

(To be filled up by the candidate by **blue/black ball-point pen**)

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 30 minutes of the issue of the Question Booklet, Please ensure that you have got the correct booklet and it contains all the pages in correct sequence and 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.*
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 unfair means.*
8. *This Booklet contains 40 multiple choice questions followed by 10 short answer questions. For each MCQ, 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. For answering any five short Answer Questions use five Blank pages attached at the end of this Question Booklet.*
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 pages of the title cover and the blank page at the end of this Booklet.
12. Deposit *both OMR Answer Sheet and Question Booklet* 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 : 16**

**FOR ROUGH WORK**

# M. Phil. Ph. D. – 2017

No. of Questions : 50

*Time : 2 Hours*

*Full Marks : 200*

- Note :* (i) This Question Booklet contains 40 Multiple Choice Questions followed by 10 Short Answer Questions.
- (ii) Attempt as many MCQs as you can. Each MCQ carries 3 (Three) marks. 1 (One) mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question. If more than one alternative answers of MCQs seem to be approximate to the correct answer, choose the closest one.
- (iii) Answer only 5 Short Answer Questions. Each question carries 16 (Sixteen) marks and should be answered in 150-200 words. Blank 5 (Five) pages attached with this booklet shall only be used for the purpose. Answer each question on separate page, after writing Question No.

1. What are the three 'Rs' for a clean environment ?
  - (1) Recycle, reuse, redo
  - (2) Remember, recycle, recreate
  - (3) Recycle, reuse, reduce
  - (4) Refer, recreate, redo
  
2. Which of the following are the two correct properties of air ?
  - (1) Air has weight and is colourless
  - (2) Air has taste and is invisible
  - (3) Air has no pressure and occupies no space
  - (4) It is not tasteless and is a mixture of many gases
  
3. Which of the following does not have energy at all ?
  - (1) Fat
  - (2) Protein
  - (3) Vitamin
  - (4) Carbohydrate
  
4. The specific heat of aluminium is 0.22 calories/g/°C. The number of calories required to heat 25 g of aluminium from 12°C to 28°C is :
  - (1) 42 calories
  - (2) 400 calories
  - (3) 88 calories
  - (4) 150 calories
  
5. The solar energy cannot be stored in which of the following ?
  - (1) Water
  - (2) Iron
  - (3) Gaseous
  - (4) Wood
  
6. Which energy development agency has launched an ambitious programme to mobilize children as Urja Rakshak ?
  - (1) Gujarat State Energy
  - (2) Development Agency
  - (3) Gujarat Electricity Board
  - (4) Gujarat Energy Development Agency and Gujarat Electricity Board Delhi Transco Power
  
7. Which is the largest member of Solar System with other members revolving around it ?
  - (1) Earth
  - (2) Mars
  - (3) Sun
  - (4) Moon

8. An endemic species is :
- (1) found in a given region or location and nowhere else in the world
  - (2) found everywhere in the world
  - (3) an extinct species
  - (4) vulnerable species
9. The chemical responsible for Bhopal Gas Tragedy was :
- (1) Methyl isocyanate
  - (2) Oxygen difluoride
  - (3) Diborane
  - (4) Phosgene
10. The chemical formula for CFC-12 is :
- (1)  $\text{CCl}_2\text{F}_2$
  - (2)  $\text{CCl}_3\text{F}_3$
  - (3)  $\text{C}_2\text{Cl}_3\text{F}_3$
  - (4)  $\text{CCl}_2\text{F}_3$
11. Which among these is a green house gas :
- (1)  $\text{SO}_2$
  - (2)  $\text{NH}_3$
  - (3)  $\text{CH}_4$
  - (4)  $\text{C}_2\text{H}_2$
12. Which of the following gases facilitates formation of tropospheric ozone ?
- (1)  $\text{NO}_2$
  - (2)  $\text{SO}_2$
  - (3)  $\text{H}_2\text{O}$
  - (4)  $\text{NH}_3$
13. The most significant component of photochemical smog is :
- (1)  $\text{SO}_2$
  - (2)  $\text{N}_2$
  - (3)  $\text{CH}_3$
  - (4) PAN
14. Global cooling is basically due to :
- (1)  $\text{CO}_2$
  - (2)  $\text{SO}_2$
  - (3) aerosols
  - (4)  $\text{CH}_4$
15. The air pollutant responsible for maximum crop damage is :
- (1)  $\text{SO}_2$
  - (2)  $\text{O}_3$
  - (3)  $\text{CH}_4$
  - (4) Aerosols
16. Central aim of the Paris Agreement-2016 is to keep global temperature rise well below :
- (1) 1.5 degree
  - (2) 2 degree
  - (3) 3 degree
  - (4) 2.5 degree
17. Which of these radionuclides is used for therapeutic purposes :
- (1) Cesium-134
  - (2) Cesium-137
  - (3) Technicium-99 m
  - (4) Strontium-90

18. Nitrogenase is a :
- (1) Phosphoprotein (2) Metalloprotein  
(3) Thiol-containing protein (4) None of the above
19. Which of these is not a major contributor to the greenhouse effect ?
- (1) Carbon monoxide (2) Carbon dioxide  
(3) Chlorofluorocarbons (4) Methane
20. Itai-itai disease is caused due to which of the following metal :
- (1) Cadmium (2) Lead (3) Mercury (4) Selenium
21. Sharp decline in oxygen level downstream from a point source is known as :
- (1) Oxygen sag (2) Oxygen loss  
(3) Oxygen depletion (4) Oxygen demand
22. DEM refers to :
- (1) Digitally Enhanced Model (2) Digital Elevation Model  
(3) Direct Emission Model (4) None of the above
23. Raster image datasets have :
- (1) Continuous information over the surface  
(2) Discrete dimensions  
(3) Discontinuous information over the surface  
(4) None of the above
24. Normalized difference vegetation index can be computed by :
- (1)  $(\text{Near Infrared} - \text{Red}) / (\text{Near Infrared} + \text{Red})$   
(2)  $(\text{Near Infrared} + \text{Red}) / (\text{Near Infrared} - \text{Red})$   
(3)  $\text{Near Infrared} / \text{Red}$   
(4)  $\text{Red} / \text{Near Infrared}$
25. Which of the following is true in case of passive Satellites ?
- (1) Uses natural source of energy (2) Uses artificial source of energy  
(3) Obtain measurements anytime (4) Require fairly large amount of energy

26. Which of the following sequence is true in terms of wavelength ?  
 (1) X-ray>Ultraviolet>Gamma (2) Visible<Infrared<Microwave  
 (3) Visible<Microwave<Infrared (4) X-ray<Ultraviolet<Gamma
27. Loss of environmental resources is a problem because valuable resources disappear, with some perhaps irreversibly :  
 (1) Economic (2) Social (3) Cultural (4) Sociocultural
28. Which of the following is an object or phenomenon having the potential of creating undesirable adverse consequences ?  
 (1) Exposure (2) Risk (3) Threat (4) Hazard
29. A book *Company and Community, 1900-60*, published in 1970, is written by :  
 (1) David (2) Dempsey (3) Morrell Healed (4) Bernard
30. Which *one* of the following characteristics is widely regarded as being an important aspect of sustainable development ?  
 (1) Inter-generational equity (2) Increasing consumption expenditure  
 (3) Intra-generational inequity (4) Increased levels of saving
31. A "green transport plan" is :  
 (1) An environmentally acceptable travel plan devised by a local authority for its area  
 (2) An internationally agreed strategy for reducing the impact of international transport activity of the global environment  
 (3) A plan devised by a company or organization to reduce the environmental impact of the transport demands generated by itself and its employees  
 (4) The UK government's plan for a sustainable transport sector
32. ISO 14001 is :  
 (1) A particularly harmful global warming gas  
 (2) A European Union regulation on pollution abatement  
 (3) A water quality regulation set out under the Indian Environment Act  
 (4) An international standard setting out best practice for carrying out audits by companies of their environmental management systems and policies

33. The 'Montreaux Record' is a register of :
- (1) Invasive Alien Species and their ecological hazards outside their native environment.
  - (2) Wetland sites under the threat of anthropogenic activities.
  - (3) Endangered species of tropical and sub-tropical fauna.
  - (4) Coastal cities under direct threat of consequences of global warming.
34. All species of 'Lemur' are endemic to which among the following places of the world ?
- (1) Seychelles Islands
  - (2) Galapagos Islands
  - (3) New Caledonia
  - (4) Madagascar
35. Which of the following Environmentalists first gave the concept of Biodiversity 'hotspots' ?
- (1) Gaylord Nelson
  - (2) Norman Myers
  - (3) John Muir
  - (4) Julia "Butterfly" Hill
36. Which of the following Tiger Reserves are correctly paired with their respective locations ?
- (1) Udanti Sitanadi – Rajasthan
  - (2) Dandeli Anashi – Chhattisgarh
  - (3) Sariska – Karnataka
  - (4) Satkosia – Orissa
37. Which of the following is not part of the Human Development Index ?
- (1) infant mortality
  - (2) life expectancy
  - (3) educational attainment
  - (4) GDP per capita
38. The first group of least developed countries were listed by the UN in its resolution 2768 (XXVI) of 18 November 1971 :
- (1) 1958
  - (2) 1965
  - (3) 1971
  - (4) 1988
39. A graphical technique that can be used to show the degree of inequality that exists between two variables is the :
- (1) Lorenz curve
  - (2) median-line bar graph
  - (3) Kuznets curve
  - (4) semantic differential profile
40. The People's Campaign for decentralized Planning was launched in 1996 in the Indian state of :
- (1) Tamil Nadu
  - (2) Bihar
  - (3) Karnataka
  - (4) Kerala



*Attempt any five questions. Write answer in 150-200 words. Each question carries 16 marks. Answer each question on separate page, after writing Question Number.*

1. Explain how common air pollutants causes damage to agricultural crops ?
2. What is indoor air pollution ? Explain air quality management for indoor air quality.
3. Explain the potential of phytoremediation for air pollutants with few examples.
4. Analyze the importance and contribution of ecosystem services to mankind.
5. Is Arsenic contamination in India critical ? Comment.
6. Discuss the major ways used for nuclear waste disposal ?
7. What do you understand by the term Remote Sensing ? Name few Indian Satellites along with their applications.
8. What is digital image processing ?
9. Discuss climate change and its effect on human health.
10. Discuss the renewable options of energy for meeting the growing energy demands of India.

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**Q. No. :**

**FOR ROUGH WORK**

## 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 30 मिनट के अन्दर ही कृपया 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 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।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान 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. इस पुस्तिका में 40 बहुविकल्पीय प्रश्नों के साथ 10 लघु उत्तरीय प्रश्न हैं। प्रत्येक बहुविकल्पीय प्रश्न के लिए, आपको उत्तर-पत्र के प्रथम पृष्ठ पर दी गयी गाइडलाइन के अनुसार सही विकल्प के लिए उत्तर-पत्र की संगत पंक्ति में उपयुक्त गोले को पेन द्वारा काला करना है। किन्हीं पाँच लघु उत्तरीय प्रश्नों के उत्तर देने के लिए प्रश्न-पुस्तिका के अन्त में संलग्न पाँच रिक्त पृष्ठों का प्रयोग कीजिए।
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 ओ० एम० आर० उत्तर-पत्र एवं प्रश्न पुस्तिका दोनों 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।

SEAL