INSTRUCTIONS TO CANDIDATES

1. Immediately after the commencement of the Examination, you should check that this Booklet does not have any unprinted or torn or missing pages or items, etc. If any of the above defects is found, get it replaced by a Complete Question Booklet of the available series.

2. Write clearly the Question Booklet Version Code A, B, C, D or E, in the appropriate space provided for the purpose, in the OMR Answer Sheet.

3. Enter the name of the Subject, Reg. No., Question Booklet version code and affix Signature on the OMR sheet. As the answer sheets are designed to suit the Optical Mark Reader (O.M.R.) system, special care should be taken to fill those items accurately.

4. This Question Booklet contains 55 questions, Part – A contains 40 questions of one mark each and Part – B contains 15 questions of two marks each. All questions must be attempted. Each question contains four answers, among them one correct answer should be selected and shade the corresponding option in the OMR sheet.

5. All the answers should be marked only on the OMR sheet provided and only with a black or blue ink ball point pen. If more than one circle is shaded / wrongly shaded / half shaded for a given question no marks will be awarded.

6. Questions are in both English and Kannada. If any confusion arises in the Kannada version, please refer to the English version of the questions.

7. Immediately after the final bell indicating the closure of the examination, stop making any further markings in the OMR Answer Sheet. Be seated till the OMR Answer Sheet is collected. After handing over the OMR Answer Sheet to the Invigilator you may leave the examination hall.
1. ಭಾರತೀಯ ವಿಶ್ವವಿದ್ಯಾಲಯಗಳು ಸಂಬಂಧಿಸುವ ಕ್ರಮದ ಹುಟ್ಟೆ ಮೂಲಕ್ಕೆ ಇನ್ನೂ ಕನಕ್ಕೆ ಮತ್ತು ಕ್ರಮದಾರದ ಮೂಲಕ್ಕೆ ಇತರೆ ಹುಟ್ಟೆಗಳು ತಯಾರಾಗುವ ಕ್ರಮದ ಹುಟ್ಟೆಗಳಲ್ಲಿ ಮಾತ್ರವೇ ಕೆಲಸ ಹೊರಗೆ ಇದೆ. ಹುಟ್ಟೆಗಳನ್ನು ತಯಾರಿಸುವವರು ಆದುಗಳನ್ನು ವಿವಿಧ ರೀತಿಯಲ್ಲಿ ಕೆಲಸ ಹೊರಗೆ ಇದೆ. 

2. ಇಲ್ಲಿ ಪ್ರಕಟಿಸಲಾಗುವ ಶಾಸ್ತ್ರೀಯ ಕೆಳಗಳು A, B, C, D ಆಧ್ಯತ್ಮ E (OMR) ಮತ್ತು ಇವು ಎಂದು ಹೊರಗೆ ಇದೆ. ಕೆಳಗಳನ್ನು ಮಾತ್ರವೇ ಹೊರಗೆ ಇದೆ.

3. ಭಾರತೀಯ ವಿದ್ಯಾಲಯದಲ್ಲಿ (ನಿತ್ಯವರ್ಧಿಸಿದ) ಸಂಸ್ಥಾನಗಳು ಸಂಬಂಧಿಸದಿದ್ದಾಗ ಹುಟ್ಟೆಯನ್ನು ರಚಿಸುವ ಕೆಳಗಳು ಸಂಬಂಧಿಸುವ ಕೆಳಗಳನ್ನು ಹೊರಗೆ ಇದೆ. ಹುಟ್ಟೆಗಳನ್ನು ಒತ್ತಮವಾಗಿ ಸಂಬಂಧಿಸುವ ಕೆಳಗಳನ್ನು ಸಂಬಂಧಿಸುವ ಕೆಳಗಳನ್ನು ಹೊರಗೆ ಇದೆ.

4. ಇಲ್ಲಿ ಪ್ರಕಟಿಸಲಾಗುವ 55 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ್ದರೆ, ಹುಟ್ಟೆ - 0 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ - 15 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 15 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ. ಹುಟ್ಟೆಗಳು ಸಂಬಂಧಿಸುವ ಕೆಳಗಳಲ್ಲಿ ಹೊರಗೆ ಇದೆ.

5. ಹುಟ್ಟೆಯ ಮೂಲಕ್ಕೆ ಇದೇ ರೀತಿಯಲ್ಲಿ ಸಂಬಂಧಿಸಿದರೆ, 55 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ - 15 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 15 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ. ಹುಟ್ಟೆಯ ಮೂಲಕ್ಕೆ ಇದೇ ರೀತಿಯಲ್ಲಿ ಸಂಬಂಧಿಸಿದರೆ, ಹುಟ್ಟೆಯ ಮೂಲಕ್ಕೆ ಇದೇ ರೀತಿಯಲ್ಲಿ ಸಂಬಂಧಿಸಿದರೆ, 55 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ. 

6. ಹುಟ್ಟೆಯ ಮೂಲಕ್ಕೆ ಇದೇ ರೀತಿಯಲ್ಲಿ ಸಂಬಂಧಿಸಿದರೆ, ಹುಟ್ಟೆಯ ಮೂಲಕ್ಕೆ ಇದೇ ರೀತಿಯಲ್ಲಿ ಸಂಬಂಧಿಸಿದರೆ, 55 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ. 

7. ಹುಟ್ಟೆಯ ಮೂಲಕ್ಕೆ ಇದೇ ರೀತಿಯಲ್ಲಿ ಸಂಬಂಧಿಸಿದರೆ, 55 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ, 40 ಹುಟ್ಟೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದರೆ. 

**Note:** English version of the instructions is printed on the front page of this booklet.
PART - A

Answer all questions. Each question carries 1 mark. (1x40=40)

1. Copernicus is well known for his contribution in the field of
   a) Biology       b) Physics
   c) Mathematics   d) Social Science

2. The discovery of ‘Cape of Good Hope’ goes to
   a) Columbus      b) Vespucci
   c) Vagellan      d) Bartolomeu Dias

3. Nanoparticles of which substance were found on the surface of the sword of Tipu Sultan?
   a) Gold         b) Lead
   c) Carbon       d) Silicon
4. The size of nanoparticles is between _________ nm.  
   a) 100 to 1000  
   b) 0.1 to 10  
   c) 1 to 100  
   d) 0.01 to 1  
   ನಾಲ್ವದ ನಂಬಾದ ವಿನ್ಯಾಸ  _________ nm  ಇದೆ.  
   a) 100 ಹೆಂದಿ 1000  
   b) 0.1 ಹೆಂದಿ 10  
   c) 1 ಹೆಂದಿ 100  
   d) 0.01 ಹೆಂದಿ 1  

5. Main branch of mathematics is  
   a) Algebra  
   b) Geometry  
   c) Statistics  
   d) Abacus  
   ಗಣಿತದ ಮೂಲ ವಿಭಾಗ  
   a) ಸಂಖ್ಯೆಗಳ  
   b) ಜೆಮ್ಸಿಕೆ  
   c) ಸ್ಥಾಪಿತಿ  
   d) ಅಬ್ಯಸ  

6. Which is the base of scientific development?  
   a) Physics  
   b) Chemistry  
   c) Engineering  
   d) Mathematics  
   ವಿಜ್ಞಾನದ ಪ್ರತಿಭೇದಕ  
   a) ಫಾಂಸಿಸ  
   b) ಚೀನಿಕೆ  
   c) ಎಂಜಿನಿಯರಿಂಗ್  
   d) ಗಣಿತ  

7. Principle of laser is  
   a) Spontaneous absorption  
   b) Simulated emission  
   c) Induced emission  
   d) Both b) and c)  
   ಲೇಸರ್‌ದ ಪ್ರципಲ್  
   a) ಸುತ್ತ ಪ್ರತ್ಯೇಕಿತ  
   b) ನೆಲೆಹೊರ ಪ್ರತ್ಯೇಕಿತ  
   c) ಸ್ತುಂಟ್ ಪ್ರತ್ಯೇಕಿತ  
   d) ಬಾಣಿಕ್ಕ b) ಮತ್ತು c)
8. Laser is the short form of
   a) light absorption stimulated emission of radiation
   b) light amplification by stimulated emission of radiation
   c) light amplification stimulated emission of rays
   d) light adsorption stimulated rays

9. OFC stands for
   a) Optical Fibre Cables
   b) Optic Forced Cables
   c) Optical Forged Cables
   d) Optical Fibre Can

10. The most energy efficient and environment safe source of light is
    a) CFL
    b) LCD
    c) LED
    d) LPG

SPACE FOR ROUGH WORK
11. Compound microscope has _________ lens/lenses.
   a) 1
   b) 2
   c) 3
   d) 4

12. The resolving power of unaided human eye is
   a) 100 µm
   b) 1000 µm
   c) 10 µm
   d) 1 µm

13. Photograph which is taken from microscope is known as
   a) macrograph
   b) monograph
   c) micrograph
   d) pictograph

14. Process in which two light nuclei combine to form a heavy nucleus is called
   a) fusion reaction
   b) fission reaction
   c) radioactivity
   d) transmutation
15. Genetic improvements in which two crops form the basis of the Green Revolution
   a) Corn and rice
   b) Wheat and corn
   c) Wheat and rice
   d) Wheat and sorghum

16. The nearly perfect source of energy is
   a) coal
   b) natural gas
   c) petrol
   d) tar

17. DNA is not a genetic material in
   a) Human
   b) Virus
   c) Plant
   d) Animal
18. DNA stands for
   a) Disaccharide Nucleic Acid
   b) Diphenyl Nucleic Acid
   c) Diribose Nuclear Acid
   d) Deoxyribose Nucleic Acid
   ಗ್ರಾಬೆ (DNA) ಎಂದರೆ
   a) Disachharide Nucleic Acid
   b) Diphenyl Nucleic Acid
   c) Diribose Nuclear Acid
   d) Deoxyribose Nucleic Acid

19. The objectives of experiments include
   a) testing hypothesis
   b) for supporting and negating theory
   c) for gathering about natural phenomenon
   d) all the above
   ಮೇದುವೆಯನ್ನು ಪ್ರತಿಷ್ಠಾಪಿಸಲು
   a) ವಿಶೇಷ ವಿಷಯದಲ್ಲಿ ವಿಜ್ಞಾನ ವಿವೇಚನೆಗಳನ್ನು
   b) ಮೇದುವೆಯನ್ನು ಪ್ರಯೋಗ ಮಾಡಲು ಒಳಗೊಂಡ ವಿಜ್ಞಾನ ವಿವೇಚನೆಗಳನ್ನು
   c) ವಿಜ್ಞಾನ ಪ್ರತಿಷ್ಠಾಪಿಸಲು ಸಂಯೋಜನೆಗಳನ್ನು
   d) ಇವೆರಡನ್ನು ಇಲ್ಲ

SPACE FOR ROUGH WORK
20. The detailed report of the whole work prepared in a standard format is called
   a) research  
   b) presentation  
   c) thesis  
   d) scientific paper

21. The only metal in liquid state is
   a) iron  
   b) mercury  
   c) calcium  
   d) magnesium

22. Stainless steel is so called because of its
   a) High strength  
   b) High corrosion resistance  
   c) High ductility  
   d) Brittleness

   'ಜೀವನ್ನು ಬಲವಾಗಿ ನಿರ್ದಿಷ್ಟವಿಕೆ ವೃತ್ತಾಕಾರದ ಧ್ವಜವಾಡುವರು.'
   a) ಜೀವನ್ನು ಬಲವಾಗಿ
   b) ಜೀವನ್ನು ಬಲವಾಗಿಕೆ ವೃತ್ತಾಕಾರದ ಧ್ವಜವಾಡುವರು
   c) ಜೀವನ್ನು ಬಲವಾಗಿಕೆ ವೃತ್ತಾಕಾರದ್ದಿಲ್ಲದಾಗಿ
   d) ಜೀವನ್ನು ಬಲವಾಗಿಕೆ ವೃತ್ತಾಕಾರದ್ದಿಲ್ಲದಾಗಿ
23. Layer of atmosphere in which Ozone layer lies is
   a) Exosphere   b) Mesosphere
   c) Troposphere  d) Stratosphere

24. One of the best solutions to get rid of non biodegradable wastes is
   a) Burying   b) Burning
   c) Recycling  d) Dumping

25. Which state irrigates largest percentage of land?
   a) Haryana   b) Uttar Pradesh
   c) Maharashtra d) Punjab

26. Which of the following is not a primary pollutant?
   a) SO$_2$   b) Volcanic ash
   c) O$_3$   d) CO$_2$
27. The earth originated
   a) 4.6 billion yrs.       b) 8.5 billion yrs.
   c) 2.6 billion yrs.      d) 1.3 billion yrs.

28. The first formed photosynthetic organisms were
   a) Algae                   b) Cyanobacteria
   c) Bryophytes             d) Plants

29. The scientifically suggested reason for the extinction of dinosaurs is
   a) volcanic eruptions
   b) massive storm
   c) massive asteroid hit
   d) massive flood

   a) नागा महाबाल नाले-नमीने कुछे
   b) सुदारित शक्ति
   c) तौलमटा विद्युत युगमें पीले सारे
   d) तौलमटा गैस
30. Soap does not work well with
   a) hard water
   b) light water
   c) heavy water
   d) soft water

31. Hard water contains the salts of
   a) Aluminium
   b) Carbon
   c) Calcium
   d) Iron

32. INTELSAT IV telecommunication satellite has a capacity of handling
   a) 1 TV channel
   b) 2 TV channels
   c) 3 TV channels
   d) 4 TV channels

INTELSAT IV ತೆಳುಬೊಬ್ಬೆ ಸಾಂಖ್ಯಾಷಿಕ ವಿದ್ಯಾನೂರಿಗೆ ಶೇಖರಿಸಬಹುದಾದ ಸಾಂಖ್ಯಾಷಿಕ ಶಕ್ತಿಯನ್ನು ಎಂದು ಹೇಳಬಹುದು?
   a) 1 TV ಚನ್ನೆ
   b) 2 TV ಚನ್ನೆಗಳ
   c) 3 TV ಚನ್ನೆಗಳ
   d) 4 TV ಚನ್ನೆಗಳ
33. Headquarters of ISRO is situated
   a) Chandipur  
   b) Chandigarh
   c) Bengaluru  
   d) Chennai

34. Satish Dhawan space centre is situated in
   a) Bengaluru  
   b) Ahemedabad
   c) Chennai  
   d) Sriharikota

35. Remote sensing includes gathering of
   a) Images  
   b) Changes
   c) Movements  
   d) Sounds

   ರೆಮಾಕ್ಸ್ ಕ್ರಿಯೆಗಳಿಗೆ ಎಂದು ಕರ್ನಾಟಕದಲ್ಲಿ ಹೊಂದಿರುವ ವಿಶೇಷತೆಗಳು
   a) ಸೇರಿಕೊಂಡು  
   b) ಮತ್ತು ಸೇರಿಕೊಂಡು
   c) ಹೊಂದಿರುವ  
   d) ಪಾಲು
36. Landsat program began in
   a) 1972  
   b) 2003  
   c) 1982  
   d) 1992
   
37. To join the internet, the computer has to be connected to a
   a) internet architecture board  
   b) internet society  
   c) internet service provider  
   d) none of the mentioned
   
38. Internet works on
   a) Packet switching  
   b) Circuit switching  
   c) Both a) and b)  
   d) None of the mentioned
39. Drug is
   a) produced by endocrine glands
   b) produced by exocrine glands
   c) are secreted through pituitary gland
   d) externally administered chemical substances

40. Lakes and forests are best classified as examples of
   a) artificial ecosystem
   b) natural ecosystem
   c) natural biosphere
   d) artificial biosphere

   a) ಆಕರ್ಷಣೆ ಪ್ರತಿಕ್ರಿಯೆಯಾದ ಇತರ ನಿತ್ಯಶೈಲಿಯ ಮಾದರಿಗಳಾಗಿದ್ದು
   b) ಆಕರ್ಷಣೆ ಪ್ರತಿಕ್ರಿಯೆಯಾದ ಇತರ ನಿತ್ಯಶೈಲಿಗಳೊಂದು
   c) ಆಕರ್ಷಣೆ ಪ್ರತಿಕ್ರಿಯೆಯಾದ ಇತರ ನಿತ್ಯಶೈಲಿಗಳೊಂದು
   d) ಆಕರ್ಷಣೆ ಪ್ರತಿಕ್ರಿಯೆಯಾದ ಇತರ ನಿತ್ಯಶೈಲಿಗಳೊಂದು
PART – B

All questions are compulsory.

41. Photovoltaic energy is the conversion of sunlight into
   a) chemical energy
   b) biogas
   c) electricity
   d) geothermal energy

42. The outermost layer of the earth is
   a) Magma
   b) Mantle
   c) Crust
   d) Solid iron core

43. LED stands for
   a) Laser Emitting Diode
   b) Light Emitting Diode
   c) Light Emitting Device
   d) Laser Emitting Device
44. Lignite, bituminous, anthracite is the variety of
   a) natural gas  b) wind
c) petrol  d) coal

45. BTU is measurement of
   a) Volume  b) Temperature
c) Area  d) Pressure

46. Non conventional energy sources are
   a) biomass, solar, wind
   b) nuclear, coal, petrol
c) thermal, nuclear, diesel
d) all the above
47. Match the correct pair.
   A) Indian nuclear programme    1. M. S. Swaminathan
   B) Green revolution            2. Vasant Gowarikar
   C) Indian monsoon model        3. Homi J Bhabha
   D) White revolution             4. Kurien Varghese
   a) A-2, B-3, C-4, D-1          b) A-4, B-2, C-1, D-3
   c) A-1, B-3, C-4, D-2          d) A-3, B-1, C-2, D-4

48. __________ and __________ are two major discoveries of 15th century which led to expansion of white colonies outside Europe.
   a) Mariners compass and telescope
   b) Spinning machine and telescope
   c) Gun powder and steam engine
   d) None of the above

15 वीं शताब्दी शहीद देशाणे अनुभव किसी __________ आणि __________ आढळली होती.
   a) क्रान्ती धमाल, तपस्या
   b) खुदाई, तपस्या
   c) पंढर, रात्री
   d) __________
49. Match the correct pair.

Diseases

A) Typhoid
B) Tuberculosis
C) AIDS
D) Pneumonia

Causes

1. Pneumococcus
2. HIV
3. Mycobacterium
4. Salmonella typhi

   a) A-4, B-3, C-2, D-1
   b) A-3, B-2, C-4, D-1
   c) A-2, B-4, C-1, D-3
   d) A-1, B-3, C-4, D-2

50. Name the MOEFC campaign for land use science or Forest Plus.

a) Good Wood
b) Wood Good

c) Wood is Good
d) Good Earth

MOEFC ವಿದ್ಯಾಪತಿಮಾಡಲು ವ್ಯವಹಾರ ಪಡೆದು ವಿದ್ಯಾಶಾಲಿ ವಿದ್ಯಾರ್ಥಿಯರು ವಿದ್ಯಾಪತಿ ಪಡೆದು ವಿದ್ಯಾರ್ಥಿಯರು

a) ವ್ಯವಹಾರ ವಿದ್ಯಾಶಾಲಿ
b) ವಿದ್ಯಾಶಾಲಿ ವ್ಯವಹಾರ

c) ವಿದ್ಯಾಶಾಲಿ ವ್ಯವಹಾರ
d) ವಿದ್ಯಾಶಾಲಿ ವ್ಯವಹಾರ

SPACE FOR ROUGH WORK
51. Union Environment ministry approved projects for climate change in which States?
   a) Rajasthan  b) Gujarat  
   c) Manipur  d) Both a) and b)

52. The process of introduction of weakened pathogen into a human body is called
   a) vaccination  b) immunization  
   c) attenuation  d) none of the above

53. Pradhan Mantri Awaas Yojana of Government of India, is meant for
   a) child development  b) house for individual  
   c) skill development  d) none of the above
54. Which of the following States in India ranks first in the installation of wind power?
   a) Gujarat
   b) Andhra Pradesh
   c) Maharashtra
   d) Tamil Nadu

55. The observed increase in the average temperature of the air near earth’s surface and oceans in recent decades
   a) environment change
   b) global warming
   c) health change
   d) none of these

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SPACE FOR ROUGH WORK
INSTRUCTIONS TO CANDIDATES

1. Immediately after the commencement of the Examination, you should check that this Booklet does not have any unprinted or torn or missing pages or items, etc. If any of the above defects is found, get it replaced by a Complete Question Booklet of the available series.

2. Write clearly the Question Booklet Version Code A, B, C, D or E, in the appropriate space provided for the purpose, in the OMR Answer Sheet.

3. Enter the name of the Subject, Reg. No., Question Booklet version code and affix Signature on the OMR sheet. As the answer sheets are designed to suit the Optical Mark Reader (O.M.R.) system, special care should be taken to fill those items accurately.

4. This Question Booklet contains 55 questions, Part – A contains 40 questions of one mark each and Part – B contains 15 questions of two marks each. All questions must be attempted. Each question contains four answers, among them one correct answer should be selected and shade the corresponding option in the OMR sheet.

5. All the answers should be marked only on the OMR sheet provided and only with a black or blue ink ball point pen. If more than one circle is shaded / wrongly shaded / half shaded for a given question no marks will be awarded.

6. Questions are in both English and Kannada. If any confusion arises in the Kannada version, please refer to the English version of the questions.

7. Immediately after the final bell indicating the closure of the examination, stop making any further markings in the OMR Answer Sheet. Be seated till the OMR Answer Sheet is collected. After handing over the OMR Answer Sheet to the Invigilator you may leave the examination hall.
1. ಮೂಲಕ ಐರ್ಪ್ಲಾಗ್‌ಬಾಂಡ್‌ಕ್ಕಿರುವ ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ನಲ್ಲಿ ನಡೆದ ಮಹತ್ವದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ವಾಸ್ತವವಾಗಿ ಅಧಿಕ ಪ್ರಶ್ನಗಳನ್ನು ಅಶ್ರುತಿಗೊಳಿಸಲು ಅವರು ಪಿರ್ಣ್ಯತ್ತಿಗಳನ್ನು ತೀವ್ರವಾಗಿ ಹೆಸರಿಸಬೇಕು. ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ನಲ್ಲಿ ವಾಸ್ತವವಾಗಿ ಅಧಿಕ ಪ್ರಶ್ನಗಳನ್ನು ಅಶ್ರುತಿಗೊಳಿಸಲು ಅವರು ಪಿರ್ಣ್ಯತ್ತಿಗಳನ್ನು ತೀವ್ರವಾಗಿ ಹೆಸರಿಸಬೇಕು.

2. ಟಾರ್ಗೆಟ್‌‌ಬಾರ್ ತಾಂತ್ರಿಕೀಕರಣ A, B, C, D ಎಂಬುದಾದರೆ E ಎಂಬ ಓಯಿಲ್‌ಬಾರ್ (OMR) ಅವರು ತಾಂತ್ರಿಕೀಕರಣ ತಾಂತ್ರಿಕೀಕರಣದ ಸಾಧನವುದು. ಈ ಸಾಧನವು ಅವರು ನಿಯಂತ್ರಿಸಬೇಕು.

3. ಸ್ವತಂತ್ರವಾಗಿ (ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌) ನಡೆದ ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ನಲ್ಲಿ ಸಾಧನವು ತಾಂತ್ರಿಕೀಕರಣ ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ ನಲ್ಲಿ ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಇದು ತಾಂತ್ರಿಕೀಕರಣ ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಶ್ರೇಗುರಾಮದಂತೆ ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು.

4. ಹಿಂದೆ ಇಟ್ಟಿರುವ 55 ಎಂಬುದಾದರೆ ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ನಲ್ಲಿ ಸಾಧನವು ಎಂಬ 40 ಎಂಬುದಾದರೆ ಕ್�ಾಸ್‌ಕೋರ್ಸ್‌ನಲ್ಲಿ ಸಾಧನವು ಎಂಬ 15 ಎಂಬುದಾದರೆ ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ನಲ್ಲಿ ಸಾಧನವು ಎಂಬುದು. ಇದು ತಾಂತ್ರಿಕೀಕರಣ ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು.

5. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು.

6. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು. ಅವರು ಮೇಲಕ್ಕೆ ಹೆಸರಿಸಬೇಕು.

7. ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ನಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ವಾಸ್ತವವಾಗಿ ಅಡ್ಡಾಗಿ ಮಾಡಿದಾಗ ವಿದ್ಯಾರ್ಥಿಗಳು ಅತ್ಯಂತ ಪ್ರಥಮ ವಿಶೇಷಗಳಿಸುವುದು. ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ ನಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ವಾಸ್ತವವಾಗಿ ಅಡ್ಡಾಗಿ ಮಾಡಿದಾಗ ವಿದ್ಯಾರ್ಥಿಗಳು ಅತ್ಯಂತ ಪ್ರಥಮ ವಿಶೇಷಗಳಿಸುವುದು. ಕ್ಲಾಸ್‌ಕೋರ್ಸ್‌ ನಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ವಾಸ್ತವವಾಗಿ ಅಡ್ಡಾಗಿ ಮಾಡಿದಾಗ ವಿದ್ಯಾರ್ಥಿಗಳು ಅತ್ಯಂತ ಪ್ರಥಮ ವಿಶೇಷಗಳಿಸುವುದು.

Note: English version of the instructions is printed on the front page of this booklet.
PART - A

Note: Answer all questions. Each question carries 1 mark. (1×40 = 40)

1. Primitive observers defined natural phenomenon as an activity of
   a) Super natural forces
   b) Humans
   c) Machines
   d) None of the above

2. Science and Technology in Ancient India is a work by
   a) Joseph Needham
   b) D.P. Chattopadhyaya
   c) Sushil Kumar Mukherjee
   d) John Bernard

"अखिल भारतीय विज्ञान और प्रौद्योगिकी" से रचनात्मक प्रेम
   a) सुशील कुमार मुखर्जी
   b) जोसेफ नीडहम
   c) जोन बर्नर्ड
   d) डी.पी. छट्टोपाध्याय

SPACE FOR ROUGH WORK
3. DNA Finger Printing is used in Forensic test is based on
   a) Matching of the DNA sequences from specimen's crime site and suspects
   b) Matching of the DNA sequences from specimens at crime site and suspect’s parents
   c) Matching of the DNA sequences from specimens at crime site and suspect's children
   d) All the above

4. The radiant energy of the sun is due to
   a) Nuclear fission
   b) Nuclear fusion
   c) Radioactive decay
   d) All of the above

5. Origin of Species is a work of
   a) Mathew Arnold
   b) Charles Darwin
   c) Albert Einstein
   d) Sigmund Freud
6. __________ and __________ are two major discoveries of 15th century which led to expansion of white colonies outside Europe.
   a) Spinning machine and telescope
   b) Gunpowder and steam engine
   c) Gunpowder and Mariner's compass
   d) Mariner's compass and telescope

7. Non-conventional sources of energy are
   a) Nuclear, Biomass, Wind, Thermal
   b) Geothermal, Ocean, Solar and Nuclear
   c) Biomass, Solar, Wind and Tidal
   d) None of the above

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SPACE FOR ROUGH WORK

E
8. Green House gases such as carbon dioxide and methane cause
   a) Increase in planet's surface temperature by blocking sunlight
   b) Decrease surface temperature by absorbing sunlight
   c) Increase planet surface temperature by trapping moisture
   d) Increase planet surface temperature by trapping the heat in the atmosphere

9. Internet can be defined as
   a) A software program installed on a computer
   b) An electronic device for printing documents
   c) A world-wide collection of computer networks
   d) A power backup source
10. The fear of GM crops for human consumers are due to
   a) Lack of information on long term effects on biodiversity
   b) Religious practices are against modifying a species
   c) Foreign genes in food may cause cancer
   d) All of the above

11. Protected land for conservation of wild life, plant and animal resources and traditional life of tribals living in that area is known as
   a) Sanctuary
   b) National Park
   c) Biosphere reserve
   d) All of the above

12. What was the first disease to be treated with a specific chemical
   a) Tuberculosis
   b) Syphilis
   c) Bacterial meningitis
   d) Whooping cough

   SPACE FOR ROUGH WORK
13. Radioisotope used in production of nuclear weapons in India is
   a) Uranium  b) Plutonium
c) Thorium  d) Radium

14. Which of the following is an example of genetic variation?
   a) Two children have different eye colors
   b) One person is older than another
c) One person has a scar, but his friend does not
d) Todd eats meat, but his brother Rod is a vegetarian

15. The moons of Jupiter are called
   a) Satellites  b) Simpleton
c) Galilean  d) None of the above
16. Scientific studies of nature is necessary in society for
   a) Simple curiosity and improve people's lives
   b) Economic development and enlightenment
   c) Increasing control over our planet and its environment
   d) All the above

17. Which of the following is a weather sensing satellite?
   a) Astrosat
   b) Radarsat
   c) Meteosat
   d) INSAT 3DR

18. Father of Indian Nuclear Programme is
   a) J.C. Bose
   b) Homi J. Bhabha
   c) Vikram Sarabhai
   d) C.V. Raman
19. First Nuclear Power Plant set up in India is
   a) Narora Atomic Power Station established in 1979 at Maharashtra
   b) Tarapur Atomic Power Station established in 1969 at Maharashtra
   c) Tarapur Atomic Power Station established in 1969 at Uttar Pradesh
   d) Kakrapur Atomic Power Station established in 1969 at Gujarat
   
20. Which of the following technological advances are affecting human cognition, emotions and ethics?
   a) Bus, aeroplane, microwave ovens
   b) Boilers, metro trains, television
   c) Internet, cell phones, digital communication devices
   d) Submarines, radars, missiles

  रिंग मैशन के प्रकाशीय अन्वेषण समस्या में अस्वस्थ दर्दों बीड़ में एकाधिक के साथ, फूलों में मूर्खी विचारों रेखा सेवा साधन ?
   a) वनस्पति, जंगली, खेतीनिवासी नै (oven)
   b) रत्न, चीनी, तीन, तीनसफर
   c) गहन, जंगली, सोली, विशालिका
   d) चौबाबाबीरा, चौबाबा, चौबाबा
21. The lens used to construct a Microscope
   a) Convex  
   b) Concave  
   c) Biconvex  
   d) Biconcave

22. Most likely event which can cause a rise in the average temperature of earth's atmosphere in future is
   a) Forest fires  
   b) CO₂ from fossil fuels  
   c) Dust clouds from volcanoes  
   d) Depletion of earth's ozone layer

23. Plants with green and tender stems are called
   a) Herbs  
   b) Shrubs  
   c) Trees  
   d) All of the above
24. High Yielding Variety Seeds (HYV) were introduced to Indian farmers as a result of
   a) White Revolution  b) Green Revolution
   c) Red Revolution    d) Orange Revolution
   Kannada: ವಿಶೇಷವಾಗಿ ಪಶುಪಾಲನ ಪ್ರೋದ್ಧಾಣವನ್ನು ಪಡೆದುಕೊಂಡರು ಅದರ ವಿಭಜನೆಯನ್ನು ರಾಜಕೀಯವಾಗಿಯೂ ಮಾಡಲಾಯಿತು?
   a) ಪ್ರತಿಯೊಂದು ಮೂಲಕ  b) ಪ್ರತಿಯೊಂದು ರೂಪದಲ್ಲಿ
   c) ಪ್ರತಿಯೊಂದು ರೂಪದಲ್ಲಿ d) ಪ್ರತಿಯೊಂದು ರೂಪದಲ್ಲಿ

25. Who is known as the father of Indian Monsoon Model?
   a) Madhavan Nair  b) Vikram Sarabhai
   c) Vasant Gowrikar  d) C.N.R. Rao
   Kannada: ಇಂಡಿಯನ್ ಮೊನ್ಸೌನ್ ಮೋಡಲ್ನ ದತ್ತಕ್ಕೆ ಪ್ರಮುಖರು,
   a) ಮದ್ಧವನ್ ನೈರ  b) ವಿಕ್ರಮ್ ಸರಾಬಹೈ
   c) ವಾಂಸತ್ ಗೌರಿಕರ  d) ಸಿ.ಎಂ.ಬಿ. ರಾಓ

26. New way of thinking, sparked by a philosophy known as
   a) Humanism  b) Socialism
   c) Behaviorism  d) Politics
   Kannada: ನಿರ್ದೇಶಕೀಯ ಸಿದ್ಧಾಂತಗಳನ್ನು ಪ್ರತಿಯೊಂದು ರೂಪದಲ್ಲಿ
   a) ಹೂದಿನಿಸೆಂಡಿ  b) ಸಾಮಾಜಿಕ
   c) ಬ್ರೆಹ್ಯಾರಿಸ್ಮ  d) ಪೋಲಿಟಿಕ್ಸ್

27. The latest satellite launched by India is
   a) Astrosat  b) Rohini
   c) GSAT 18  d) INSAT 3DR
   Kannada: ಇಂಡಿಯಾ ನವೀಕರಣ ನಡುವಿನ ಸ್ಥಳೀಯ ಸ್ಮಕ್ಷೆಯನ್ನು ತೋರಿಸುವ?
   a) ಅಸ್ಟ್ರೋಸಾಟ್  b) ರೋಹಿಣಿ
   c) ಜಿಸೈಟ್ 18  d) ಇನ್ಸಾಟ್ 3DR
28. A social science is the systematic study of
   a) The natural world   b) Models of reality
   c) Human behavior and society   d) Experimentation

29. Who laid down the first accurate laws of motion for masses?
   a) Nicholas Copernicus   b) Galileo
   c) Oldham   d) Einstein

30. Photovoltaic energy is the conversion of sunlight into
   a) Chemical energy   b) Biogas
   c) Electricity   d) Geothermal energy

31. Blue revolution being envisaged by the Govt. of India is aimed at
   a) Increasing industrial production of blue dyes
   b) Augmenting pulse production
   c) Enhancing aquaculture products both in brackish and fresh water
   d) Increasing fish production in fresh water
32. Which of these two provide proof of excellence of Indian metallurgy before industrial revolution?
   a) Damascus swords of West Asia and iron pillar near the Qutub Minar
   b) India gate and Gateway of India
   c) Tippu Sultan’s sword and palace
   d) None of the above

33. Which one of these depletes the ozone layer and causes global warming?
   a) Nitrogen dioxide
   b) CFCs
   c) Ammonia
   d) All the above

34. What is the maximum speed possible for any wave in the solar system?
   a) Every wave can have its own speed
   b) Speed of light
   c) Speed of electron
   d) None of the above
35. Washing soaps contain
   a) Potassium salts of fatty acids
   b) Sodium and calcium salts of fatty acids
   c) Potassium and sodium salts of fatty acids
   d) Sodium salts of fatty acids

36. Who was the father of White Revolution?
   a) Dr. Norman Borlaung
   b) Dr. M.S. Swaminathan
   c) Dr. Varghese Kurien
   d) K.N. Bahal

37. Scientific management of animal livestock, breeding and diseases control is
   a) Animal husbandry
   b) Animal based farming
   c) Both a and b
   d) None
38. Antimicrobial drugs that are derived from the natural processes of some microorganisms and that can inhibit or destroy other microorganisms are specifically known as what?
   a) Chemothapeutic drugs  b) Prophylactic drugs  
   c) Semisynthetic drugs  d) Antibiotics

39. Detergents are better than soaps in removal of greasy dirt because
   a) They have longer fatty acids than soaps  
   b) They have surfactants which make them interact with greasy dirt 
   c) They contain less sodium and potassium  
   d) They are water repellents

40. The process of softening of hard water by using nanoparticles is known as
   a) Nanopurification  b) Nanoremediation  
   c) Nanofiltration  d) All of the above
PART - B

Note: Answer all questions. Each question carries 2 marks. (15 x 2 = 30)

41. Which statement best describes the structure of an atom?
   a) A tiny nucleus of protons and neutrons with electrons orbiting around it
   b) A positive core surrounded by electrons packed tightly around it
   c) A particle comprised of a mixture of protons, electrons and neutrons
   d) A large core of protons and electrons surrounded by neutrons

42. Heliocentric model of Nicolas Copernicus explains the motions of planets
   a) Motion of astronomical epicycles
   b) Motion of heavenly bodies around the earth
   c) Motion of planets around the sun
   d) Motion of satellites around the planets

SPACE FOR ROUGH WORK
43. Ancient Indian knowledge of theories on human body, symptoms of disease and remedies in Ayurveda are made available in which Sanskrit text?
   a) Arthashastra  b) Charaka Samhita
   c) Chandasastra   d) Aryabhatiya

44. Nano smart materials that alter shape under the influence of an electric field is
   a) Thermoresponsive materials  b) Polychromatic materials
   c) Electrochromic materials    d) Piezoelectric materials

45. Second stage of the industrial revolution
   a) Consumable goods production  b) Capital goods production
   c) Standardization              d) Productivity

46. Which of the following is true for “Sound”?
   a) Sound cannot travel through a vacuum  b) Sound cannot travel through gases
   c) Sound cannot travel through liquids  d) Sound cannot travel through solids

SPACE FOR ROUGH WORK
47. Which of the following definition for ‘Science’ has been coined by Carl Sagan?
   a) Science is a way of thinking much more than it is a body of knowledge
   b) Is an intellectual activity carried out by humans
   c) Science is a knowledge covering general truths of the operation of general laws
   d) All of science is uncertain and subject to revision

48. Difference between hybrid and transgenic or GMO plants
   a) Hybrids live longer and transgenics live shorter
   b) Hybrids arise due to cross pollination, while transgenics are produced by transfer of specific genes from different species
   c) Hybrids are generated from grafting but transgenics result from germination
   d) Genes in hybrids are under breeders control, but in GMO plants they are uncontrolled

49. The observed increase in the average temperature of the air near earth’s surface and oceans in recent decades is
   a) Environment change
   b) Global warming
   c) Health change
   d) None
50. Informed public with science and technology background are necessary in a Democracy.
   a) To convey to state necessity and feasibility of intended science business
   b) To deliberate on diverse views on merits and demerits of technology to select right ones
   c) To bring transparency in technology based business, policy-making on vital issues
   d) All of the above

51. Importance of information technology in education are
   a) Faster access to information from across the globe
   b) On-line libraries and dictionaries, make grasping and learning easier
   c) IT based communication systems such as emails, SMS help interaction for clarity
   d) All the above
52. Match the scientists and their discoveries:

<table>
<thead>
<tr>
<th>Scientist</th>
<th>Discovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfred Nobel</td>
<td>i. Vaccination</td>
</tr>
<tr>
<td>Edward Jenner</td>
<td>ii. Electric bulb</td>
</tr>
<tr>
<td>Newton</td>
<td>iii. Gravitational force</td>
</tr>
<tr>
<td>Thomas Alva Edison</td>
<td>iv. Dynamite</td>
</tr>
</tbody>
</table>

a) A = iii, B = i, C = iv, D = ii  
b) A = iv, B = iii, C = i, D = ii  
c) A = iii, B = iv, C = i, D = ii  
d) A = ii, B = i, C = iv, D = iii
53. Match the Philosopher/Scientist with their contribution:

<table>
<thead>
<tr>
<th>Scientist</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Aristotle</td>
<td>i. Three laws of motion</td>
</tr>
<tr>
<td>B. Newton</td>
<td>ii. Laws of inheritance</td>
</tr>
<tr>
<td>C. Gregor Mendel</td>
<td>iii. Gravitational force</td>
</tr>
<tr>
<td>D. Galileo</td>
<td>iv. Scientific methods</td>
</tr>
</tbody>
</table>

a) A = iii, B = i, C = iv, D = ii  
b) A = iii, B = iv, C = i, D = ii  
c) A = iv, B = i, C = ii, D = iii  
d) A = ii, B = i, C = iv, D = iii
54. For a fixed mass of gas at constant temperature, if we decrease volume, the pressure will
a) also decrease
b) increase
c) remains constant
d) none of these

55. How stationary waves are formed?
a) A transverse wave superposing a longitudinal wave
b) Two waves of the same speed superposing
c) Two waves of same frequency travelling in the same direction
d) Two waves of same frequency travelling in the opposite direction
INSTRUCTIONS TO CANDIDATES

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2. Write clearly the Question Booklet Version Code A, B, C, D or E, in the appropriate space provided for the purpose, in the OMR Answer Sheet.

3. Enter the name of the Subject, Reg. No., Question Booklet version code and affix Signature on the OMR sheet. As the answer sheets are designed to suit the Optical Mark Reader (O.M.R.) system, special care should be taken to fill those items accurately.

4. This Question Booklet contains 55 questions, Part – A contains 40 questions of one mark each and Part – B contains 15 questions of two marks each. All questions must be attempted. Each question contains four answers, among them one correct answer should be selected and shade the corresponding option in the OMR sheet.

5. All the answers should be marked only on the OMR sheet provided and only with a black or blue ink ball point pen. If more than one circle is shaded / wrongly shaded / half shaded for a given question no marks will be awarded.

6. Questions are in both English and Kannada. If any confusion arises in the Kannada version, please refer to the English version of the questions.

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Note: English version of the instructions is printed on the front page of this booklet.
PART - A

Note: Answer all questions. Each question carries 1 mark. (1×40 = 40)

1. _______ and ________ are two major discoveries of 15th century which led to expansion of white colonies outside Europe.
   a) Spinning machine and telescope   b) Gunpowder and steam engine
   c) Gunpowder and Mariner’s compass   d) Mariner’s compass and telescope

2. Non-conventional sources of energy are
   a) Nuclear, Biomass, Wind, Thermal
   b) Geothermal, Ocean, Solar and Nuclear
   c) Biomass, Solar, Wind and Tidal
   d) None of the above

SPACE FOR ROUGH WORK
3. Green House gases such as carbon dioxide and methane cause
   a) Increase in planet’s surface temperature by blocking sunlight
   b) Decrease surface temperature by absorbing sunlight
   c) Increase planet surface temperature by trapping moisture
   d) Increase planet surface temperature by trapping the heat in the atmosphere

4. Internet can be defined as
   a) A software program installed on a computer
   b) An electronic device for printing documents
   c) A world-wide collection of computer networks
   d) A power backup source
5. The fear of GM crops for human consumers are due to
   a) Lack of information on long term effects on biodiversity
   b) Religious practices are against modifying a species
   c) Foreign genes in food may cause cancer
   d) All of the above

6. Protected land for conservation of wild life, plant and animal resources and
traditional life of tribals living in that area is known as
   a) Sanctuary
   b) National Park
   c) Biosphere reserve
   d) All of the above

7. What was the first disease to be treated with a specific chemical?
   a) Tuberculosis
   b) Syphilis
   c) Bacterial meningitis
   d) Whooping cough
8. Radioisotope used in production of nuclear weapons in India is
   a) Uranium   b) Plutonium
   c) Thorium   d) Radium
   ಮೂಲದ ಅರುಧರ ವಿಕ್ರಾಂತಕಾರಿಯಾಗಿರುವಿದ್ದಾಗಲೇ ಮೂಲಸ್ವರೂಪ (isotope) ________ ಸ್ವಾಧೀನ.
   a) ಉರಾನ್ಯತ್ತಕ  b) ಪ್ಲುಟೋನಿಯಮ್
   c) ಥೋರಿಯम್   d) ರಾಡಾಯ

9. Which of the following is an example of genetic variation?
   a) Two children have different eye colors
   b) One person is older than another
   c) One person has a scar, but his friend does not
   d) Todd eats meat, but his brother Rod is a vegetarian
   ಇದು ಜೀನೋಜ್ಞಾನಶಾಸ್ತ್ರದಲ್ಲಿ ಸಂಬಂಧಿಸಿದ ಎರಡು ಕೋಣಗಳು
   ಆಂಗಿಕ ವರ್ಗಾಂಶದ ವಿಪರೀತಕ್ಕೆ ಬದಲಾಗಬಹುದು?
   a) ಎರಡು ಬೇರೆ ಬೇರೆ ಅನುಕ್ರಮದ ಕೋಣಗಳು
   b) ಒಂದು ಪ್ರವೃತ್ತಿಯಲ್ಲಿ ಕೋಣಗಳು
   c) ಒಂದು ಪ್ರವೃತ್ತಿಯಲ್ಲಿ ಕೋಣಗಳು
   d) ಆತದ ಹೆಸರು ಹಿಂದಿನ ಹೆಸರು

10. The moons of Jupiter are called
    a) Satellites   b) Simpleton
    c) Galilean   d) None of the above
    ಜೂಪಿಟರ್‌ನ ಪರವಾಣಗಳಿವೆ ಎಂದರೆ ಪರವಾಣಗಳನ್ನು ತಿಳಿಯಲೂ?
    a) ಸಾಟೇಲೈಟ್‌ಗಳು
    b) ಸಿಮ್ಪ್ಲೆಟನ್
    c) ಗಾಲೀನನ್
    d) ಎಂದರೆ ಪರವಾಣಗಳ ಸುಪ್ರ发觉
11. Scientific studies of nature is necessary in society for
   a) Simple curiosity and improve people's lives
   b) Economic development and enlightenment
   c) Increasing control over our planet and its environment
   d) All the above

12. Which of the following is a weather sensing satellite?
   a) Astrosat
   b) Radarsat
   c) Meteosat
   d) INSAT3DR

13. Father of Indian Nuclear Programme is
   a) J.C. Bose
   b) Homi J. Bhabha
   c) Vikram Sarabhai
   d) C.V. Raman
14. First Nuclear Power Plant set up in India is
   a) Narora Atomic Power Station established in 1979 at Maharashtra
   b) Tarapur Atomic Power Station established in 1969 at Maharashtra
   c) Tarapur Atomic Power Station established in 1969 at Uttar Pradesh
   d) Kakrapur Atomic Power Station established in 1969 at Gujarat

15. Which of the following technological advances are affecting human cognition, emotions and ethics?
   a) Bus, aeroplane, microwave ovens
   b) Boilers, metro trains, television
   c) Internet, cell phones, digital communication devices
   d) Submarines, radars, missiles

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SPACE FOR ROUGH WORK
16. Blue revolution being envisaged by the Govt. of India is aimed at
   a) Increasing industrial production of blue dyes
   b) Augmenting pulse production
   c) Enhancing aquaculture products both in brakish and fresh water
   d) Increasing fish production in fresh water

17. Which of these two provide proof of excellence of Indian metallurgy before industrial revolution?
   a) Damascus swords of West Asia and iron pillar near the Qutub Minar
   b) India gate and Gateway of India
   c) Tippu Sultan's sword and palace
   d) None of the above

---

SPACE FOR ROUGH WORK
18. Which one of these depletes the ozone layer and causes global warming?
   a) Nitrogen dioxide  b) CFCs  
   c) Ammonia  d) All the above

19. What is the maximum speed possible for any wave in the solar system?
   a) Every wave can have its own speed  b) Speed of light  
   c) Speed of electron  d) None of the above

20. Washing soaps contain
   a) Potassium salts of fatty acids  b) Sodium and calcium salts of fatty acids  
   c) Potassium and sodium salts of fatty acids  d) Sodium salts of fatty acids
21. Who was the father of White Revolution?
   a) Dr. Norman Borlaug
   b) Dr. M.S. Swaminathan
   c) Dr. Varghese Kurien
   d) K.N. Bahal

22. Scientific management of animal livestock, breeding and diseases control is
   a) Animal husbandry
   b) Animal based farming
   c) Both a and b
   d) None

23. Antimicrobial drugs that are derived from the natural processes of some microorganisms and that can inhibit or destroy other microorganisms are specifically known as what?
   a) Chemotherapeutic drugs
   b) Prophylactic drugs
   c) Semisynthetic drugs
   d) Antibiotics
24. Detergents are better than soaps in removal of greasy dirt because
   a) They have longer fatty acids than soaps
   b) They have surfactants which make them interact with greasy dirt
   c) They contain less sodium and potassium
   d) They are water repellents

25. The process of softening of hard water by using nanoparticles is known as
   a) Nanopurification
   b) Nanoremediation
   c) Nanofiltration
   d) All of the above

26. Primitive observers defined natural phenomenon as an activity of
   a) Supernatural forces
   b) Humans
   c) Machines
   d) None of the above
27. Science and Technology in Ancient India is a work by
   a) Joseph Needham       b) D.P. Chattopadhyaya
   c) Sushil Kumar Mukherjee d) John Bernard

28. DNA Finger Printing is used in Forensic test is based on
   a) Matching of the DNA sequences from specimen's crime site and suspects
   b) Matching of the DNA sequences from specimens at crime site and suspect's parents
   c) Matching of the DNA sequences from specimens at crime site and suspect's children
   d) All the above

29. The radiant energy of the sun is due to
   a) Nuclear fission       b) Nuclear fusion
   c) Radioactive decay     d) All of the above
30. *Origin of Species* is a work of
   a) Mathew Arnold  
   b) Charles Darwin  
   c) Albert Einstein  
   d) Sigmund Freud

31. Who laid down the first accurate laws of motion for masses?
   a) Nicholas Copernicus  
   b) Galileo  
   c) Oldham  
   d) Einstein

32. Photovoltaic energy is the conversion of sunlight into
   a) Chemical energy  
   b) Biogas  
   c) Electricity  
   d) Geothermal energy

33. New way of thinking, sparked by a philosophy known as
   a) Humanism  
   b) Socialism  
   c) Behaviorism  
   d) Politics

34. The latest satellite launched by India is
   a) Astrosat  
   b) Rohini  
   c) GSAT 18  
   d) INSAT 3DR
35. A social science is the systematic study of
   a) The natural world
   b) Models of reality
   c) Human behavior and society
   d) Experimentation

36. The lens used to construct a Microscope
   a) Convex
   b) Concave
   c) Biconvex
   d) Biconcave

37. Most likely event which can cause a rise in the average temperature of earth's atmosphere in future is
   a) Forest fires
   b) CO₂ from fossil fuels
   c) Dust clouds from volcanoes
   d) Depletion of earth's ozone layer
38. Plants with green and tender stems are called
   a) Herbs
   b) Shrubs
   c) Trees
   d) All of the above

39. High Yielding Variety Seeds (HYV) were introduced to Indian farmers as a result of
   a) White Revolution
   b) Green Revolution
   c) Red Revolution
   d) Orange Revolution

40. Who is known as the father of Indian Monsoon Model?
   a) Madhavan Nair
   b) Vikram Sarabhai
   c) Vasant Gowrikar
   d) C.N.R. Rao
PART - B

Note: Answer all questions. Each question carries 2 marks. (15×2 = 30)

41. Match the Philosopher/Scientist with their contribution:

<table>
<thead>
<tr>
<th>Scientist</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Aristotle</td>
<td>i. Three laws of motion</td>
</tr>
<tr>
<td>B. Newton</td>
<td>ii. Laws of inheritance</td>
</tr>
<tr>
<td>C. Gregor Mendel</td>
<td>iii. Gravitational force</td>
</tr>
<tr>
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SPACE FOR ROUGH WORK
42. For a fixed mass of gas at constant temperature, if we decrease volume, the pressure will
   a) also decrease   b) increase  
   c) remains constant  d) none of these

43. How stationary waves are formed?
   a) A transverse wave superposing a longitudinal wave
   b) Two waves of the same speed superposing
   c) Two waves of same frequency travelling in the same direction
   d) Two waves of same frequency travelling in the opposite direction

   What is the formula for phase difference?
   a) \( \phi = B = 0 \), given \( A = 2 \), \( A = 3 \), \( \phi = 0 \)
   b) \( \phi = B = 0 \), given \( A = 2 \), \( A = 3 \), \( \phi = 0 \)
   c) \( \phi = B = 0 \), given \( A = 2 \), \( A = 3 \), \( \phi = 0 \)
   d) \( \phi = B = 0 \), given \( A = 2 \), \( A = 3 \), \( \phi = 0 \)
44. Informed public with science and technology background are necessary in a
Democracy.

a) To convey to state necessity and feasibility of intended science business
b) To deliberate on diverse views on merits and demerits of technology to select
right ones
c) To bring transparency in technology based business, policy-making on vital issues
d) All of the above

45. Importance of information technology in education are

a) Faster access to information from across the globe
b) On-line libraries and dictionaries, make grasping and learning easier
c) IT based communication systems such as emails, SMS help interaction for clarity
d) All the above
46. Match the scientists and their discoveries:

Scientist
A. Alfred Nobel
B. Edward Jenner
C. Newton
D. Thomas Alva Edison

Discovery
i. Vaccination
ii. Electric bulb
iii. Gravitational force
iv. Dynamite

a) A = iii, B = i, C = iv, D = ii
b) A = iv, B = iii, C = i, D = ii
c) A = iii, B = iv, C = i, D = ii
d) A = ii, B = i, C = iv, D = iii

47. Select the option that best describes the statement: "Waves are formed in a lake when a stone is dropped into it."

A. ಎಲ್ಲಾ ಅವಶ್ಯಗಳಿಗೆ ಉಪಕರಣಗಳು ಏಕಂದರ ಹಾಗೂ ಉಪಕರಣಗಳು
B. ಎಲ್ಲಾ ಅವಶ್ಯಗಳಿಗೆ ಉಪಕರಣಗಳು ಏಕಂದರ ಹಾಗೂ ಉಪಕರಣಗಳು
C. ಎಲ್ಲಾ ಅವಶ್ಯಗಳಿಗೆ ಉಪಕರಣಗಳು ಏಕಂದರ ಹಾಗೂ ಉಪಕರಣಗಳು
D. ಎಲ್ಲಾ ಅವಶ್ಯಗಳಿಗೆ ಉಪಕರಣಗಳು ಏಕಂದರ ಹಾಗೂ ಉಪಕರಣಗಳು

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b) A = iv, B = iii, C = i, D = ii
c) A = iii, B = iv, C = i, D = ii
d) A = ii, B = i, C = iv, D = iii

SPACE FOR ROUGH WORK
47. Which statement best describes the structure of an atom?
   a) A tiny nucleus of protons and neutrons with electrons orbiting around it
   b) A positive core surrounded by electrons packed tightly around it
   c) A particle comprised of a mixture of protons, electrons and neutrons
   d) A large core of protons and electrons surrounded by neutrons

48. Heliocentric model of Nicolas Copernicus explains the motions of planets
   a) Motion of astronomical epicycles
   b) Motion of heavenly bodies around the earth
   c) Motion of planets around the sun
   d) Motion of satellites around the planets
49. Ancient Indian knowledge of theories on human body, symptoms of disease and remedies in ayurveda are made available in which Sanskrit text?
   a) Arthashastra
   b) Charaka Samhita
   c) Chandasshastra
   d) Aryabhatiya

50. Nano smart materials that alter shape under the influence of an electric field is
   a) Thermoresponsive materials
   b) Polychromatic materials
   c) Electrochromic materials
   d) Piezoelectric materials

51. Second stage of the industrial revolution
   a) Consumable goods production
   b) Capital goods production
   c) Standardization
   d) Productivity

52. Which of the following is true for “Sound”?
   a) Sound cannot travel through a vacuum
   b) Sound cannot travel through gases
   c) Sound cannot travel through liquids
   d) Sound cannot travel through solids

   'ಬ್ರಹ್ಮದಾಯ'  ಉಭಯ ದೇವನಾಗಿರುವುದರ ಸ್ಥಳದ ವಿನಾಗೀಯ?
   a) ಶಾಶ್ವತ ವಿನಾಗೀಯ
   b) ಪ್ರೇಕ್ಷಿತ ವಿನಾಗೀಯ
   c) ಬುಧಸಾನ ವಿನಾಗೀಯ
   d) ಪ್ರಜ್ಜಣ ವಿನಾಗೀಯ

   SPACE FOR ROUGH WORK
53. Which of the following definition for 'Science' has been coined by Carl Sagan?
   a) Science is a way of thinking much more than it is a body of knowledge
   b) Is an intellectual activity carried out by humans
   c) Science is a knowledge covering general truths of the operation of general laws
   d) All of science is uncertain and subject to revision

54. Difference between hybrid and transgenic or GMO plants
   a) Hybrids live longer and transgenics live shorter
   b) Hybrids arise due to cross pollination, while transgenics are produced by transfer of specific genes from different species
   c) Hybrids are generated from grafting but transgenics result from germination
   d) Genes in hybrids are under breeders control, but in GMO plants they are uncontrolled

55. The observed increase in the average temperature of the air near earth's surface and oceans in recent decades is
   a) Environment change
   b) Global warming
   c) Health change
   d) None
III SEMESTER B.A./B.Com./B.B.A. EXAMINATION,
NOVEMBER/DECEMBER 2015
(CBCS) (F) (2015 – 16 & Onwards)

SCIENCE & SOCIETY

Question Booklet Sl. No. 628387

Time Allowed : 3 Hours
Maximum Marks : 70

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PART – A

Choose the best option. Each question carries 1 mark. (40×1=40)

1. Photonics is a field concerned with
   a) Generation of light
   b) Amplification of light
   c) Modulation of light
   d) All of these

2. Who announced the introduction of National Food Security Act?
   a) Pranab Mukherjee
   b) Manmohan Singh
   c) P. Chidambaram
   d) Arun Jaitley

3. The observed increase in the average temperature of the air near earth’s surface and oceans in recent decades indicates
   a) Environmental change
   b) Global warming
   c) Health change
   d) None of these

---

SPACE FOR ROUGH WORK
4. The prefix "nano" comes from a
   a) French word meaning billion
   b) Greek word meaning dwarf
   c) Spanish word meaning particle
   d) Latin word meaning invisible

5. The process of introduction of weakened pathogen into human body is called
   a) Immunization
   b) Vaccination
   c) Attenuation
   d) Transformation

6. The study of genes, heredity and variation in living organisms is called
   a) Cell biology
   b) Ecology
   c) Immunology
   d) Genetics

7. Third generation biofuels are made from
   a) Animal fats
   b) Agricultural waste
   c) Algae
   d) Engineered plants
8. Name the Indian American origin astronaut who took over as the commander of International space station as a flight engineer in 2012.
   a) Rakesh Sharma  b) Kalpana Chawla  
   c) Sunita Williams  d) Tessy Thomas

9. First manned landing on the moon was done using
   a) Apollo 9  b) Apollo 10  
   c) Apollo 11  d) Apollo 12

10. The Industrial Revolution began in ________ country.
    a) Germany  b) Britain  
    c) Russia  d) America

   a) ________  b) ________  
   c) ________  d) ________
11. Global warming is primarily a problem of too much ________ in the atmosphere.
   a) Carbon dioxide  b) Oxygen  c) Hydrogen  d) Nitrogen

12. Genetics is the study of
   a) heredity  b) cell structure  c) plant life  d) human evolution

13. Evolution is the study of
   a) structure of plant or animal  b) life on earth and in space  c) change in plant life  d) evolutionary processes that produced the diversity of life on Earth

14. Chernobyl nuclear disaster happened in
   a) USA  b) Finland
c) USSR  d) Hungary
   ಚೆರೋಬ್ಯಿಲ್ ತೋರಣದ ಸಮಯವು
   a) ಎಡಹಾರ್‌  b) ಭಿನ್ನಿ
   c) ಕ್ರಿಸ್త್ ಧ್ಮ್ಯ  d) ಹುನ್ಯಾರ்

15. The term 'operation flood' refers to
   a) Flood Control  b) Milk Production
c) Foodgrain Production  d) Population Control
   ಆಧಾರಕ ನೀಡಣೆ ಹತ್ತಿರಿಸಲು ಸಮಯವು
   a) ಪ್ರಮುಖ ಪ್ರಾಣಿ  b) ಮಾದಾನಿಲು
c) ಪ್ರಾಣಿದಿತ್ಯ  d) ಜನರ ಸಮಯ

16. Aristotle was an ancient ______ philosopher.
   a) French  b) Greek
c) Italian  d) Chinese
   ಅರಸ್ತ್ಯು ಅಂತಿನ ವಿಜ್ಞಾನ
   a) ಫ್ರೆನ್ಚ್  b) ಗೀಕೀ<
c) ಇಟಲಿಯಾನ್  d) ಚೀನಿ<

17. 'Origin of Species' was written by
   a) Oparin  b) Weismann
c) Lamarck  d) Darwin
   'ಸಂಬಂಧ ಚಕ್ರ ಸ್ವಭಾವ' ರಚಿಸಲು
   a) ಓಪರಿನ  b) ವೆಂಸ್‌ಮನ
   c) ಲಾಮರ್ಕ  d) ಡರವಿನ

SPACE FOR ROUGH WORK
18. The energy associated with motion is called
   a) Potential energy  b) Chemical energy
   c) Kinetic energy      d) Physical energy

19. _______ suggested that Sun was at rest near the center of our solar system
    and that the Earth, spinning on its axis once daily, revolves annually around the Sun
   a) Plato  b) Copernicus  c) Ptolemy  d) Aristotle

20. TCP/IP is a
    a) Hardware  b) Software
    c) Internet protocol suite  d) Virus
21. Which factory was considered as a symbol of new era in England in the late 18th century?
   a) Iron and Steel  b) Metal  
   c) Jute  d) Cotton

22. Which of the following processes acis to remove carbon dioxide from the atmosphere?
   a) Burning of fossil fuels  b) Deforestation  
   c) Photosynthesis  d) Lightning

23. A wind turbine converts kinetic energy from the wind to _______ energy.
   a) Solar  b) Hydro  
   c) Electrical  d) Mechanical
24. In ancient India the name of Varahamihira was associated with
   a) Mathematics
   b) Astronomy
   c) Astrology
   d) Medicine

25. The science of getting exact copies of desired living organism is known as
   a) Copying
   b) Reproduction
   c) Cloning
   d) Bio-copying

26. Which of the following State is the largest producer of Milk?
   a) Maharashtra
   b) Gujarat
   c) Andhra Pradesh
   d) Uttar Pradesh
27. Microbes that produce chemicals which inhibits the growth of other microbes in the same habitat are exhibiting
   a) Commensalism
   c) Antagonism
   b) Mutualism
d) Parasitism

28. The change of heritable traits of biological population over successive generations is called
   a) Exploration
   c) Experimentation
   b) Evolution
d) Pollination

29. The full form of PSLV is
   a) Polar Satellite Launch Vehicle
   b) Passive Satellite Launch Vehicle
   c) Precision Satellite Launch Vehicle
   d) Penumbra Satellite Launch Vehicle
30. The founder of Mathematical analysis
   a) Madhava
   c) Sushruta
   b) Aryabhata
   d) Hanneman

31. Indian Space Research Organisations rocket launching pad is located at
   a) Srikakulam
   c) Sriharikota
   b) Srishailam
   d) Sulurpet

32. The former name of Nuclear Reactor is
   a) Atomic Reactor
   c) Atomic Plie
   b) Nuclear Reader
   d) Atomic Weapon

33. A group of satellites make up the
   a) Constellations
   c) Global positioning system
   b) Galaxy
   d) Milky way

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SPACE FOR ROUGH WORK
34. Telescope was discovered by
   a) Ptolemy  b) Copernicus  c) Einstein  d) Galileo

35. ______ is not a deficiency disease.
   a) Anaemia  b) Goitre  c) Hepatitis  d) Scurvy

36. The first ever artificial satellite to orbit the Earth was
   a) Sputnik  b) Explorer  c) Vostok  d) Aryabhata

37. Darwin's theory of evolution is based on the concept of
   a) Use and disuse  b) Mutations  c) Natural selection  d) Divine creation
38. ________ is not an example of renewable source of energy.
   a) Wind power  d) Solar
   b) Biomass  c) Electricity

39. The movement of genetic information from one population to another is called
   a) Genetic Drift  b) Genetic equilibrium
   c) Gene frequency  d) Gene flow

40. The branch of science which deals with the study of eyes and its nerves is called
   a) Oncology  b) Neurology
   c) Ophthalmology  d) Otology
PART – B

Choose the best option. Each question carries 2 marks. (15x2=30)

41. The electrical output of a solar cell depends on the
   a) Intensity of solar radiation    b) Heat component of solar radiation
   c) Ultraviolet radiation        d) Infrared radiation

42. Which among the following is not an adverse environmental impact of tidal power generation?
   a) Interference with spawning and migration of fish
   b) Pollution and health hazard in the estuary due to blockage of flow of polluted water into the sea
   c) Navigation hazard
   d) None of the above

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SPACE FOR ROUGH WORK
43. Match the items in Part - A with appropriate alternative in Part - B:

**Part - A**

<table>
<thead>
<tr>
<th>i) Biotechnology</th>
<th>a. Quantum dots</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii) Material science</td>
<td>b. Spintronics</td>
</tr>
<tr>
<td>iii) Information technology</td>
<td>c. Gene therapy</td>
</tr>
</tbody>
</table>

**Part - B**

| 2 |
| 3 |

- a) i - c, ii - d, iii - a
- b) i - c, ii - b, iii - a
- c) i - c, ii - a, iii - b
- d) i - a, ii - b, iii - d

** Karnataka Language Section:**

| 1 |
| 2 |
| 3 |

- a) 1 - a, 2 - b, 3 - c
- b) 1 - a, 2 - b, 3 - b
- c) 1 - a, 2 - c, 3 - c
- d) 1 - a, 2 - c, 3 - a

SPACE FOR ROUGH WORK
44. Genetic modification of crops
   a) Produces disease resistant and herbicide intolerant crops
   b) Improves the texture and flavor and increases shelf life of food
   c) Can increase the nutritional value of food and create an essential sustainable way to feed the world
   d) Can produce crops to withstand environmental stress and decrease the yield

45. Smart materials are those materials
   a) That responds to change in their fossilized and hydrocarbon form
   b) That responds to a change either in the temperature, humidity, colour
   c) That can be controlled by external stimuli such as mechanical or electric stress
   d) and c) but not a)
46. Which of the following statements are true?
   i. Lasers are used in optical disk drives and bar code scanners
   ii. Lasers are yet to be used in printing technology
   iii. Lasers are used in fiber-optics and skin treatments
   iv. Laser was one of the major inventions of The Enlightenment Age
   a) i and ii only
   b) iii and iv only
   c) i and iii only
   d) i, ii, iii and iv

47. INTELSAT stands for
   a) International Telecommunications Satellite
   b) India Telecommunications Satellite
   c) Inter Telecommunications Satellite
   d) None of the above

   a) 'Indiananad Satellite' aadheja
   b) 'Indiaanad Satellite' aadheja
   c) 'Inter Telecommunications Satellite' aadheja
   d) 'None of Above' aadheja
48. GIS stands for
   a) Global Information System
   b) Geospatial Informative System
   c) Geographical Information System
   d) Geological Information System

49. Ozone present in the atmosphere acts as
   a) artificial filter for absorption of solar radiation
   b) natural filter for absorption
   c) mediator of earth and sky
   d) none of the above

SPACE FOR ROUGH WORK
50. Choose the best option
   a) There is no difference between nuclear fusion and fission
   b) Deuterium and Tritium are the two hydrogen isotopes used in a nuclear fusion reaction
   c) Nuclear power can increase the production of greenhouse gases
   d) Radioactive wastes generated from thermal power plants may harm the health of people

51. Sickle Cell Anemia, Hemophilia, Tay Sachs diseases are examples of
   a) diseases as a result of complications due to HIV
   b) diseases where no new cases have been reported since 2000
   c) diseases as a result of increased use of genetically modified food
   d) dysfunctional gene behavior caused due to mutation or chromosome abnormality

   *SPACE FOR ROUGH WORK*
52. Principle of laser is
   a) spontaneous absorption
   b) stimulated emission
   c) induced emission
   d) both b and c

53. Manufacture of water and stain repellent clothing is made using
   a) Nanotechnology application
   b) Biotechnology application
   c) Smart materials
   d) Metallurgical Sciences
54. Theory of natural selection dwells on
   a) Role of environment in evolution
   b) Natural selection acting on favourable variations
   c) Changes in gene complex resulting in heritable variations
   d) None of the above

55. Nuclear fusion releases energy when
   a) Uranium splits into two fragments
   b) Very light nuclei fuse together
   c) Uranium emits a neutron
   d) Heavy ions fuse together

   ଏଜେକ୍ଟରେ ପ୍ରକ୍ରିୟାଧାରଣରେ କେତେକ ବେଳେ ତେବିନା ଗ୍ରହଣରେ।
   a) ଉରାନି움 ପୂରି ଭାବରେ ପ୍ରକୃତିଭାବରେ ବୃଦ୍ଧି
   b) ଲୋକାତମାନ ତାରକରେ ବୃଦ୍ଧି ପ୍ରକୃତିଭାବରେ
   c) ଉରାନି洱୍ ପ୍ରକୃତିଭାବରେ ବୃଦ୍ଧି
   d) ଉରାନି洱୍ ପ୍ରକୃତିଭାବରେ ବୃଦ୍ଧି