

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 10 minutes of the issue of the Question Booklet, check whether it contains all the pages in correct sequence and that no page is missing. If any page is missing or if you find any other defect in the Question Booklet bring it to the notice of the Superintendent of Examinations at once. You will be issued with a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall without its envelope.
3. A separate Answer Sheet is given. It should not be folded or cut. Only the Answer Sheet will be evaluated.
4. Write your Roll Number and Serial Number of the Answer Sheet.
5. On the front page of the Answer Sheet, write by pen your Roll Number and Serial Number 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 the OMR sheet and also 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. Each question in this Booklet is followed by four alternative answers. For each question, 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 ball-point pen as mentioned in the guidelines given on the first page of the Answer Sheet.
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 mark).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit only the OMR Answer Sheet 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.

No. of Questions/प्रश्नों की संख्या**Time/समय : 2 Hours/घण्टे**

- Note :**
- (1) Attempt as many questions as you can.
One mark will be deducted for each incorrect answer awarded for each unattempted question.
- अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न 3 अंक का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जाएगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।
- (2) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.
- यदि एकाधिक वैज्ञानिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

1. Which of the following pigments occur in blue green algae?

- | | |
|-----------------|-------------------|
| (1) Fucoxanthin | (2) Violaxanthin |
| (3) Phycocyanin | (4) Phycoerythrin |

2. A protein rich organism is

- | | |
|-------------------------------|--------------------------|
| (1) <i>Spirulina/Nostoc</i> | (2) <i>Chlamydomonas</i> |
| (3) <i>Spirogyra/Ulothrix</i> | (4) <i>Oedogonium</i> |

3. Oil is the reserve food in

- | | |
|--------------------------|-----|
| (1) <i>Chlamydomonas</i> | (2) |
| (3) <i>Vaucheria</i> | (4) |

4. Carrageenin, a jelly-like substance, is ob

- | | | |
|----------------------|------------------|-----|
| (1) <i>Sargassum</i> | (2) <i>Fucus</i> | (3) |
|----------------------|------------------|-----|

5. Gulf weed is

- | | |
|--------------------------|----------------------------|
| (1) <i>Chlamydomonas</i> | (2) <i>Fucus</i> |
| (3) <i>Sargassum</i> | (4) <i>Batrachospermum</i> |

6. *Chlamydomonas* shows

- | | |
|-------------|-----------------------------------|
| (1) isogamy | (2) anisogamy |
| (3) oogamy | (4) isogamy, anisogamy and oogamy |

7. A ring of multiciliate zoogonidium is found in

- | | | | |
|---------------------|-------------------|-----------------------|------------------|
| (1) <i>Ulothrix</i> | (2) <i>Zygnea</i> | (3) <i>Oedogonium</i> | (4) <i>Chara</i> |
|---------------------|-------------------|-----------------------|------------------|

20. An archegonium of *Riccia* has

- (1) 4 neck canal cells, 1 venter canal cell and one oosphere
- (2) 4 neck canal cells, 2 venter canal cells and one oosphere
- (3) 4 neck canal cells, 1 venter canal cell and two oospheres
- (4) 6 neck canal cells, 2 venter canal cells and one oosphere

21. Alternation of generation in *Polysiphonia* is

- (1) haplobiontic and monophasic (2) haplobiontic and diphasic
- (3) diplobiontic and diphasic (4) diplobiontic and monophasic

22. Which one of the following is a gymnostomous moss?

- (1) *Funaria* (2) *Pogonatum* (3) *Sphagnum* (4) *Polytrichum*

23. Function of elaters and pseudaelaters is

- (1) conduction of sap (2) protection of spores
- (3) absorption of nutrients (4) spore dispersal

24. If a sporangium develops from a group of cells it is called

- (1) Leptosporangiate (2) Eusporangiate
- (3) Heterosporangiate (4) None of these

32. 'Shower of sulphur' occurs in

- | | |
|----------------------------|------------------------------|
| (1) <i>Tectona</i> forests | (2) Pine forests |
| (3) <i>Ginkgo</i> forests | (4) <i>Juniperus</i> forests |

33. Which gymnosperm is medicinally important for treatment of Asthma?

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|------------------|--------------------|---------------|
| (1) <i>Taxus</i> | (2) <i>Ephedra</i> | (3) <i>Gr</i> |
|------------------|--------------------|---------------|

34. *Pentoxylon* was discovered from

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|--------------------|--------|
| (1) Western Ghats | (2) Ar |
| (3) Rajmahal Hills | (4) Ra |

35. Coconut fruit is a example of

- | | | | |
|-----------|-----------------|-----------|--------------|
| (1) Drupe | (2) Hesperidium | (3) Berry | (4) Lomentum |
|-----------|-----------------|-----------|--------------|

36. Parachute mechanism of fruit dispersal is due to

- | | | | |
|-----------|------------|------------|------------|
| (1) Thorn | (2) Pappus | (3) Bracts | (4) Tepals |
|-----------|------------|------------|------------|

37. Gynobasic style is found in

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|--------------------|-------------------|------------------|-----------------------|
| (1) <i>Solanum</i> | (2) <i>Ocimum</i> | (3) <i>Vinca</i> | (4) <i>Calotropis</i> |
|--------------------|-------------------|------------------|-----------------------|

38. Cortical vascular bundles are found in

- | | | | |
|---------------------|----------------------|-----------------------|-----------------------|
| (1) <i>Bignonia</i> | (2) <i>Mirabilis</i> | (3) <i>Boerhaavia</i> | (4) <i>Nyctanthes</i> |
|---------------------|----------------------|-----------------------|-----------------------|

- 39.** Perisperm in seeds develops from
(1) nucellus (2) funiculus (3) hilum (4) ovary wall
- 40.** Bicollateral vascular bundles are present in stem of
(1) Cucurbitaceae (2) Cycas
(3) Pinus (4) Gramineae
- 41.** Circinotropous ovules are found in
(1) *Opuntia* (2) *Chenopodium* (3) *Polygonum*
- 42.** Non-medullated stele consisting of a central cylinder of phloem is known as
(1) Protoxylem (2) Solenostele (3) Siphonostele (4) Dictyostele
- 43.** Flowers are zygomorphic in
(1) *Mussaenda* (2) *Ixora* (3) *Hamelia* (4) *Calotropis*
- 44.** The term 'Operational Taxonomic Units' (OTU) is used in
(1) Hutchinson classification
(2) Chemotaxonomy
(3) Numerical taxonomy
(4) Bentham and Hooker classification

45. The 'Lignosae' is used in

- (1) Hutchinson classification
- (2) Chemotaxonomy
- (3) Bentham and Hooker classification
- (4) Numerical taxonomy

46. The process by which seedless fruits are produced

- (1) Apomixis
- (2) Parthenocarpy
- (3) Parthenogenesis
- (4) Polyembryony

47. Wood is classified as porous if it contains

- (1) vessels
- (2) tracheids
- (3) companion cells
- (4) sclereids

48. Plant parts used for extraction of opium from *Papaver somniferum* are

- (1) young seedlings
- (2) unripe capsules
- (3) mature leaves
- (4) ripened seeds

49. Rubber is obtained from

- (1) cell sap
- (2) gum
- (3) resin
- (4) latex

50. Find out the false statement with regard to family Asteraceae

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|---------------------|-------------------------|
| (1) cypselia fruits | (2) hypogynous flowers |
| (3) inferior ovary | (4) zygomorphic flowers |

51. LC₅₀ is commonly used as the test of

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|----------------------|-----|
| (1) chronic toxicity | (2) |
| (3) margin of safety | (4) |

52. Asiatic lions in the wild are found in

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|------------------------------|-------------------------|
| (1) Gir Forest National Park | (2) |
| (3) Kaziranga National Park | (4) Kanha National Park |

53. Biomagnification is defined as

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|--|--|
| (1) the process of accumulation of chemicals in the organisms | |
| (2) the increasing concentration of chemicals at successive trophic levels | |
| (3) accumulation of chemicals in certain species | |
| (4) excessive accumulation of chemicals in primary consumers | |

54. Which of the following is a first-order consumer?

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|-----------|----------|-----------|-----------|
| (1) Dingo | (2) Gaur | (3) Hyena | (4) Dhole |
|-----------|----------|-----------|-----------|

66. Identify the correct combination :

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|-------------------|--|
| (a) SO_2 | (i) Red-brown distal necrosis |
| (b) NO_x | (ii) Red-brown inter-venial necrosis |
| (c) HF | (iii) Flecks on upper surface of leaves with distal necrosis |
| (d) Cl | (iv) Tip and marginal necrosis |
| (e) Ethylene | (v) Needle-point chlorotic dots with upper surface flecks |
| (f) O_3 | (vi) Abscission and curling |

- (1) (a)-(ii); (b)-(i); (c)-(iv); (d)-(iii); (e)-(vi); (f)-(v)
- (2) (a)-(i); (b)-(ii); (c)-(iv); (d)-(iii); (e)-(v); (f)-(vi)
- (3) (a)-(i); (b)-(ii); (c)-(iv); (d)-(iii); (e)-(vi); (f)-(v)
- (4) (a)-(i); (b)-(iii); (c)-(iv); (d)-(vi); (e)-(ii); f-(v)

67. About 60% of the total greenhouse forcing is caused by

- (1) CO_2
- (2) CH_4
- (3) CFC
- (4) ozone

68. The interaction that benefits both the participating species is known as

- (1) predation
- (2) parasitism
- (3) mutualism
- (4) commensalism

69. In a tree ecosystem, pyramid of number is

- (1) upright
- (2) intermediate type
- (3) inverted
- (4) upright and inverted

70. Which of the following species is not an indicator of eutrophic condition?

- (1) *Anabaena flos-aquae*
- (2) *Microcystis aeruginosa*
- (3) *Aphanizomenon flos-aquae*
- (4) *Hydrilla*

78. During feedback inhibition

- (1) product of the pathway acts on DNA to inhibit enzyme synthesis
- (2) product of the pathway inhibits the activity of the first enzyme of the pathway
- (3) product of the pathway interacts with substrate to inhibit enzyme activity
- (4) substrate of the pathway inhibits the activity of the first enzyme of the pathway

79. The nitrogen-fixing bacterium *Beijerinckia* is a

- (1) facultative anaerobe
- (2) aerob
- (3) anaerobe
- (4) symb

80. *In vitro* how many molecules of ATP are consumed

- (1) 6
- (2) 8
- (3) 16
- (4) 24

81. Ferredoxin-dependent nitrate reductase is found in

- (1) fungi
- (2) all photosynthetic organisms
- (3) cyanobacteria
- (4) eukaryotes

82. How many electrons are involved in reduction of nitrate to ammonium and its incorporation into amine-nitrogen?

- (1) 4
- (2) 10
- (3) 12
- (4) 6

83. Uptake of sulfur into plant roots from the soil is almost exclusively via

- (1) SO_4^{2-}
- (2) SO_3^{2-}
- (3) S^{2-}
- (4) GSH

84. The turnover time for ATP in a cell is

- (1) 2-3 hours
- (2) 12-24 hours
- (3) 30-60 min
- (4) 10-45 seconds

85. A reaction can occur spontaneously only if

- (1) ΔG is positive
- (2) ΔG is negative
- (3) ΔG is zero
- (4) ΔG content of product is higher than Δ

86. Large K_m denotes for

- (1) large dissociation constant
- (2) small dissociation constant
- (3) large association constant
- (4) high enzyme substrate affinity

87. In which part of the enzyme substrate specificity resides?

- (1) Prosthetic part
- (2) Apoenzyme part
- (3) Coenzyme part
- (4) Organic part of the cofactor

88. Fatty acid biosynthesis does not require

- (1) biotin
- (2) malonyl-CoA
- (3) acetyl-CoA
- (4) NADH

89. Which of the following statements is correct?
- (1) A low concentration of orthophosphate in the cytosol promotes the synthesis of starch in chloroplast
 - (2) A low concentration of orthophosphate in the cytosol promotes the synthesis of sucrose in cytosol
 - (3) An abundance of orthophosphate in the cytosol promotes the synthesis of starch in cytosol
 - (4) An abundance of orthophosphate in the cytosol promotes the synthesis of starch in chloroplast
90. 16S ribosomal RNA (or 16S rRNA) is a component of
- (1) 30S small subunit
 - (2) 50S
 - (3) 40S small subunit
 - (4) 60S
91. The conversion of stored fatty acids to sucrose in germinating seeds begins in
- (1) mitochondria
 - (2) cytosol
 - (3) vacuoles
 - (4) glyoxisomes
92. The precursor for the biosynthesis of glutamate family amino acids is
- (1) 2-oxoglutarate
 - (2) 3-phosphoglycerate
 - (3) oxaloacetate
 - (4) pyruvate
93. ATP can be best referred as
- (1) a molecule that serves as a storage form of energy
 - (2) a molecule that serves as an immediate donor of free energy
 - (3) a molecule that has the highest phosphate group transfer potential
 - (4) a molecule used as a source of phosphate

- 94.** In which range of the visible spectrum leaves absorb the least amount of light?
- (1) Yellow (2) Blue (3) Green (4) Violet
- 95.** Cyt C, a freely soluble protein of the mitochondrial intermembrane space moves between
- (1) complex III and IV (2) complex I and II
(3) complex I and II (4) NAD
- 96.** Oligomycin inhibits
- (1) cytochrome oxidase (2) F_0 α
(3) adenine nucleotide translocase (4) K^+
- 97.** Ribulose bisphosphate carboxylase/oxygenase of higher plants has
- (1) eight identical large subunits and eight identical small subunits
(2) eight identical large subunits and six identical small subunits
(3) eight identical large subunits and four dissimilar small subunits
(4) eight identical large subunits and two identical small subunits
- 98.** During C_4 metabolism the first intermediate into which CO_2 is fixed is
- (1) malate (2) pyruvate
(3) pyruvate phosphate (4) oxaloacetate

99. During photorespiration glycine is synthesized in
(1) peroxysome (2) mitochondria
(3) chloroplast (4) cytoplasm

100. The most abundant element next to C, H and O is
(1) P (2) N (3) S

101. Green ear disease of 'Bajara' is caused by
(1) *Sclerospora graminicola* (2) *E*
(3) *Plasmopara viticola* (4) *S*

102. Mycoplasmas were first isolated in pure cu.....
(1) Safferman and Morris (2) Nocard and Roux
(3) Nowak (4) Antonie van Leeuwenhoek

103. Soft rot disease of sweet potato is caused by
(1) *Rhizopus stolonifer* (2) *Rhizopus sexualis*
(3) *Rhizoctonia solani* (4) *Trichophyton tuberosa*

104. Apple scab disease is caused by
(1) *Taphrina deformans* (2) *Venturia inequalis*
(3) *Xanthomonas* (4) SO_2 pollution

- 121.** Which of the following fungi was first reported to be involved in transmission of viral diseases?
- (1) *Albugo* (2) *Candida* (3) *Olpidium* (4) *Allomyces*
- 122.** Parasexuality in fungi refers to
- (1) absence of plasmogamy, karyogamy and meiosis at all
 (2) presence of plasmogamy, karyogamy and meiosis at all
 (3) presence of plasmogamy, karyogamy and meiosis at a point
 (4) absence of asexual mode of reproduction
- 123.** Tabtoxin also known as wildfire toxin is produced by
- (1) *Xanthomonas citri* (2) *Pseudomonas syringae*
 (3) *Alternaria alternata* (4) *Fusicoccum amygdali*
- 124.** *Thermococcus*, *Methanococcus* and *Methanobacterium* are
- (1) archaeabacteria having eukaryotic histone homologue
 (2) bacteria with cytoskeleton
 (3) archaeabacteria with negatively supercoiled DNA as in eukaryotes but lacking histones
 (4) bacteria with positively coiled DNA, cytoskeleton and mitochondria

142. Which of the following types of crosses is most compatible?

- (1) Interspecific (2) Intergeneric (3) Intervarietal (4) Intrageneric

143. Sexual incompatibility can be overcome by

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|---------------------------------|-----------------------|
| (1) ovule culture | (2) protoplast fusion |
| (3) <i>in vitro</i> pollination | (4) anth |

144. F_2 phenotypic ratio 7:1:1:7 indicates

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|-----------------|-----------|
| (1) codominance | (2) gene |
| (3) linkage | (4) pleio |

145. XY-sex determining mechanism was demonstrated in

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|-----------------------------|------------------------------|
| (1) <i>Triticum vulgare</i> | (2) <i>Datura stramonium</i> |
| (3) <i>Cajanus cajan</i> | (4) <i>Coccinia indica</i> |

146. Which of the following is a mutagen?

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|------------------------------|----------------|
| (1) Ethyl methane sulphonate | (2) Colchicine |
| (3) Aesculine | (4) Actidione |

147. The chromosome complement of an organism as seen of pro-metaphase is known as

- (1) karyogram (2) karyotype (3) histogram (4) idiogram

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अध्यायया के लिए नदेश

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

- प्रश्न पुस्तिका मिलने के 10 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 ग्राम कर लें।
- परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा था भावा कोई भी खुला कागज साथ में न लायें।
- उत्तर-पत्र अलग से दिया गया है। इसे न तो माँड़ें और न ही विकृत करने का पत्र का ही मूल्यांकन किया जायेगा।
- अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर ऐसे ही लिखें।
- उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट कर दें।
- ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व अनुक्रमांक सं० और ओ० एम० आर० पत्र सं० की प्रविष्टियों में उपरांत पर
- उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग गाना जायेगा।
- प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये बृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ करना है।
- प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही बृत्त को गाढ़ करें। एक से अधिक बृत्तों को गाढ़ करने पर अथवा एक बृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
- ध्यान दें कि एक बार स्थानी द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं तो सम्बन्धित पंक्ति के सामने दिये गये सभी बृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
- रफ कार्य के लिये प्रश्न-पुस्तिका के मुख्यपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।
- परीक्षा के उपरान्त केवल ओ०एम०आर० उत्तर-पत्र परीक्षा भवन में जमा कर दें।
- परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
- यदि कोई अध्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/कों, भागी होगा/होगी।