

Question Booklet No. ....

(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 10 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 page 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.

**Total No. of Printed Pages : 15**

**FOR ROUGH WORK**

# Research Entrance Test – 2014

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. Which of the following is *not* a greenhouse gas ?
 

(1) Carbon dioxide	(2) Methane
(3) Sulphur dioxide	(4) Nitrogen
2. The saliva of mammals contains starch splitting enzyme. The name of that enzyme is :
 

(1) Amylase (Ptyalin)	(2) Secretin
(3) Lysozyme	(4) Mucin
3. Cytosine in DNA combines with :
 

(1) Adenosine	(2) Uracil	(3) Guanine	(4) Thiamine
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4. If Vectors  $2i - j + k$ ,  $i + 2j - 3k$ ,  $3i + \lambda j + 5k$  are coplanar, then the value of  $\lambda$  is :
 

(1) -2	(2) -3	(3) -4	(4) -5
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5. The value of  $(-1 + i\sqrt{3})^{3/2}$  is :
 

(1) $\sqrt{2}$	(2) $2\sqrt{2}$	(3) $2 + \sqrt{2}$	(4) $2 - \sqrt{2}$
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6. The number of electrons contained in 1 Coulomb of charge equals to :
 

(1) $6.25 \times 10^{17}$	(2) $6.25 \times 10^{18}$	(3) $6.25 \times 10^{19}$	(4) $1.6 \times 10^{19}$
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7. A unit mass of solid is converted to liquid at its melting ; the heat required for this process is the :
 

(1) Specific heat	(2) Latent heat of vaporization
(3) Latent heat of fusion	(4) External latent heat
8. Granite is :
 

(1) a sedimentary rock	(2) a metamorphic rock
(3) a volcanic rock	(4) a plutonic igneous rock
9. Coal is a :
 

(1) Sedimentary rock	(2) Hydrothermal deposit
(3) Low-grade metamorphic rock	(4) High-grade metamorphic rock
10. Which one of the following gases is present in the stratosphere that filters out some of the sun's ultraviolet light and provides an effective shield against radiation damage to living things ?
 

(1) Oxygen	(2) Methane	(3) Ozone	(4) Helium
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11. Increase in carbon content of coal is indicative of its :
- (1) Lower Rank
  - (2) Depletion of mineral matter
  - (3) Higher Rank
  - (4) High moisture content
12. S1 peak of Rock-Eval pyrolysis is indicative of :
- (1) The amount of free hydrocarbons
  - (2) The amount of CO<sub>2</sub>
  - (3) Temperature of maximum release of hydrocarbons
  - (4) Pressure activity
13. Exsudatinite is a maceral of :
- (1) Inertinite group
  - (2) Vitrinite group
  - (3) Liptinite group
  - (4) Xylite group
14. Kerogen Type-II is rich in :
- (1) Woody plant matter
  - (2) Spore, pollen, cuticle and resin
  - (3) Algal matter
  - (4) Tanin compounds
15. High content of vitrinite in a source rock is suggestive of :
- (1) Dominance of zooplanktons as in put of organic matter
  - (2) Dominance of terrestrial plants as in put of organic matter
  - (3) Fast subsidence of the basin
  - (4) Slow subsidence of the basin
16. The ocean floor sediments below the Calcium carbonate Compensation Depth (CCD) are generally rich in :
- (1) Planktic foraminifera
  - (2) Benthic foraminifera
  - (3) Radiolaria
  - (4) Ostracodes
17. Planktic/benthic Foraminiferal abundance ratio from continental shelf to slope :
- (1) Increases
  - (2) Decreases
  - (3) Remains constant
  - (4) Shows no definite pattern

18. Which of the following microfossil groups occur both in marine and non-marine environments ?
- (1) Foraminifera (2) Radiolaria  
 (3) Ostracodes (4) Pteropods
19. Abundance of elongated, tapered/cylindrical benthic foraminifera in sediment is indicative of :
- (1) Oxygen-poor and eutrophic environment  
 (2) Oxygen-rich and eutrophic environment  
 (3) Oxygen-rich and oligotrophic environment  
 (4) Oxygen-poor and oligotrophic environment
20. Cross-beds are :
- (1) Lower surface structure (2) Upper surface structure  
 (3) Internal structure (4) Surface structure
21. Greywacke contains matrix :
- (1) <15% (2) >15% (3) > 40% (4) >75%
22. Lithic arenites are :
- (1) Quartz-rich sandstones (2) Feldspar-rich sandstones  
 (3) Sandstones rich in rock fragments (4) Clay-rich sandstones
23. Fluvial deposits are characterized by :
- (1) Poor sorting (2) Moderate sorting  
 (3) Moderately well sorted (4) Very well sorting
24. A clastic reservoir can have maximum porosity with packing as :
- (1) Tetrahedral (2) Rhombohedral  
 (3) Orthorhombic (4) Cubic

25. Convolute laminations develop due to :
- (1) Gravity induced slide
  - (2) Dewatering
  - (3) Stress exerted by water or sediment movement
  - (4) Activity of folding and faulting
26. Which of the following constitutes a sand-rich delta :
- (1) Birdfoot delta
  - (2) Arcuate delta
  - (3) lobate delta
  - (4) Cuspate delta
27. A diagenetic trap develops by :
- (1) Pinch out of strata
  - (2) Wedge out of strata
  - (3) Stylolites
  - (4) Dolomitization
28. Roll over anticlines are formed by :
- (1) Movement of low density sediments overlain by denser sediments
  - (2) Compressive deformation
  - (3) Transfer of physical displacement from vertical to horizontal across a listric fault trajectory
  - (4) Push up due to diapirism
29. The fluid pressure :
- (1) Decreases both shearing and compressive strengths of the rock
  - (2) Decreases the shearing strength of the rock only
  - (3) Decreases the compressive strength of the rock only
  - (4) Increases both the shearing and compressive strengths of the rock
30. Schist represents a material which has mechanical properties as :
- (1) Homogeneous and isotropic
  - (2) Homogeneous and anisotropic
  - (3) Inhomogeneous and anisotropic
  - (4) Inhomogeneous and isotropic

31. Keeping other conditions the same, if the strain rate is increased, the behaviour of the rock shall be more :
- (1) Ductile (2) Brittle  
(3) Elastic (4) Plastic
32. If a competent layer embedded between thick incompetent layers and subjected to layer parallel shortening, it will develop :
- (1) Anticline and Syncline (2) Fan Fold  
(3) Boudinage (4) Ptygmatic fold
33. A positive flower structure is most likely to develop in :
- (1) Fold thrust belt (2) Nappe zone  
(3) Strike-slip duplex zone (4) Schuppen zone
34. Which of the following is a detritus feeder bivalve ?
- (1) Nucula (2) Prtocardia  
(3) Lucina (4) Pholadomya
35. Which of the following is not a taphonomic process ?
- (1) Nacrolysis (2) Lithification  
(3) Biostratinomy (4) Fossil diagenesis
36. Delthyrium is present in :
- (1) Echinoids (2) Bivalves  
(3) Corals (4) Brachiopods
37. The fossil community is also known as :
- (1) Biocoenosis (2) Shell beds  
(3) Thanatocoenosis (4) Skeletal concentration



38. Trophic structure is related to the :
- (1) Feeding habits of organism
  - (2) Energy flow for food distribution
  - (3) Food distribution only
  - (4) Feeding habits of organism and energy flow
39. The traces of interconnected burrows in two dimensions are known as :
- (1) Maze
  - (2) Box work
  - (3) Shaft
  - (3) Spriete
40. The dwelling traces are called :
- (1) Cubichnia
  - (2) Repichnia
  - (3) Domichnia
  - (4) Fodichnia

*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. Process of preservation of organic matter in source rocks.
2. Importance of oil-source correlation in petroleum exploration.
3. Importance of time in the development of petroleum system elements in a sedimentary basin.
4. Coalbed methane as non-conventional energy resource.
5. What is strain ellipsoid ? Briefly discuss its geological significance.
6. Applications of nannoplanktons in hydrocarbon exploration.
7. Types of microfossils based on their test composition and their separation techniques.
8. Formation of Arkosic sandstones.
9. Discuss Tide-dominated estuarine environment.
10. Stratigraphic Traps.

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FOR ROUGH WORK

