called as hinomial nomenal system.	
- 1	species. This system is called as binomial nomenclature and used worldwide, which gives accurate information	
- 1	which gives accurate information	
	Rules of Binomial Nomenciature :-	
	1. The first letter of generic name should be capital letter.	
	2. The first feller of species name should be small and	
	3. All the words are Latinized and written in It is	
	3. All the words are Latinized and written in Italics. It should be written and underlined separately other than Italics.	1
1	4. Authority name is written after the species name. It starts with capital letter.	
	iottoj.	
	5. The author name is put in bracket if the taxa has been reclassified.	
11 1	SECTION 'B'	
	Do as directed.	
1.	7. 1)   Spell out the abbreviation CIR & RC	

Q. 11	Do as directed.		
	+1)	Spell out the abbreviation CIB & RC.  Ans- Central Insecticide Board and Registration Committee.	
		Ans- Central Insecticide Board and Registration Committee	1
-	#2)	Ommatidium is concerned with compound eyes. (State true or false)	-
		Ans- True	1
	#i3)	Which type of antenna is present in mango stem borer?	1
		Ans- Serrate.	1
	17.4)	What do you mean by apodous larva?	1
		What do you mean by apodous larva?  Ans- Legless larva / absence of legs.  Telegram - AgroMind	1 '



\*\*\*\*