(To be filled up by the candidate by blue/black ball-point pen)
Roll No. $\square$
Roll No.
(Write the digits in words)
Serial No. of Answer Sheet $\qquad$
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 the Question Booklet to ensure that it contains all the pages in correct sequence and that 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. Only the Answer Sheet will be evaluated.
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 changes in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfairmeans.
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 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 marks).
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.
[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गये हैं।]
Total No. of Printed Pages : 18

## No. of Questions : 120

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

1. Bloom forming cyanobacterium is :
(1) Microcystis
(2) Anacystis
(3) Volvox
(4) Ulothrix
2. Which histone is not present in nucleosome?
(1) $H_{2 A}$
(2) $\mathrm{H}_{3}$
(3) $\mathrm{H}_{4}$
(4) $\mathrm{H}_{1}$
3. Cell wall is absent in :
(1) Synchytrium
(2) Ectocarpus
(3) Physarum
(4) Nostoc
4. Gemmae help in :
(1) $\mathrm{N}_{2}$-fixation
(2) Vegetative propagation
(3) Seed development
(4) Chloroplast development
5. Mycorrhizal infections are common in :
(1) Psilotum
(2) Isoetes
(3) Azolla
(4) Ophioglossum
6. Brown rot of potato is caused by :
(1) Corynebacterium sepedonicum
(2) Plasmodiophora brassicae
(3) Pseudomonas solanacearum
(4) Xanthomonas citri
7. In which crop dwarf varieties were introduced in India from Mexico?
(1) Rice
(2) Wheat
(3) Jowar
(4) Bapra
8. In which generation would you start selection in the bulk method of breeding ?
(1) $F_{1}$
(2) $\mathrm{F}_{4}$
(3) $F_{6}$
(4) $\mathrm{F}_{8}$
9. Edible part of litchi is:
(1) Aril
(2) Pericarp
(3) Thallamus
(4) Seed
10. Four nucleate embryosac is present in :
(1) Mangifera
(2) Plumbagella
(3) Cyperus
(4) Fritillaria
11. Adventive embryogeny is not reported in :
(1) Eugenia
(2) Mangifera
(3) Citrus
(4) Desmodium
12. Codeine is derived from :
(1) Rauolfia serpentina
(2) Papaver somniferum
(3) Catharanthus roseus
(4) Ocimum Sanctum
13. Commercial cork is :
(1) Phellem
(2) Phellogen
(3) Phelloderm
(4) Periderm
14. In dihybrid cross if in $\mathrm{F}_{2}$ generation ratio is $13: 3$ it indicates about the effect of:
(1) Epistasis
(2) Supplementary factor
(3) Complementary factor
(4) Inhibitory factor
15. T-cells secretes :
(1) Cytokines
(2) Antibodies
(3) Antigens
(4) Clycoproteins
16. Reticulate veination present in the leaves of:
(1) Ginkgo
(2) Ephedra
(3) Gnetum
(4) Pinus
17. Halophiles grow in the presence of high salt concentration above:
(1) 0.2 M
(2) 0.02 M
(3) 0.002 M
(4) 0.01 M
18. Conversion of xylulose 5-phosphate into ribulose-5-phosphate is mediated by :
(1) Aldolase
(2) Isomerase
(3) Epimerase
(4) Transketolase
19. What is the first product of photosynthesis in sugarcane leaves?
(1) Malate
(2) Glycolate
(3) PGAL
(4) Glyoxylate
P.T.O.

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20. 1-aminocyclopropane carboxylic acid synthase is involved in synthesis of :
(1) IAA
(2) ABA
(3) Ethylene
(4) BAP
21. Nonsense codon is :
(1) UAA
(2) UUU
(3) CGU
(4) AGU
22. Arginine is coded by :
(1) UAU
(2) CGU
(3) GGU
(4) GUU
23. Stellate chloroplast is present in :
(1) Zygnema
(2) Oedogonium
(3) Polysiphonia
(4) Ectocarpus
24. Hyaline conidia are present in :
(1) Alternaria
(2) Fusarium
(3) Cercospora
(4) Helminthosporium.
25. Elaterophores are present in :
(1) Pellia
(2) Anthoceros
(3) Riccia
(4) Marchantia
26. Eusporangiate fern is :
(1) Osmunda
(2) Pteris
(3) Marsilea
(4) Ophioglossum
27. Organo-mercury fungicide is:
(1) Bordeaux
(2) Captan
(3) Agrosan
(4) Thiram
28. Blast of rice is caused by:
(1) Helminthosporium oryzae
(2) Pyricularia oryzae
(3) Sclerotium oryzae
(4) Alternariá alternata
29. Antagonistic microorganism is :
(1) Colletotrichum
(2) Trichoderma
(3) Verticillium
(4) Rhizobium
30. Self pollination is result of :
(1) Cleistogamy
(2) Herkogamy
(3) Dichogamy
(4) Heterostyly
31. Which of the following is a jowar hybrid varicty ?
(1) Kalyansona
(2) $\mathrm{CSH}_{4}$
(3) $\mathrm{JKH}_{Y} 1$
(4) HSI 9
32. The term 'heterosis' was coined by :
(1) Fredgriffith
(2) Zinder
(3) G. H. Shull
(4) Mc Carty
33. Delphinium belongs to the family of :
(1) Ranunculaceae
(2) Papaveraceae
(3) Apocyanaceae
(4) Apiaceae
34. Botanical name of wood-apple is:
(1) Tectona grandis
(2) Dalbergia sisso
(3) Aegle marmelos
(4) Mangifera indica
35. Cleavage polyembryony is common in:
(1) Psidium
(2) Erythromiam
(3) Brassica
(4) None
36. Pearl millet is :
(1) Echinochloa colona
(2) Digitaria iburua
(3) Pennisetum typhoides
(4) Eleusine corocana
37. Cortical vascular bundle is present in:
(1) Casuarina
(2) Anemone
(3) Leptadenia
(4) Delph:nium
38. Pentoxylon is a fossil of:
(1) Bryophyta
(2) Gymnosperm
(3) Alga
(4) Pteridophyta
39. Archaeal membranes lacking in :
(1) Lipids
(2) Proteins
(3) Fatty acids
(4) Glycolipids
40. Single stranded DNA phage is :
(1) $\phi \times 174$
(2) Pf1
(3) $Q \beta$
(4) $\mathrm{T}_{2}$
41. Cofactor in nitrogenase is :
(1) Fe
(2) Mo
(3) Zn
(4) Mg
42. Ultra violet induced dimer formation of :
(1) $\mathrm{A}=\mathrm{A}$
(2) $\mathrm{T}=\mathrm{T}$
(3) $C=C$
(4) $G=G$
43. Most active participation in phloem transport is by :
(1) Phloem parenchyma
(2) Sieve cells
(3) Companion cells
(4) Tracheids
44. Z-scheme is involved in:
(1) Electron transport during respiration
(2) Electron transport during photosynthesis
(3) Electron transport during nitrogen fixation
(4) Electron transport during stomatal opening
45. Which of the following is considered a macronutrient for most plant?
(1) Iron
(2) Copper
(3) Magnesium
(4) Manganese
46. Net ATP production during glycolysis is :
(1) 4 ATP
(2) 2 ATP
(3) $1 \wedge T P$
(4) 6 ATP
47. Callus formation is induced by :
(1) $2,4-\mathrm{D}$
(2) Zeatin
(3) $\mathrm{AB} \wedge$
(4) IBA
48. Spermidine is a :
(1) Cytokinin
(2) Polyamine
(3) Auxin
(4) Polysaccharide
49. A solution of amino acid is :
(1) Acidic
(2) Alkaline
(3) Dipolar
(4) Neutral
50. Fresh water brown alga is :
(1) Bodanella
(2) Batrachospermum
(3) Ectocarpus
(4) Chara
51. Geniculate conidiophores are present in :
(1) Alternaria
(2) Cystopus
(3) Cercospora
(4) Erysiphe
52. Smut causing fungus is :
(1) Tilletia
(2) Uromyces
(3) Melampsora
(4) Puccinia
53. Parasitic plasmodium is present in :
(1) Phytophthora
(2) Agaricus
(3) Rhizopus
(4) Plasmodiophora
54. Leafy thallus is found in :
(1) Marchantia
(2) Anthoceros
(3) Porella
(4) Riccia
55. Fossile genus is :
(1) Ephedra
(2) Rhynia
(3) Pteris
(4) Isoetes
56. Systemic fungicide is:
(1) Benzimidazole
(2) Dinocap
(3) Zincb
(4) Perenox
57. Concept of centres of origin for our crop plants was proposed by :
(1) K. C. Mehta
(2) N. I. Vavilov
(3) S. D. Garett
(4) E. J. Buttler
58. Which hormone is secreted by hypothalamus?
(1) TRH
(2) ACTH
(3) ADH
(4) FSH
59. What is calmodulins ?
(1) Calcium rich cell
(2) Calcium deposit on bones
(3) Calcium binding protein
(4) Crystals of calcium
60. Spiral cleavage usually occur in :
(1) Nematodes
(2) Insects
(3) Chordates
(4) Coelenterates
61. Active agent of chalones is chemically a :
(1) Nucleoprotein
(2) Mucoprotein
(3) Lipoprotein
(4) Glycoprotein
62. Coenocysts formation in rhizoids are reported in :
(1) Botrydium
(2) Spirogyra
(3) Chlamydomonas
(4) Cladophora
63. Source of single cell protein is :
(1) Glococapsa
(2) Spirulina
(3) Pandorina
(4) Nostoc
64. Stolon is found in:
(1) Phytophthora
(2) Pythium
(3) Mucor
(4) Rhizopus
65. Amphigastria is present in :
(1) Anthocerotales
(2) Marchantiales
(3) Jungermanniales
(4) Sphaerocarpales
66. Homosporous fern is :
(1) Selaginella
(2) Marsilea
(3) Equisetum
(4) Azolla
67. Basidiospores are not produced in :
(1) Ustilago tritici
(2) Ustilago avenae
(3) Ustilago hordei
(4) Ustilago maydis
68. Sclerospora graminicola is a causal agent of :
(1) Smut of bajra
(2) Downy mildew of bajra
(3) Grain smut of bajra
(4) Rust of jowar
69. Muriform condia is produced in :
(1) Cercospora
(2) Fusarium
(3) Curvularia
(4) Alternaria
70. The decrease in size and vigour in early generations of inibreeding is due to :
(1) Loss of superior genes
(2) Reduction in the frequency of superior genes
(3) Expression of many lethal and sub-vital recessive alleles
(4) Loss of segregation of genes
71. Kalyan sona is a variety of :
(1) Rice
(2) Potato
(3) Wheat
(4) Pea
72. Gyanophore is present in :
(1) Capparis
(2) Argemone
(3) Shorea
(4) Solanum
73. GTP-binding proteins consist of :
(1) Three types of subunits
(2) Two types of subunits
(3) Ten types of subunits
(4) One type of subunit
74. Cretinism is the result of deficiency of :
(1) Adrenaline
(2) Oxytocin
(3) Androgens
(4) Thyroid

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75. Acrosome made up of :
(1) Ribosomes
(2) Golgi apparatus
(3) Mitochondria
(4) Fndoplasmic reticulum
76. The fluid filled space in the centre of the blastoderm is :
(1) Enteron
(2) Enterocoel
(3) Blastocoel
(4) Archenteron
77. Red pigment containing blue green alga is :
(1) Trichodesmium erythraeum
(2) Aulosira fertilissma
(3) Uroglenopsis americana
(4) Rivularia arta
78. Perithecium is present in :
(1) Erysiphe
(2) Peziza
(3) Chaetomium
(4) Morchella
79. Coenocytic hyphae is present in :
(1) Uromyces
(2) Tilletia
(3) Pythium
(4) Neurospora
80. Polytene chromosome is not present in :
(1) Salivary gland
(2) Oocyte
(3) Fat bodies
(4) Gut epithelium
81. Symmetrical karyotype has all :
(1) Sub metacentric chromosomes
(2) Telocentric chromosomes
(3) Metacentric chromosomes
(4) Acrocentric chromosomes
82. $X X$ female and $X O$ male type sex determination is reported in :
(1) Vallisneria spiralis
(2) Rumex acetosella
(3) Fragraris viridis
(4) Cannabis indica
83. Virus free plants can be developed by :
(1) Node culture
(2) Root culture
(3) Leaf culture
(4) Meristem culture
84. Torula stage is found in:
(1) Ustilago
(2) Cystopus
(3) Mucor
(4) Cladosporium
85. Diatoms belong to the family of :
(1) Bacillariophyceae
(2) Phaeophyceae
(3) Chrysophyceae
(4) Cyanophyceae
86. Infective stage of Plasmodium is :
(1) Schizont
(2) Merozoite
(3) Trophozoite
(4) Sporozoite
87. Calcium concentration in blood is enhanced by:
(1) Parathormone
(2) Vasopressin
(3) Somatostatin
(4) Thyroid stimulating hormone
88. Holobasidium is present in :
(1) Dacrymyces
(2) Agaricus
(3) Ustilago
(4) Phragmidium
89. Columella is absent in :
(1) Funaria
(2) Pogonatum
(3) Andreaea
(4) Riccia
90. Amphiphloic siphonostele is found in :
(1) Lycopodium
(2) Adiantum
(3) Cyathea
(4) Selaginella

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91. Teleutopustules is absent in :
(1) Rust of wheat
(2) Rust of pea
(3) Rust of linseed
(4) Rust of chickpea
92. National flower of our country belongs to the family of :
(1) Nymphaeceae
(2) Rutaceae
(3) Liliaceae
(4) Asteraceae
93. Bacterial RNA Polymerase may be symbolized as :
(1) $\alpha \beta_{2} \beta^{\prime} \sigma$
(2) $\alpha_{2} \beta \beta^{\prime} \sigma$
(3) $\alpha_{2} \beta_{2} \beta^{\prime} \sigma$
(4) $\alpha \beta \beta^{\prime}{ }_{2} \sigma$
94. Indefinite stamens are present in :
(1) Triticum
(2) Cyperus
(3) Papaver
(4) Musa
95. Onagrad type of embryo development is reported in :
(1) Annonaceae
(2) Asteraceae
(3) Lamiaceae
(4) Chenopodiaceae
96. Saffron derived from :
(1) Cocos nucifera
(2) Cuminum cyminum
(3) Crocus sativus
(4) Cucumis sativus
97. In which angiosperm vessels are absent?
(1) Utricularia
(2) Primula
(3) Asclepias
(4) Boerhaavia
98. Winged microscopes are found in :
(1) Thuja
(2) Pinus
(3) Cycas
(4) Ginkgo
99. The substance present in endospore but lacking in vegetative cell is :
(1) Peptidoglycan
(2) Dipicolinic acid
(3) Lipoprotein
(4) Sphingosterol
100. Thermophiles grow at the temperature of :
(1) $40^{\circ} \mathrm{C}$
(2) $7^{\circ} \mathrm{C}$
(3) $30^{\circ} \mathrm{C}$
(4) $55^{\circ} \mathrm{C}$
101. P. Mitchell proposed the :
(1) Phospholipid hypothesis
(2) Stomatal opening
(3) Electro-chemical gradient hypothesis
(4) Carrier-mediated uptake
102. Which enzyme helps in ammonia assimilation ?
(1) APS kinase
(2) Nitrate reductase
(3) Glutamine synthase
(4) Nitrogenase
103. Precursor of IAA is :
(1) Tryptophan
(2) Lysine
(3) Glutamine
(4) Asparagine
104. Conversion of fat into sugars took place through :
(1) Pentose-phosphate pathway
(2) Glycolysis
(3) Glyoxylate cycle
(4) Kreb's cycle

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105. What is phytochrome ?
(1) A pigment that absorbs light and affect photosynthesis
(2) A pigment that absorbs light and affect seed germination
(3) A pigment that senses gravity and affect seed germination
(4) A macronutrient
106. Which of the following wavelength of light would stimulate seed germination ?
(1) 660 nm
(2) 730 nm
(3) 540 nm
(4) 450 mm
107. Naturally occurring cytokinin is:
(1) Kinetin
(2) $\Gamma 1 כ Z$
(3) BAP
(4) 2-Isopentenyl adenine
108. Which virus is used in rDNA technology?
(1) $\mathrm{T}_{2}$
(2) TMV
(3) HIV
(4) $\lambda$
109. Aflatoxins are produced by :
(1) Phytophthora infestans
(2) Aspergillus flavus
(3) Claviceps purpurea
(4) Microcystis aeuriginosa
110. What is probe ?
(1) A fragment of single stranded nucleic acid
(2) A fragment of labelled double stranded nucleic acid
(3) A fragment of labelled single stranded nucleic acid
(4) A fragment of double stranded nucleic acid
111. High-efficiency particulate air filter is used in :
(1) Autoclave
(2) Electron microscope
(3) Laminar flow
(4) Electrophoresis
112. Frankia induces root nodule formation in:
(1) Cajanus cajan
(2) Psidium guava
(3) Alnus cordata
(4) Citrus reticulata
113. Resistance against drought is provided by :
(1) Ethylene
(2) Gibberellin
(3) Cytokinin
(4) Abscissic acid
114. Grain smut of jowar is caused by:
(1) Sphacelotheca sorghi
(2) Sphacelotheca reliana
(3) Ustilago nuda
(4) Tolyposporium penicillariae
115. For staining of fungi we use :
(1) Safranin
(2) Methylene blue
(3) Cotton blue
(4) Iodine
116. Which base in DNA is easily methylated ?
(1) Cytosine
(2) Adenine
(3) Guanine
(4) Thymine
117. Double trisomic is :
(1) $2 n+1$
(2) $2 n-1$
(3) $2 n+1+1$
(4) $2 n+2$
118. Deamination of bases is caused by :
(1) $5-\mathrm{BU}$
(2) $\mathrm{HNO}_{2}$
(3) EMS
(4) UV
119. Method which is very commonly used for genetic transformation of higher plants is:
(1) Electroporation
(2) Microinjection
(3) Particle gun method
(4) Lipofection

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120. Volvariella is a :
(1) Biofertilizer
(2) Mushroom
(3) Plant Pathogen
(4) Transgenic plant

## 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 10 मिनट के अन्दर ही देख ले कि प्रश्नपत्र में सभी पृष्ठ मौजूद है 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 म्रथम आवरण-पृष्ठ पर पेन से निर्धारित रथान 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, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक संख्या 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 लिये 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 लिये 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 सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ कार्य के लिये इस पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा अंतिम खाली पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ० एम० आर० उत्तर-पत्र ही परीक्षा भवन में जमा करें।
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।
