

QUESTION BOOKLET - 2016

Subject : Paper II : Biology

Ouestion Booklet Version

11

(Write this number on your Answer Sheet)

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Answer Sheet	No.	

Question Booklet Sr. No.

(Write this number on your Answer Sheet)

Duration: 1 Hour 30 Minutes Total Marks: 100

This is to certify that, the entries of Roll Number and Answer Sheet Number have been correctly written and verified.

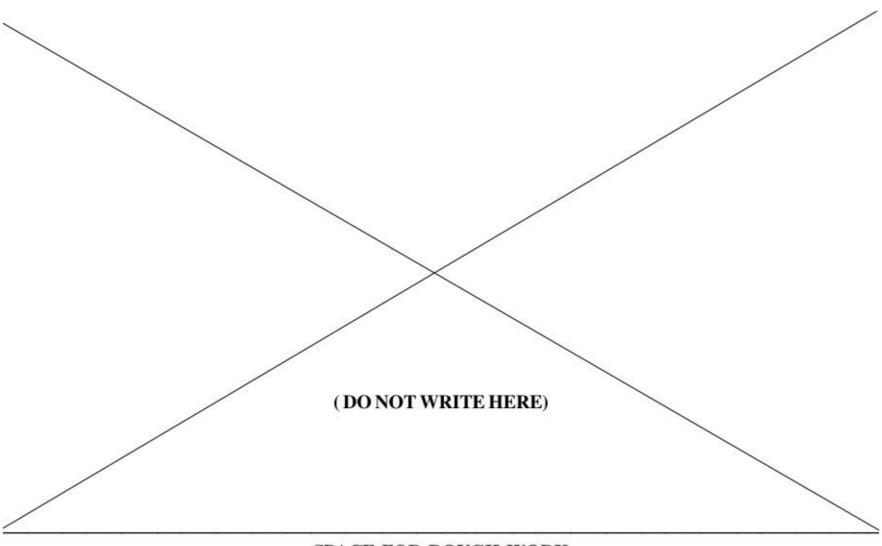
Candidate's Signature

Invigilator's Signature

Instructions to Candidates

- This question booklet contains 100 Objective Type Questions (Single Best Response Type) in the subjects
 of Biology.
- The question paper and OMR (Optical Mark Reader) Answer Sheets are issued to examinees separately at the beginning of the examination session.
- 3. Choice and sequence for attempting questions will be as per the convenience of the candidate.
- 4. Candidate should carefully read the instructions printed on the Question Booklet and Answer Sheet and make the correct entries on the Answer Sheet. As Answer Sheets are designed to suit the OPTICAL MARK READER (OMR) SYSTEM, special care should be taken to mark appropriate entries/answers correctly. Special care should be taken to fill QUESTION BOOKLET VERSION, SERIAL No. and Roll No. accurately. The correctness of entries has to be cross-checked by the invigilators. The candidate must sign on the Answer Sheet and Question Booklet.
- 5. Read each question carefully.
- 6. Determine the correct answer from out of the four available options given for each question.
- Fill the appropriate circle completely like this ●, for answering the particular question, with Black ink ball point pen only, in the OMR Answer Sheet.
- 8. Each answer with correct response shall be awarded one (1) mark. There is no Negative Marking. If the examinee has marked two or more answers or has done scratching and overwriting in the Answer Sheet in response to any question, or has marked the circles inappropriately e.g. half circle, dot, tick mark, cross etc, mark/s shall NOT be awarded for such answer/s, as these may not be read by the scanner. Answer sheet of each candidate will be evaluated by computerized scanning method only (Optical Mark Reader) and there will not be any manual checking during evaluation or verification.
- Use of whitener or any other material to erase/hide the circle once filled is not permitted. Avoid overwriting and/or striking of answers once marked.
- Rough work should be done only on the blank space provided in the Question Booklet. Rough work should not be done on the Answer Sheet.
- 11. Immediately after the prescribed examination time is over, the Question Booklet and Answer sheet are to be returned to the Invigilator. Confirm that both the Candidate and Invigilator have signed on question booklet and answer sheet.
- 12. No candidate is allowed to leave the examination hall till the examination session is over.





SPACE FOR ROUGH WORK



BIOLOGY

Ι.	What will be the genotype of parents	s of a child with 'O' blood group?			
	A) $I^A I^A \times I^A I^A$	B) $I^B I^B \times I^B I^B$			
	C) $I^A I^A \times I^B I^B$	D) $I^A i \times I^B i$			
2.	In Angiosperms, megaspores formed are arranged in	d after meiosis of megaspore mother cell			
	A) Isobilateral tetrad	B) Linear tetrad			
	C) Tetrahedral tetrad	D) T-shaped tetrad			
3.	During replication of DNA, the two s from each other under the influence	strands of the double helix are separated of enzyme			
	A) rep-protein	B) SSBP			
	C) initiator protein	D) DNA polymerase			
 4. Identify the <u>INCORRECT</u> statement from the following with reference to lac operon. A) It is a unit of gene expression and regulation for lactose sugar metabolism. 					
	E. Coli.B) Lactose sugar enters the cell due	to the activity of anzyma parmagea			
	C) Operators are present between pr	β-galactosidase, 'y' for transacetylase and			
	'a' for permease.	p-galactosidase, y foi transacetylase and			
5.	High levels of Aspartic acid, low nit	trogen and sugar content in maize plants			
	A) Aphids	B) Jassids			
	C) Boll worms	D) Stem borers			
6.	The common feature in CAM and C ₂ A) Stomata open only during night	4 plants is			
	B) Acid concentration increases dur	B) Acid concentration increases during night			
	C) Both C ₃ and C ₄ pathway occur				
	D) Having Kranz anatomy				
7.	Which one of the following electron	acceptor is present in respiratory chain ?			
	A) Cytochrome f	B) Cytochrome a ₃			
	C) Plastocyanin	D) Ferredoxin			





8.	The codon sequence on coding strand of transcription unit is ATG GTG AGC TAC GCG. What will be the codon sequence on mRNA formed on template strand?			
	A) ATG GTG AGC TAC GCG	B)	GCG TAC AGC GTG ATG	
	C) TAC CAC TGC ATG CGC	D)	AUG GUG AGC UAC GCG	
9.	9. A cross between two pea plants tall with axial flowers and dwarf with terminal flowers produced offsprings tall with axial flowers and tall with terminal flowers in the ratio 1:1. What will be the genotype of parents?			
	A) TTAa × ttaa	TO ALCOHOLD	TtAa × ttaa	
	C) TtAA × ttaa		TTAA × ttaa	
10.	Which one of the following is used b CO ₂ to CH ₂ O?	y gr	reen sulphur bacteria for reduction of	
	A) H_2S	B)	H ₂ O	
	C) CH ₄		NH ₄	
11.	The <u>CORRECT</u> sequence of events du A) Triple fusion, syngamy, porogam B) Syngamy, triple fusion, porogam C) Porogamy, syngamy, triple fusion D) Syngamy, porogamy, triple fusion	ny y n	double fertilization in Angiosperms is	
12.	When genomic DNA is fragmented gene is done by using	and	cloned, the screening of the desired	
	A) Plasmid DNA	B)	DNA probes	
	C) Southern blotting		PCR technique	
13.	The guano deposits are obtained from	m tl	ne excreta of	
	A) Reptiles	B)	Human	
	C) Marine birds	D)	Micro-organisms	
14.	In an angiosperm a female plant have having $2n = 12$. What will be the chi	7.00		
	A) 12	B)	18	
	C) 24	D)	30	
15.	Two alternative forms of a gene or a			
	A) Identical loci of the same chromo			
	B) Non-identical loci of the same ch	iron	nosome	
	C) Identical loci of homologous chr			
	D) Non-identical loci of homologou	s ch	nromosomes	





11 -5-16. In Kreb's cycle Guanosine Triphosphate is formed during the conversion of A) Isocitrate to oxalosuccinate B) Oxalosuccinate to α -ketoglutarate C) Succinyl CoA to succinate D) Fumarate to malate 17. Mycorrhiza is _____ A) Alga B) Fungus C) Bacteria D) Virus 18. During PCR technique, the pairing of primers to ssDNA segment is called _____ A) Denaturation B) Annealing C) Polymerisation D) Isolation 19. ______ is the most convenient and cheap method of artificial vegetative propagation. A) Grafting B) Budding C) Cutting D) Micropropogation 20. Glycosidic bond exists in DNA molecule between _____ A) Sugar and phosphate B) Any two nitrogen bases C) Sugar and nitrogen base D) Purines and pyrimidines 21. Which of the following wall layer of anther shows fibrous thickenings of callose? A) Epidermis B) Tapetum D) Endothecium C) Middle layer 22. Photosynthesis is considered as an oxidation reaction because ___ B) H₂O is oxidised A) CO₂ is oxidised C) O₂ is released D) CH₂O is oxidised 23. Which one of the following is the **CORRECT** order of conversion of waste materials during biogas formation? A) Monomers \rightarrow polymers \rightarrow methane \rightarrow organic acids B) Organic acids \rightarrow methane \rightarrow polymers \rightarrow monomers

C) Methane \rightarrow organic acids \rightarrow polymers \rightarrow monomers

D) Polymers \rightarrow monomers \rightarrow organic acids \rightarrow methane





- 24. Match the plant and the part in relation to Vegetative Propagation.
 - 1) Dahlia

- a) Eyes
- 2) Solanum tuberosum
- b) Runner

3) Begonia

c) Fasciculated tuberous roots

- 4) Cynodon
- d) Epiphyllous buds
- A) (1) c, (2) a, (3) b, (4) d B) (1) d, (2) a, (3) b, (4) c
- C) (1) c, (2) a, (3) d, (4) b D) (1) b, (2) c, (3) a, (4) d
- 25. Agrobacterium tumefaciens is most widely used for gene transfer because
 - A) it causes crown gall tumours
 - B) of its ability to insert Ti plasmid into nuclear genome
 - C) it can grow anywhere
 - D) it has ability to kill pathogenic bacteria
- 26. Which of the following event does NOT lead into secondary succession?
 - A) All organisms that existed are lost
 - B) Where no living organisms ever existed
 - C) Abandoned crop field
 - D) Land affected by flood
- 27. A nucleosome along with linker DNA consists of _
 - A) eight molecules of histones and 146 base pairs
 - B) eight molecules of histones and 200 base pairs
 - C) nine molecules of histones and 146 base pairs
 - D) nine molecules of histones and 200 base pairs
- 28. During aerobic respiration the final electron acceptor is
 - A) Cyto b

B) NADH₂

C) Water

- D) Oxygen
- 29. In quantitative inheritance, when a character is controlled by two pairs of genes, the ratio obtained in F₂ generation is __
 - A) 1:2:1

B) 1:4:6:4:1

C) 9:3:3:1

- D) 1:6:15:20:15:6:1
- 30. Which one of the following pigment functions as a reaction center in photosynthesis?
 - A) Chlorophyll-a

B) Xanthophyll

C) Carotenoid

D) Anthocyanin



- -7-31. Remarkable increase in rice production from 35 million tones to 89.5 million tones during 1960 – 2000 was mainly due to _____ A) Improved semidwarf varieties B) Introduction of Golden rice C) Increased use of chemical fertilizers D) Cultivation of wild varieties 32. Which of the following is the first cell of female gametophytic generation in Angiosperms? A) Megaspore mother cell B) Microspore mother cell C) Functional megaspore D) Egg cell
- 33. During dihybrid cross, in the F₂ generation, the ratio of individuals showing one dominant and the other recessive character will be _____ of parents with contrasting characters.
 - A) $\frac{4}{16}$

B) $\frac{6}{16}$

C) $\frac{8}{16}$

- D) $\frac{9}{16}$
- 34. In an ecological succession the pioneers are generally _____
 - A) Autotrophs

B) Carnivores

C) Herbivores

- D) Detrivores
- 35. Given below are some antibiotics and their microbial source. Match the correct pairs.
 - 1) Chloromycetin

a) Streptomyces griseus

2) Erythromycin

b) Penicillium chrysogenum

3) Penicillin

c) Streptomyces erythreus

4) Streptomycin

- d) Streptomyces venezuelae
- A) 1-a, 2-b, 3-c, 4-d
- B) 1-d, 2-c, 3-b, 4-a
- C) 1-b, 2-d, 3-a, 4-c
- D) 1-c, 2-a, 3-d, 4-b
- 36. In plasmid pBR 322, 'BR' stands for
 - A) Baculovirus and Retrovirus
- B) Boyer and Reed
- C) Bolivar and Rodrigues
- D) Bacillus and Rhizobium
- 37. How many glucose molecules are required for the formation of 52 pyruvic acid molecules at the end of glycolysis?
 - A) 52

B) 46

C) 32

D) 26



38.	The pitch angle of deflection between two successive base pairs in DNA double helix is			
	A) 20°	B) 34°		
	C) 36°	D) 360°		
39.	Which one of the following processes involved in wine production?	s involved in alcohol production is NOT		
	A) Malting	B) Mashing		
	C) Fermentation	D) Distillation		
40.	Which one of the following is formed as a result of cyclic photophosphorylation?			
	A) NADPH ₂	B) O ₂		
	C) ATP	D) H ₂ O		
41.	The same was a second s	of angiosperms shows filiform apparatus?		
	A) Antipodals	B) Polar nuclei		
	C) Egg	D) Synergids		
42.	2. Which one of the following organism's plasmid was used successfully for the first time as a vector by Stanley Cohen and Herbert Boyer?			
	A) Salmonella typhimurium	B) Streptococcus pneumoniae		
	C) Staphylococcus aureus	D) Rhizobium leguminosarum		
43.	During a dihybrid cross with contr parental genotypes will appear in	rasting characters in the F ₂ generation ratio.		
	A) $\frac{1}{16}$	B) $\frac{2}{16}$		
	A) $\frac{1}{16}$ C) $\frac{3}{16}$	B) $\frac{2}{16}$ D) $\frac{9}{16}$		
44.	The wall of pollen tube is made up o	f		
	A) Cellulose and Pectin	B) Only sporopollenin		
	C) Lignin and Pectin	D) Pectin and Sporopollenin		
45.	The micro consumers are commonly	called		
	A) Autotrophs	B) Herbivores		
	C) Decomposers	D) Carnivores		
46.	Which of the following is a character	r of Castor plant to avoid autogamy?		
	A) Unisexuality	B) Protogyny		
	C) Protandry	D) Heterostyly		



47.	are self pollinated for few successiv	hybrid vigour superior to both parents e generations to B) remove their parental characters D) segregate characters
	Which of the following is the <u>WRON</u> character for adaptation of cross pole A) <u>Zostera</u> → Bright coloured flow B) <u>Bougainvillea</u> → Petaloid bracts C) Passion flower → Corona D) <u>Adansonia</u> → Copious nectar	NG match between the plant and its lination? ers with nectar
49.	What is the outbreeding device, whe different times called ?	
	A) Monoecy	B) Self sterility
	C) Dichogamy	D) Heterostyly
50.	In anaerobic respiration acetaldehyde NADH ₂ obtained from	e is reduced to form alcohol by utilising
	A) Glycolysis	B) Terminal oxidation
	C) Kreb's cycle	D) Acetylation
51.	A pair of analogous organs is	
	A) Wing of bird – flipper of whale	B) Forelimbs of horse and man
	C) Wing of bird – forelimb of horse	D) Wing of insect and wing of bird
52.	In diploid set of chromosomes, delet	ion or addition of a member leads to
	A) Aneuploidy	B) Euploidy
	C) Polyploidy	D) Triploidy
53	Select the correct match:	
	I	П
	i) Competition	a) Tapeworm and man
	ii) Commensalism	b) Lichen
	iii) Mutualism	c) Cattle egret and cattle
	iv) Parasitism	d) Lions and Leopards
	A) $i - d$, $ii - c$, $iii - b$, $iv - a$	B) $i - d$, $ii - b$, $iii - c$, $iv - a$
	C) $i - c$, $ii - b$, $iii - d$, $iv - a$	D) $i - a$, $ii - b$, $iii - d$, $iv - c$
	-,,,,,	_,,,,





- 54. Which one of the following statement is **CORRECT**?
 - A) Fertilization in human takes place in womb
 - B) Zygote contains haploid number of chromosomes
 - C) Fertilization membrane avoids polyspermy
 - D) Primary oocyte inhibits the process of oogenesis
- 55. Osmoreceptors are present in the
 - A) Hypothalamus

B) Hypophysis

C) Epiphysis

- D) Epithalamus
- 56. The interaction observed in this diagram is



A) Commensalism

B) Competition

C) Mutualism

- D) Predation
- 57. Select the correct match:

I

II

Ш

- i) Monocyte
- a) Large round nucleus
- l) Antihistamine property

- ii) Lymphocyte
- b) Twisted nucleus
- m) Release heparin

- iii) Basophil
- c) Bilobed nucleus
- n) Phagocytic

- iv) Eosinophil
- d) Kidney shaped nucleus o) Produce antibodies
- A) i d n, ii a o, iii b m, iv c l
- B) i b m, ii a l, iii c n, iv d o
- C) i c n, ii b o, iii d m, iv a l
- D) i a o, ii d m, iii c l, iv b n
- 58. The parietal and temporal lobes are separated by
 - A) Central sulcus

B) Longitudinal fissure

C) Lateral sulcus

- D) Parieto-occipital sulcus
- 59. The corpus callosum interconnects
 - A) Cerebral hemispheres
- B) Cerebellar hemispheres
- C) Corpora quadrigemina
- D) Crura Cerebri



60.	The parotid salivary glands are innervated by branches of ne			
	A) Vagus	B)	Spinal accessory	
	C) Facial	D)	Glossopharyngeal	
<i>~</i> 1	Y			
61.	Lac is used in the	D)	D 1 (' CT ' 1	
	A) Production of guano	50	Production of Isinglass	
	C) Silvering mirrors	D)	Production of soaps	
62.	Bacterial poultry diseases mainly in	clud	le	
	A) Avian influenza, Bronchitis, Ran			
	B) Enteritis, TB, CRD			
	C) Favus, Thrush, Aspergillosis			
	D) Bird Flu, Coccidiosis, Pullorum			
(2	A 1			
03.	A change in a wart or mole on the sk		22 V	
	A) Adenoma		Carcinoma	
	C) Lymphoma	D)	Melanoma	
64. The spermatozoa not ejaculated are reabsorbed in the				
	A) Ejaculatory duct	B)	Urethra	
	C) Vas efferns	D)	Vas deferens	
65	All of the following are and man star		n origin of man EVCEDT	
05.	All of the following are ape-men stag A) <i>Ramapithecus</i>		Kenyapithecus	
	and the same of th		<u>Australopithecus</u>	
	C) <u>Dryopithecus</u>	D)	Austraioptinecus	
66.	Linkage groups can be separated du	ring	in meiosis.	
	A) Crossing over	B)	Synapsis	
	C) Tetrad formation	D)	Terminalization	
67	One of the most polluted river in Ma	har	achtra ic	
07.	A) Brahmaputra		Ganga	
	C) Jamuna		Panchaganga	
	C) Jamuna	D)	Tanchaganga	
68.	Hypercalcemic hormone is			
	A) Aldosterone	B)	Calcitriol	
	C) PTH	D)	TCT	
60	An oral contraceptive pill checks			
٠,٠	A) Fertilization	B)	Implantation	
	C) Infection		Ovulation	
	-,	-)	- · william	





- 70. AB blood group was discovered by
 - A) Decastello and Sturli
- B) Karl Landsteiner
- C) William Harvey
- D) Wallace Alfred
- 71. The process by which primary germinal layers are formed is called
 - A) Blastulation

B) Cleavage

C) Gastrulation

- D) Implantation
- 72. Select the group of animals adapted for ammonotelism, guanotelism and ureotelism respectively from the following
 - A) Tadpole larva of frog, spider, pigeon
 - B) Scorpion, turtle and labeo
 - C) Catla, penguin and cat
 - D) Cobra, cockroach and Bombay duck
- 73. Muscular ridges at inner surface of ventricles are called
 - A) Chordae tendinae
- B) Inter ventricular septum
- C) Papillary muscle
- D) Trabeculae carnae
- 74. Which of the following is **NOT** a breed of buffalo?
 - A) Gir

B) Nili

C) Nagpuri

D) Surti

75.	Column A	Column B	Column C
	i) Coenozoic	2-65 mya	Origin of vertebrates
	ii) Palaeozoic	500 – 165 mya	Rise of egg laying mammals
	iii) Mesozoic	135 – 225 mya	Reptiles dominant
	iv) Proterozoic	350 – 500 mya	Trilobites dominant
The correct match of Columns A, B and C is			
ı	A) i	B) ii	
(C) iii	D) iv	

- 76. Which of the following organisms is <u>NOT</u> involved in genome sequencing and mapping technique?
 - A) <u>Drosophila</u> <u>melanogaster</u>
- B) E. Coli

C) Mus musculus

D) Salmonella typhi



		-13-
77.	The most common chemical compourable were A) Amino acids C) Methane	nds formed in Urey-Miller's experiment B) Ammonia D) Vitamins
78.	Select the <u>CORRECT</u> pair of endode A) Adrenal medulla – Dermis of ski B) Lungs – Thyroid gland C) Lymphatic vessel – Vagina D) Retina – Tonsil	
79.	Peacock shows following genotype. A) XX C) ZZ	B) XY D) ZW
80.	Incubation period of <u>Treponema Par</u> A) 2 to 14 days C) 1 to 2 weeks	B) 7 to 21 days D) 3 to 4 weeks
81.	Acromegaly is caused by hypersecre A) ACTH C) MSH	etion of in the adult. B) GH D) TSH
82.	Restriction endonuclease, in DNA fit process. A) Fragmentation of DNA C) Loading DNA on agaroseplate	B) Getting copies of DNA
83.	Which one of the following is NOT A) Arthralgia C) Dysentery	the symptom of malaria ? B) Fever D) Shivering
84.	In ECG, P – wave represents A) Ventricular repolarization C) Atrial depolarisation	B) Ventricular depolarizationD) Atrial repolarization
85.	The isthmus which connects right at from tracheal cartille. A) 1 st to 3 rd C) 5 th to 7 th	nd left lobes of thyroid gland is located ages. B) 2 nd to 4 th D) 6 th to 8 th





86.	Asexual reproduction through forma A) Ascidian C) Planaria	tion of gemmule occurs in B) Hydra D) Spongilla
87.	The marsupial mammal amongst the A) Gibbon C) Lemur	following animals is B) Kangaroo D) Spiny ant-eater
88.	When white eyed and miniature wing with its wild type, it produces follow A) 1.3% C) 62.8%	ged <i>Drosophila melanogaster</i> is crossed ing percent of recombinants. B) 37.2% D) 98.7%
89.	Asiatic wild ass is an example of A) Endangered species C) Rare species	B) Extinct speciesD) Vulnerable species
90.	The quantitative and statistical study A) Calligraphy C) Topography	of human population is B) Demography D) Seismography
91.	Cystic fibrosis can be treated by A) TGF-B C) DNase	B) TPA D) BGH
92.	ADH carries out following functions A) Increases blood pressure B) Increases glomerular filtrate rate C) Increases permeability for water in D) Increases Na ⁺ excretion	
93.	Which of the following are NOT pro A) Sheep and Pig C) Dog and Banded Krait	duced as transgenic animals? B) Rat and Rabbit D) Cow and Fish
94.	Temporal lobe of cerebrum is conc sensations <u>EXCEPT</u> A) Hearing	cerned with the detection of following B) Pressure
	C) Smell	D) Taste





11

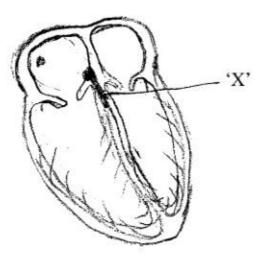
- 95. The sterilization procedure in human female is
 - A) Coitus interruptus

B) Rhythm method

C) Tubectomy

D) Vasectomy

96. In the given diagram, the role of 'X' is to



- A) Generate cardiac impulse
- B) Cause atrial systole
- C) Cause ventricular diastole
- D) Carry cardiac impulse to ventricles
- 97. A pair of hormones produced by kidneys is
 - A) Erythropoietin and relaxin
 - B) Erythropoietin and calcitriol
 - C) Calcitonin and relaxin
 - D) Calcitonin and calcitriol

98.	Alec Jeffreys used	as	genetic r	narker

A) HUMULIN

B) Radioactive probe

C) RFLP

D) VNTR

- 99. Which constituent of seminal fluid helps in coagulation of semen after ejaculation?
 - A) Fibrin

B) Fibrinogen

C) Fructose

D) Prostaglandins

- 100. Which one of the following statement is **CORRECT**?
 - A) Lysergic acid diethylamide is a depressant
 - B) Heroin is diacetylmorphine
 - C) Hashish has hallucinogenic property
 - D) Cocaine is opioid drug



SPACE FOR ROUGH WORK

